

Economic Impact Analysis of the Saskatchewan Mining Supply Chain

**Prepared for Saskatchewan Industrial and Mining Suppliers Association, Saskatchewan
Ministry of the Economy, and the Saskatchewan Mining Association**

Final Report

Nov, 2016



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Executive Summary

The Saskatchewan Industrial and Mining Suppliers Association (SIMSA), Saskatchewan Ministry of the Economy (ECON), and the Saskatchewan Mining Association (SMA) engaged Praxis Consulting to examine the Saskatchewan mining supply chain and its economic impact on the provincial economy. Mining supply companies and mining companies were surveyed to estimate the value of procurement activities and to quantify the impact on supplier companies in the areas of new capital investment and operating maintenance expenditures. A multiplier assessment was also conducted on increased sales in different categories of goods and services.

Key Assumptions

The study was conducted by distributing an online survey to 591 supplier companies and the nine major mining companies operating in Saskatchewan. Responses were received from 196 supplier companies and seven mining companies that operate 14 mines and represent one large mining construction project. The seven mining companies account for approximately 90% of the total investment spending in the industry and 93% of over-all operational spending with the remainders being estimated in the results.

For the purposes of this study, it has been assumed that those Saskatchewan-based companies that responded to the supplier survey account for virtually 100% of provincial sales to the seven mining companies that also participated in the study. Even though only 196 responded out of 591 on the supplier email list, it is presumed that the 395 companies that did not respond had no or very small mining related sales to report.

Main Findings

Mining Industry Procurement Patterns

The analysis of the survey results estimated that Saskatchewan mining companies purchased goods and services from Saskatchewan suppliers worth \$1.7 billion in 2014, \$1.8 billion in 2015, and are expected to purchase between \$1.65 and \$1.4 billion from 2016 and 2019 (see Table 10). Purchases related to operations are projected to average about \$1 billion annually to 2019. However, procurement related to new investment is expected to drop from about \$700 million in 2014 to less than \$400 million in 2019. The \$700 million result reflects a surge in mining expansion in recent years. Declining projections can change dramatically if new mining projects are announced or there is a sustained rise or fall in commodity prices and production levels.

A breakdown of purchases by product/services type for 2014 reveals that construction, mining/milling consumables, logistics and utilities represent 80% of procurement dollars in terms of operating expenditures (see Table 11 in the full report). For investment related procurement construction, stationary equipment and consulting/professional services represent 90% of the total spent. This demonstrates the demand for the type of goods and services varies considerable between operations and new capital projects.

Saskatchewan Supplier Company Sales Performance

The participating 196 mining supply companies reported in the survey they employed 14,300 people in 2014 earning just over \$1.1 billion from mining related sales. Sales to Saskatchewan mining companies in that year were \$900 million with slightly more than \$200 million in interprovincial or international sales. This suggests that Saskatchewan-based suppliers captured 65% of mining company purchase dollars in 2014, a total of \$1.7 billion. Praxis believes part of this success is attributable to the Annual Saskatchewan Mining Supply Chain Forum and the various supplier industry promotion activities of ECON, SMA and SIMSA. The 8th Annual Saskatchewan Mining Supply Chain Forum in Saskatoon this past April brought together all of the major operating mines in Saskatchewan with local, national and international suppliers. Over 1,100 people were in attendance including approximately 200 mining company representative. The mining companies also appreciate it is in their interest to develop qualified local supplier capacity in order to reduce procurement costs and improve response times.

Local Supplier Sales Multiplier Effect

Praxis examined the comparative economic Impacts of five scenarios of increased sales in five categories of mining company procurement. The scenarios are:

- Scenario 1: \$10M in additional local utilities sales
- Scenario 2: \$10M in additional local construction services sales
- Scenario 3: \$10M in additional local manufactured goods sales
- Scenario 4: \$10M in additional local logistics sales
- Scenario 5: \$10M in additional local professional services sales

The sale of \$10 million of goods and services in each of the scenarios has a different multiplier effect on the economy in terms of the increases in gross output/production, GDP, employment and labour income. The following table shows each of the scenarios has a positive impact on the Saskatchewan economy. An increase of sales in manufactured goods would have the highest impact in job creation, increased labour income and GDP boost.

Table 1: Multiplier Comparative Analysis by an Additional \$10M in Sales of Product/Services Type.

	Gross Output Multiplier	GDP at Basic Prices Multiplier	Employment Multiplier	Labour Income Multiplier
Utilities	1.55	1.44	3.09	1.80
Construction Services	1.67	1.95	1.93	1.68
Manufactured Goods	1.73	2.22	2.48	1.92
Logistics	1.79	1.75	1.79	1.60
Professional Services	1.94	1.75	1.75	1.56

Conclusion

This report provides a breakdown of the purchasing dollars spent annually by the mining industry on goods and services and the sales penetration achieved by Saskatchewan-based supplier companies. The results are subject to assumptions, challenges and limitations as outlined in the report. If this study is to be updated in future years, Praxis would suggest that efforts be undertaken to mitigate these challenges and limitations. Nevertheless, Praxis feels the information provided in the report is a good starting point for a deeper understanding of the mining sector as a whole and can be used to further grow a locally-based mining supplier industry.

The statements made in this report are based solely on the information obtained to date as part of the above referenced study. Praxis Consulting has used its professional judgment in assessing this information and formulating its opinion and recommendations. New information may result in a change in this opinion. The mandate at Praxis Consulting is to perform the tasks prescribed by the client with the due diligence of the profession. No other warranty or representation, expressed or implied, as to the accuracy of the information or recommendations is included or intended in this report. Praxis Consulting disclaims any liability or responsibility to any person or party, other than the party to whom this report is addressed, for any loss, damage, expense, fine, or penalty which may arise or result from the use of any information or recommendations contained in this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the sole responsibility of the third party.

Introduction

The Saskatchewan Industrial and Mining Suppliers Association (SIMSA), Saskatchewan Ministry of the Economy, and the Saskatchewan Mining Association (SMA) engaged Praxis Consulting to examine the Saskatchewan mining supply chain and its economic impact on the provincial economy. Mining supply companies and mining companies were surveyed to estimate the value of procurement activities and to quantify the impact on supplier companies in the areas of new capital investment and operating maintenance expenditures. A multiplier assessment was also conducted on increased sales in different categories of goods and services.

Methodology

Survey Method

The study was conducted by distributing an online survey to 591 supplier companies and the nine major mining companies operating in Saskatchewan. Email addresses were provided by the Ministry of the Economy, the Saskatchewan Mining Association (SMA), and the Saskatchewan Industrial and Mining Suppliers Association (SIMSA).

Mining Suppliers Companies

A unique survey was developed for mining supply companies to gather the following data:

- Type of company (mining equipment, supplies and services; mining contract service companies and consulting services and other related companies);
- Geographic location;
- Saskatchewan-based business or branch office;
- Number of years in business;
- Percentage of business derived from the mining-related business;
- Percentage of total mining-related business derived from Saskatchewan;
- Size of mining supply and service (MSS) including number of employees and annual revenues; and,
- Tax revenue to government (corporate and employee paid).

A copy of the mining supplier company survey is available in Appendix A.

Mining Companies

A separate survey was developed for mining companies to gather the following data from these entities:

- Type of goods and services that have been purchased;
- Dollar value of goods and services that have been purchased;
- Capital investment in both expansion and new projects;
- Type of goods and services have been purchased related to operations, including maintenance and repair expenditures; and,

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- Dollar value of good and service purchased for operations, including maintenance and repair expenditures.

A copy of the mining company survey is available in Appendix B.

Approach

The data obtained from the surveys was utilized to assess the economic impact of the mining supply chain on the Saskatchewan economy. Data was further assessed to identify regional benefits in the areas of jobs, gross domestic output, wages and salaries, and government revenues. The survey results were used to augment the latest provincial input output (IO) tables¹ for Saskatchewan. Praxis's input-output model of the provincial economy is based on Statistics Canada's 2012 Saskatchewan input-output table, the latest available.

Praxis estimated mining supplier industry impacts at the regional level. Regions assessed were:

- Northern Saskatchewan (Northern Administration District which excludes Prince Albert):
- Saskatoon Region (including Humboldt and environs):
- Yorkton/Esterhazy:
- Regina Region;
- Estevan (coal); and,
- Western Saskatchewan.

Sub-provincial or regional economic impact models are based on a regional share of the latest provincial Statistics Canada input-output tables. Intra-provincial imports and exports are estimated residually. Additional leakages from out-shopping and imports from other areas of the province generate region-specific impact multipliers. Region-specific impact multipliers, in turn, provide more accurate results than when using provincial impact multipliers at the regional level. Given some degree of reliance on imported goods and services as productive inputs from other parts of the province and out-shopping within Saskatchewan but outside of the region, regional multipliers generated by the economic impact model were lower than provincial multipliers across all industries.

The economic impact of the hypothetical sourcing of inputs locally was assessed at points along the production process. Results were ranked according to the metrics noted above. The results of economic impact simulations can also be used to guide potential opportunities to attract or encourage local procurement.

¹ *In economic impact analysis, an input–output model is a quantitative economic technique that represents the interdependencies between different sectors of the national economy or different regional economies. The model depicts inter-industry relationships within an economy, showing how output from one industrial sector may become an input to another industrial sector. These trace the flow of goods and services between industries and components of final demand: exports, imports, personal consumption, government spending, and public and private investment. In addition to the direct employment and economic activity (survey results) generated in the mining supply sector, use of the provincial input-output tables, and resulting economic impact model, allowed for the estimation of indirect and induced impacts of the industry on the provincial economy.*

Assumptions, Challenges and Limitations

While this project was worthwhile in the results that were achieved, it is worth noting data gathering proved unusually challenging. Both the project proponents and the researchers worked extensively to encourage participation through several online reminders and personal contact. As a result, data that was received resulted in a significant amount of data cleaning and validation. Consideration to the use of personal interviews as a means to gather data is recommended for future studies. Despite this challenge, findings have not been negatively impacted.

In terms of the research, there are some limitations worthy of note:

- Distribution of the survey in 2015 with many surveys not received until into the first quarter of 2016 resulted in 2014 results being collected in 2016. Consideration to earlier survey distribution would assist in ease of data gathering.
- A collapse in commodity prices may impact the projected mining company purchases going forward to 2019. The current low uranium and potash prices, for example, have resulted in production cuts and this in turn will reduce expenditures on goods and services. This present downturn in the industry will be reversed when global economic growth improves.
- Mining company survey results were limited to seven companies. While a greater number of responses was expected this had little impact on the data. It is estimated that these seven companies represent approximately 90% of the total investment spending in the industry and 93% of over-all operational spending.
- Supplier company reluctance to provide some key data points and had to be adjusted for using secondary data sources from Statistics Canada.
- It was assumed the 196 Saskatchewan supplier companies who responded to the survey distribution list of 591 represent virtually 100% of provincial supplier companies with sales to the large mining companies.
- There are several potential mining projects in the pre-construction phase in Saskatchewan. These were not included in the analysis but would increase the scale of estimated procurement expenditures substantially if one or more projects were to proceed to construction and operation.
- Mining exploration activities and related procurement undertakings were not part of this study.
- Economic impact results are subject to the usual constraints and limitations of any economic impact model.

Survey Response Rates

It should be noted that 196, or 33%, of the 591 mining supplier companies responding to the survey invitation. This response rate is reasonable given the large number of firms invited to respond and typical response rate for this type of online survey.

For the purposes of this analysis, it has to be assumed that those Saskatchewan-based companies that responded to the supplier survey represent 100% of provincial sales to the large mining companies that participated in the study. Even though only 196 responded out of 591, it is presumed that the 395 companies that did not respond did so because they had no or very small mining related sales to report.

There are approximately 25 mine sites in Saskatchewan producing potash, uranium, gold, coal, salt and a variety of other minerals. The survey was distributed to the 9 major companies in the mining sector and 7 companies responded. These 7 companies operate 14 mines and have one large mining project under development. These companies account for approximately 90% of the total investment spending in the industry and 93% of over-all operational spending. An adjustment for non-surveyed mining companies was included in the study finding.

Research Findings

1. Mining Supplier Survey Results

The findings from the survey and secondary research for the Saskatchewan mining supplier industry summarized in this subsection of the report.

Profile of participating supply companies

The survey indicated 97% percent of the mining supplier companies who answering the survey, or 183 out of 196, had their head office in Saskatchewan, six were headquartered outside the province and seven didn't indicated the location of their head office (see Table 2). Fourteen companies out of 177 that answered the question, or about 8%, said they were Aboriginal-owned.

These companies said they earned just over \$1.1 billion in mining related revenues of which more than 80% was earned in Saskatchewan. More than \$200 million in additional revenues were earned from interprovincial or international sales. The annual reported payroll for these companies that responded to the survey was \$428 million.

Table 2: Survey Results from 196 Mining Supplier Companies for 2014.

Saskatchewan - Based Office		Aboriginal Owned		Payroll (\$M)	Mining Revenues (\$M)	Mining Revenue in Sask. (\$M)
Yes	183	Yes	14	428	1,129	900
No	6	No	163			
Blank	7	Blank	19			

Table 3 indicates about 60% of responding companies said they were located in Saskatoon and another 20% were Regina-based. Several companies had more than one office in Saskatchewan. The survey responders reported they employed almost 14,300 employees. Saskatoon had about 62% of the total workforce reported and Regina had 28% for a combined total of 90%. The average revenues for these firms was almost \$6.8 million.

Table 3: Survey Results for Mining Supplier Location.

Region	Company Count	Employees
Saskatoon Region	137	8,755
Regina Region	41	4,115
Northern Region	16	605
Estevan Region	8	66
Western Region	7	84
Yorkton/Esterhazy Region	15	673
Provincial Total	224*	14,298

*Some suppliers have offices in more than one location

2. Mining Industry Survey Results

Profile of participating mining companies

There are approximately 25 mine sites in Saskatchewan producing potash, uranium, gold, coal, salt and a variety of other minerals. The survey was completed by 7 large mining companies operating 14 mine sites and with one site that is under construction. These companies account for approximately 90% of the total investment spending in the industry and 93% of over-all operational spending with the remainders being estimated in the results presented in Table 4.

It is worth noting that several new mine projects are under consideration in Saskatchewan. These development projects are not included in the analysis, but the findings of this study would rise substantially if one or more projects were to proceed.

The survey enquired about the types of mining supplies and services purchased from Saskatchewan suppliers in 2014 and the respective dollar value. Respondents were further asked to project for the next five years to 2019. Capital investment (expansion or new projects) were also requested. The North American Industry Classification System (NAICS) and specialized mining input definitions used within this study are contained in Appendix D.

Mining Company Purchases

The analysis estimated that Saskatchewan mining companies purchased goods and services from Saskatchewan suppliers worth \$1.7 billion in 2014, \$1.8 billion in 2015 and are expected to purchase between \$1.65 and \$1.4 billion between 2016 and 2019 (see Table 4).

Purchases for operations are forecasted to continue on average at about \$1 billion annually to 2019. However, procurement related to new investment is expected to drop from about \$700 million in 2014 to under \$400 million in 2019. These projections can change dramatically if new mining projects are announced or there is a sustained rise or fall in commodity prices and production levels.

Table 4: Estimated Mining Company Purchases in Saskatchewan (2014 – 2019)

Mining Survey Results - Purchases in Sask. (\$M)	2014	2015	2016	2017	2018	2019
Operation Expenditures						
Fuel	70.8	62.3	63.7	61.9	62.1	62.3
Chemicals	14.2	36.6	37.0	31.7	31.9	32.0
Logistics	104.1	117.5	116.6	116.3	116.7	117.1
Consulting/Prof services	52.6	98.4	53.5	52.6	54.2	54.7
Construction	380.6	424.9	411.6	339.4	345.1	343.3
Mining/Milling Consumables	152.3	176.3	177.2	173.6	174.3	176.0
Stationary Equipment	30.2	48.5	48.6	48.0	48.8	49.0
Mobile Equipment	28.9	47.7	47.8	39.7	40.0	40.1
Utilities	115.4	115.0	117.9	122.4	128.5	130.8
Total Operations	949.2	1127.0	1073.9	985.6	1001.7	1005.1
Capital Investment Expenditures						
Fuel	0.4	0.0	0.3	0.0	0.3	0.0
Chemicals	0.0	0.0	0.0	0.0	0.0	0.0
Logistics	0.9	0.2	1.0	0.2	1.0	0.2
Consulting/Prof services	80.6	173.8	62.7	99.0	53.6	75.1
Construction	371.0	396.3	302.6	281.5	271.1	233.7
Mining/Milling Consumables	62.2	48.1	57.8	43.8	52.0	39.5
Stationary Equipment	203.7	35.0	148.9	26.6	168.7	27.7
Mobile Equipment	10.9	6.3	4.6	2.4	4.7	2.4
Utilities	2.0	0.5	3.2	0.6	3.2	0.6
Total Investment	731.7	660.3	581.1	454.2	554.6	379.2
Total Expenditures (Operations & Investment)	1680.8	1787.3	1655.1	1439.8	1556.3	1384.4

Purchases by Product Type

A breakdown of purchases by product/services type for 2014 reveals that construction, mining/milling consumables, logistics and utilities represent 80% of procurement dollars in terms of operating expenditures (see Table 5). For investment related procurement construction, stationary equipment and consulting/professional services represent 90% of the total spent. This demonstrates the demand for the type of goods and services varies considerable between operations and new capital projects.

Table 5: 2014 Percentage of Purchases by Product/Services Type.

Product/Service	2014 Operating Purchases (\$M)	Percent	2014 Investment Purchases (\$M)	Percent
Fuel	70.8	7%	0.4	0%
Chemicals	14.2	1%	0	0%
Logistics	104.1	11%	0.9	0%
Consulting/Prof services	52.6	6%	80.6	11%
Construction	380.6	40%	371	51%
Mining/Milling Consumables	152.3	16%	62.2	9%
Stationary Equipment	30.2	3%	203.7	28%
Mobile Equipment	28.9	3%	10.9	1%
Utilities	115.4	12%	2	0%
Total	949.2	100%	731.7	100%

Purchases from Aboriginal owned suppliers

In addition, mining companies were surveyed on purchases made from Aboriginal-owned suppliers. Survey results are presented below:

Table 6: Percentage of Purchases by Aboriginal-Owned Suppliers.

Mining Survey Results - Purchases made from Aboriginal-Owned Suppliers	2014	2015	2016	2017	2018	2019
Part A: Operations (\$M) – Past and Anticipated	335.2	283.0	282.1	286.2	290.4	295.0
% of Total	32.0%	28.6%	28.0%	28.3%	28.2%	28.6%
Part B: New Investment-Past and Anticipated (\$M)	94.0	74.0	70.0	64.2	61.0	60.0
% of Total	7.5%	7.9%	7.9%	8.1%	17.6%	19.6%

3. Supply Chain Scenario Impacts and Multiplier Effect

As part of a comparative analysis, the study includes a hypothetical assessment of the economic impact and multiplier effect of different categories of goods and services purchases by the mining companies. Results for each category are assessed according to job creation, GDP impact, output impacts, and labour income impact.

The results of economic impact simulations can be used to guide to understand the benefits to the province of expanding local supplier content in these areas. In order to provide comparative analysis across supplier industries, simulations were based on adding \$10M of local purchases for each mining input category. The economic Impacts for five separate scenarios were compared:

- Scenario 1: \$10M in additional local utilities sales
- Scenario 2: \$10M in additional local construction services sales
- Scenario 3: \$10M in additional local manufactured goods sales
- Scenario 4: \$10M in additional local logistics sales
- Scenario 5: \$10M in additional local professional services sales

A purchase of \$10 million in each of the scenarios has a different multiplier effect on the economy. Direct effects measure the response for a given industry assuming a change in demand for that same industry. Indirect effects represent the response by all local industries from a change in final demand for a specific industry. Induced effects represent the response by all local industries caused by changes in expenditures of new household income from the direct and indirect effects in the change in demand. Total impact is the sum of direct, indirect, and induced effects. **The multiplier is the total effect divided by the direct effect.**

Table 7 indicates each of the product/services types of purchases show a significant gain for the economy if the procurement and sale is locally-based.

Table 7: Multiplier Comparative Analysis by Additional \$10M Sale of Product/Services.

	Gross Output Multiplier	GDP at Basic Prices Multiplier	Employment Multiplier	Labour Income Multiplier
Utilities	1.55	1.44	3.09	1.80
Construction Services	1.67	1.95	1.93	1.68
Manufactured Goods	1.73	2.22	2.48	1.92
Logistics	1.79	1.75	1.79	1.60
Professional Services	1.94	1.75	1.75	1.56

Table 8: Impact Results Scenario 1 - \$10M in Additional Local Utilities Sales.

Scenario 1: \$10M in additional local Utilities Purchases	Gross Output Impact	Gross Domestic Product at Basic Prices (\$M)	Employment Impact (jobs)	Labour Income Impact (\$M)
Direct Impacts (\$M)	10.00	6.26	11.3	1.36
Indirect Impacts (\$M)	3.24	1.52	10.4	0.56
Induced Impacts (\$M)	2.21	1.24	13.2	0.52
Total Impacts (\$M)	15.45	9.02	34.9	2.44

Table 9: Impact Results Scenario 2 - \$10M in Additional Local Construction Services Sales.

Scenario 2: \$10M in additional Construction Services Purchases	Gross Output Impact	Gross Domestic Product at Basic Prices (\$M)	Employment Impact (jobs)	Labour Income Impact (\$M)
Direct Impacts (\$M)	10.00	3.86	34.7	2.14
Indirect Impacts (\$M)	3.46	1.82	12.8	0.68
Induced Impacts (\$M)	3.29	1.85	19.6	0.78
Total Impacts (\$M)	16.75	7.52	67.0	3.60

Table 10: Impact Results Scenario3 - \$10M in Additional Local Manufactured Goods Sales.

Scenario 3: \$10M in additional Manufactured Goods Purchases	Gross Output Impact	Gross Domestic Product at Basic Prices (\$M)	Employment Impact (jobs)	Labour Income Impact (\$M)
Direct Impacts (\$M)	10.00	2.91	18.2	1.21
Indirect Impacts (\$M)	5.15	2.38	14.5	0.61
Induced Impacts (\$M)	2.10	1.18	12.5	0.50
Total Impacts (\$M)	17.26	6.47	45.3	2.32

Table 11: Impact Results Scenario 4 - \$10M in Additional Local Logistics Sales.

Scenario 4: \$10M in additional local Logistics Purchases	Gross Output Impact	Gross Domestic Product at Basic Prices (\$M)	Employment Impact (jobs)	Labour Income Impact (\$M)
Direct Impacts (\$M)	10.00	5.55	50.6	2.95
Indirect Impacts (\$M)	3.61	1.74	14.4	0.75
Induced Impacts (\$M)	4.32	2.43	25.7	1.02
Total Impacts (\$M)	17.93	9.71	90.7	4.72

Table 6: Impact Results Scenario 5 - \$10M in Additional Local Professional Services Sales.

Scenario 5: \$10M in additional Professional Services Purchases	Gross Output Impact	Gross Domestic Product at Basic Prices (\$M)	Employment Impact (jobs)	Labour Income Impact (\$M)
Direct Impacts (\$M)	10.00	6.33	66.0	3.76
Indirect Impacts (\$M)	4.00	1.72	17.6	0.83
Induced Impacts (\$M)	5.38	3.02	32.0	1.27
Total Impacts (\$M)	19.38	11.07	115.5	5.86

The sale of \$10 million of goods and services in each of the scenarios has a different multiplier (see Table 6) that generates the increase in gross output/production, GDP, employment and labour income. The multipliers are demonstrated in dollar impact in Figure 1. However, an increase of sales in manufactured goods would have the highest impact in job creation, increased labour income and GDP boost. Manufacturing has a larger labour income multiplier because the sector has significant purchase inputs to support the manufacturing process. In contrast, the professional services sector has a lower labour income multiplier because it is primarily engaged in activities requiring few inputs other than their own human capital.

The results for the scenarios can be viewed graphically in the following diagram.

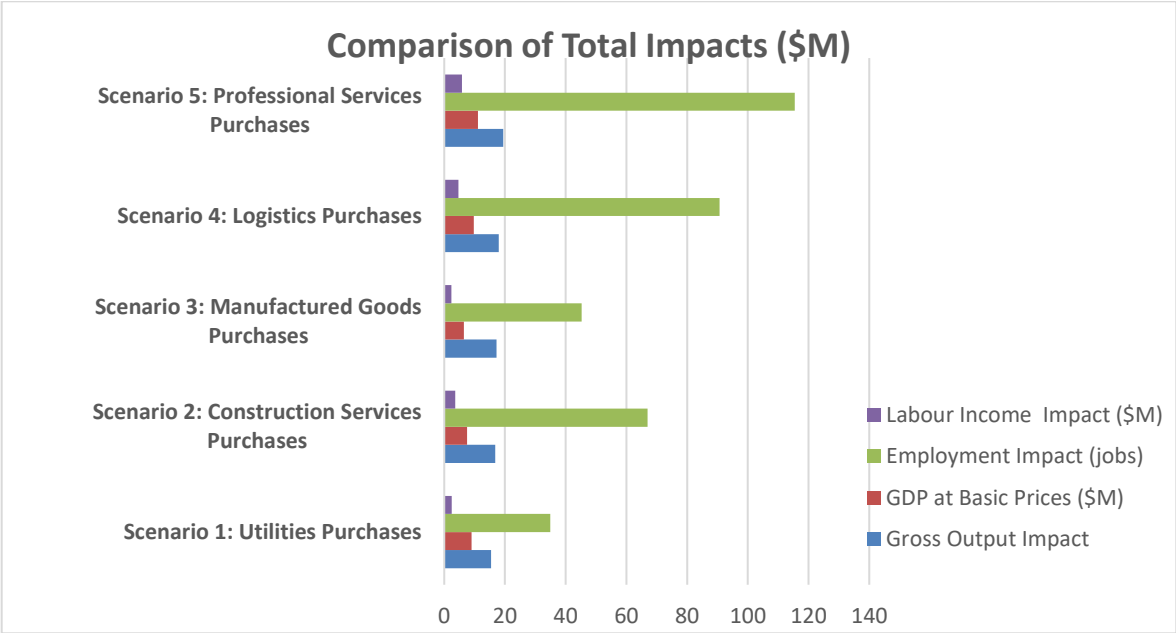


Figure 1: Impact on Saskatchewan’s Economy for Each Scenario.

By comparing the results for the scenarios, some key strengths and weaknesses can be found. The key findings in the results for each scenario by their overall impact and the contributing factors towards them are outlined below:

Scenario #5: \$10M in additional local Professional Services Purchases

- Job creation, GDP, and labour income impacts are the highest for this scenario.
- Contributing factors include the labour intensity of the industry and the low levels of imported inputs required for the industry’s production process.

Scenario #4: \$10M in additional local Logistics Purchases

- Job creation impacts ranked second to Scenario #5 above.
- Contributing factors include the relatively high ratio of employment to output.

Scenario 3: \$10M in additional local Manufactured Goods Purchases

- Job creation performs relatively poorly.
- Contributing factors include the high capital intensity in production.

Scenario 2: \$10M in additional local Construction Services Purchases

- Job creation performs relatively well.
- Contributing factors include high labour intensity in production.

Scenario 1: \$10M in additional local Utilities Purchases

- Job creation performs relatively poorly.
- Contributing factors include the high capital intensity in production.

Conclusion

This study determined that Saskatchewan-based suppliers captured 65% of mining company purchase dollars in 2014, which totaled \$1.7 billion. The survey of the 196 supplier companies reported in 2014 they earned just over \$1.1 billion from mining industry related sales. Sales to Saskatchewan mining companies in that year were \$900 million with slightly more than \$200 million in interprovincial or international sales. Praxis believes part of this success is attributable to the Annual Saskatchewan Mining Supply Chain Forum and the various supplier industry promotion activities of SIMSA, SMA and ECON. The 8th Annual Saskatchewan Mining Supply Chain Forum in Saskatoon this past April brought together all of the major operating mines in Saskatchewan with local, national and international suppliers. Over 1,100 people were in attendance including approximately 200 mining company representative. The mining companies also appreciate it is in their interest to develop qualified local supplier capacity in order to reduce procurement costs and improve response times.

This report provides a breakdown of the purchasing dollars annually spent by the mining industry on goods and services and the sales penetration achieved by Saskatchewan-based supplier companies. However, the results are subject to assumptions, challenges and limitations as outlined in the reports. If this study is to be updated in future years, Praxis would suggest that that efforts be undertaken to mitigate the challenges and limitations. Nevertheless, Praxis feels the information provided in the report is a good starting point for a deeper understanding of the mining sector as a whole and can be used to further grow a locally-based mining supplier industry.

The statements made in this report are based solely on the information obtained to date as part of the above referenced study. Praxis Consulting has used its professional judgment in assessing this information and formulating its opinion and recommendations. New information may result in a change in this opinion. The mandate at Praxis Consulting is to perform the tasks prescribed by the client with the due diligence of the profession. No other warranty or representation, expressed or implied, as to the accuracy of the information or recommendations is included or intended in this report. Praxis Consulting disclaims any liability or responsibility to any person or party, other than the party to whom this report is addressed, for any loss, damage, expense, fine, or penalty which may arise or result from the use of any information or recommendations contained in this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the sole responsibility of the third party.

Appendix A: Supplier Company Survey

HOME PAGE

Welcome to the Mining Supply Chain Economic Impact survey.

ABOUT THE SURVEY

This survey is part of a study of how mines and their suppliers add value to the Saskatchewan economy. It is being conducted on behalf of the Saskatchewan Mining and Industrial Suppliers Association (SIMSA).

The purpose of this website is to collect data from mining companies operating in Saskatchewan. The data will be used as the basis for economic impact analysis.

ANONYMITY

The data you provide will be received by Praxis Analytics, a Saskatchewan research firm. All data will be aggregated in a common pool, and no individual company data will be identified, released or linked in any way to your company in any report, other document or message except for materials used internally in analysis. The sole use that will be made of data is as input for impact analysis.

HOW TO COMPLETE THE SURVEY

At the bottom of this page, click on the Next button. It will take you to the first question. One question or set of questions is shown at a time.

To advance to the next question, you must give a response, even if it is 'Don't know' or 'Decline'.

TIME LIMIT

The online questionnaire is available until Sunday June 14, 2015. To leave the survey and return later, click the Save and Continue Later button, and come back later to the point you left off. Please complete as soon as possible after you begin.

You may print off the entire questionnaire, in case you want a hard copy to help assemble the data. [Click here](#) to go to the full questionnaire in printable form.

QUESTIONS?

If you have questions about the survey's purpose or content, you may call Alun Richards at SIMSA, at 306-221-8899, between 8:00-5:00 Monday to Friday.

If you have technical difficulty with the survey or the website, please e-mail druecker@praxis-analytics.ca.

A1. Please indicate which category that describes your company

Mining equipment, supplies and services
Mining contract service company
Consulting services or other related company

Other: _____

Decline

A2. In what town/city does your company primarily operate? _____

A3. Does your company have a Saskatchewan based office?

Yes

No

Decline

A4. How many years has your company been in business? _____

A5. Of your total business in 2014, what percentage was mining-related? ____

A6. Of your mining-related business in 2014, what percentage was done within Saskatchewan?

A7. What is the estimated (or actual) dollar amount of your 2014 revenues? _____

A8. As of December 31, 2014, what was the number of employees in your company? ____

A9. What is the estimated (or actual) dollar amount of your 2014 payroll? _____

A10. What is the estimated (or actual) dollar amount of 2014 taxes paid to the provincial government? _____

A11. What is the estimated (or actual) dollar amount of 2014 taxes paid to the federal government? _____

A12. Do you identify yourself as an Aboriginal business?

Yes

No

Decline

Thank you for your input and participation!

Click "submit" to exit the survey.

Appendix B: Mining Company Survey

**SMA/Ministry of Economy/SIMSA
Mining Supply Chain Economic Impact Study
Mining Company Questionnaire**

HOME PAGE

Welcome to the Mining Supply Chain Economic Impact survey.

ABOUT THE SURVEY

This survey is part of a study of how mines and their suppliers add value to the Saskatchewan economy. It is being conducted on behalf of the Saskatchewan Mining Association, Ministry of Economy, and Industrial Suppliers Association (SIMSA).

The purpose of this website is to collect data from mining companies operating in Saskatchewan. The data will be used as the basis for economic impact analysis.

The Survey is asking for the following:

1. Operational Investments (Section A) vs. New Investments - (Section B) for the following 9 categories:
 - a. Fuel
 - b. Chemicals and Re-agents
 - c. Logistics
 - d. Consultants/Professional Services
 - e. Construction Services
 - f. Mining and Milling Consumables/Raw Materials
 - g. Equipment (Stationary)
 - h. Equipment (Mobile)
 - i. Utilities
2. Actual cost from 2014, estimated costs for 2015 and forecast costs from 2016 – 2019 inclusive (Sections A and B).
3. The total spend of Operational and New Investments from Saskatchewan vs. outside Saskatchewan (Sections A and B) for the 9 categories listed.
4. The overall total spend of Operational and New Investments (Section C).
5. The percentage of Operational and New Investments from all suppliers within Saskatchewan and SK aboriginal suppliers (Section C).

ANONYMITY

The data you provide will be received by Praxis Analytics, a Saskatchewan research firm. All data will be aggregated in a common pool, and no individual company data will be identified, released or linked in any way to your company in any report, other document or message except for materials used internally in analysis. The sole use that will be made of data is as input for impact analysis.

HOW TO COMPLETE THE SURVEY

At the bottom of this page, click on the Next button. It will take you to the first question. One question or set of questions is shown at a time.

TIME LIMIT

The online questionnaire is available until November 20, 2015. To leave the survey and return later, click the Save and Continue Later button, and come back later to the point you left off. Please complete as soon as possible after you begin.

You may print off the entire questionnaire, in case you want a hard copy to help assemble the data. [Click here](#) to go to the full questionnaire in printable form.

QUESTIONS?

If you have questions about the survey's purpose or content, you may call Alun Richards at SIMSA, at 306-221-8899, between 8:00-5:00 Monday to Friday.

If you have technical difficulty with the survey or the website, please e-mail druecker@praxis-analytics.ca.

SECTION A: OPERATIONS
SUPPLIES AND SERVICES: PAST AND ANTICIPATED

NOTE: (appears on top of each relevant page)

- “Operations” includes maintenance and repair.
- “Location” refers to the site of the supplier’s office you dealt with in making the acquisition.

For each category of material or service shown in the left hand column, please indicate the estimated or actual dollar value of purchases on **operations** in the calendar years shown, both within Saskatchewan and outside the province. Be sure to scroll through all the options using your mouse or the tab key.

Type of Supply/ Service	2014 Value (Actual)		2015 Value (Estimated)		2016 Value (Forecast)		2017 Value (Forecast)		2018 Value (Forecast)		2019 Value (Forecast)	
	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside
Location												
Fuel Excludes natural gas												
Chemicals and re-agents												
Logistics Transportation (including air), freight, warehousing and storage												
Consultants/ Professional services *See list below												
Construction/Site services Contractors involved in constructing, repairing and renovating buildings and engineering works and includes Maintenance Contractors. Site services include security, catering, janitorial, construction camp services, etc.												

Mining and Milling Consumables/Raw Materials Grinding Balls, Bearing, Motors, etc													
Equipment (Stationary) Mineral and stone beneficiating machinery, drilling machinery and equipment ore crushing, washing, screening and loading machinery, water well drilling machinery, pumps, pipelines, fabricated metal (culverts, etc) buildings and structures													
Equipment (Mobile) Motor vehicles, Motor vehicle bodies and trailers Motor vehicle parts, Railroad rolling stock, graders, other mobile construction/extraction equipment													
Utilities Natural Gas, Electrical power, Water													

***Consultants/Professional services:**

- Architectural services
- Engineering services
- Drafting services
- Building inspection services

- Geophysical surveying and mapping services
- Surveying and mapping (except geophysical) services
- Testing laboratories
- Legal services
- Accounting, tax preparation, bookkeeping and payroll services
- Specialized design services
- Computer systems design and related services
- Management, scientific and technical consulting services
- Scientific research and development services
- Advertising, public relations, and related services
- EPCM

SECTION B: NEW INVESTMENT

SUPPLIES AND SERVICES: PAST AND ANTICIPATED

NOTE: (appears on top of each relevant page)

- “Location” refers to the site of the supplier’s office you dealt with in making the acquisition.

For each category of material or service shown in the left hand column, please indicate the estimated or actual dollar value of purchases on **new investment** in the calendar years shown, both within Saskatchewan and outside the province. Be sure to scroll through all the options using your mouse or the tab key.

Type of Supply/ Service	2014 Value (Actual)		2015 Value (Estimated)		2016 Value (Forecast)		2017 Value (Forecast)		2018 Value (Forecast)		2019 Value (Forecast)	
	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside	Sask	Outside
Location												
Fuel <i>Excludes natural gas</i>												
Chemicals and re-agents												
Logistics <i>Transportation (including air), freight, warehousing and</i>												

storage												
Consultants/ Professional services *See list below												
Construction/Site services Contractors involved in constructing, repairing and renovating buildings and engineering works and includes Maintenance Contractors. Site services include security, catering, janitorial, construction camp services, etc.												
Mining and Milling Consumables/Raw Materials Grinding Balls, Bearing, Motors, etc												
Equipment (Stationary) Mineral and stone beneficiating machinery, drilling machinery and equipment ore crushing, washing, screening and loading machinery, water well drilling machinery, pumps, pipelines, fabricated metal (culverts, etc) buildings and structures												
Equipment (Mobile) Motor vehicles, Motor vehicle bodies and trailers Motor vehicle parts, Railroad												

<i>rolling stock, graders, other mobile construction/extraction equipment</i>												
Utilities <i>Natural Gas, Electrical power, Water</i>												

***Consultants/Professional services:**

- Architectural services
- Engineering services
- Drafting services
- Building inspection services
- Geophysical surveying and mapping services
- Surveying and mapping (except geophysical) services
- Testing laboratories
- Legal services
- Accounting, tax preparation, bookkeeping and payroll services
- Specialized design services
- Computer systems design and related services
- Management, scientific and technical consulting services
- Scientific research and development services
- Advertising, public relations, and related services
- EPCM

SECTION C: LOCAL EXPENDITURES (OPERATIONS, NEW INVESTMENT)

SUPPLIES AND SERVICES: PAST AND ANTICIPATED

NOTE: *(appears on top of each relevant page)*

- “Operations” are items identified in Section A, and include maintenance and repair.
- “New Investment” refers to items identified in Section B.
- “Total” refers to all expenditures in the category listed.
- “SK” refers to any Saskatchewan suppliers.
- “Aboriginal” refers to Saskatchewan suppliers self-identifying as being Aboriginal businesses.

Within each category of expenditure shown in the left hand column, please indicate the total value of purchases in the calendar years shown.

Then also please indicate the percentage of the total value purchased in the calendar years shown to suppliers within Saskatchewan, and to SK Aboriginal suppliers (% of total; not % of SK spend). Be sure to scroll through all the options using your mouse or the tab key.

Type of Expenditure		2014 Value (Actual)			2015 Value (Estimated)			2016 Value (Forecast)		
Location	Total \$	% SK	% SK Aboriginal	Total \$	% SK	% SK Aboriginal	Total \$	% SK	% SK Aboriginal	
Operations										
New Investment										

Type of Expenditure		2017 Value (Forecast)			2018 Value (Forecast)			2019 Value (Forecast)		
Location	Total \$	% SK	% SK Aboriginal	Total \$	% SK	% SK Aboriginal	Total \$	% SK	% SK Aboriginal	
Operations										
New Investment										

Appendix C: Mining Supplier Impacts by Industry

The table below represents the total (direct, indirect, and induced) impacts by industry at the provincial level. Full industry detail is available in the Praxis Saskatchewan Economic Impact Model. Previous tables show results at the total industry level.

Total Impacts (\$M) Direct, Indirect and Induced	Gross Output Impact	GDP @ Basic Prices Impact	Employment Impact (Positions)	Labour Income Impact
Crop and Animal Production	63.2	25.9	194	2.0
Forestry and Logging	0.0	0.0	0	0.0
Fishing, Hunting and Trapping	0.0	0.0	0	0.0
Support Activities for Agriculture & Forestry	0.4	0.3	5	0.2
Mining Supply Industry	2,717.7	1819.8	43,113	1,819.8
Utilities	82.0	51.3	92	11.1
Construction	73.1	28.2	254	15.6
Manufacturing	770.5	224.2	1,404	92.9
Wholesale Trade	762.9	498.8	3,291	205.5
Retail Trade	0.3	0.2	4	0.1
Transportation and Warehousing	102.3	56.8	517	30.2
Information and Cultural Industries	90.2	51.6	397	25.1
Finance, Insurance, Real Estate and Rental and Leasing	758.5	505.5	1,718	100.0
Professional, Scientific and Technical Services	163.2	103.4	1,077	61.3
Administrative and Support, Waste Management and Remediation Services	30.9	19.2	432	13.8
Educational Services	0.0	0.0	0	0.0
Health Care and Social Assistance	28.9	18.2	231	7.6
Arts, Entertainment and Recreation	0.2	0.1	2	0.0
Accommodation and Food Services	0.0	0.0	0	0.0
Other Services (Except Public Administration)	8.3	5.2	118	3.5
Operating, Office, Cafeteria and Laboratory Supplies	67.8	0.0	0	0.0
Travel, Entertainment, Advertising and Promotion	40.8	0.0	0	0.0
Transportation Margins	47.3	0.0	0	0.0
Non-Profit Institutions Serving Households	3.9	2.2	0	2.0
Government Sector	50.1	32.3	408	26.7
Total	5,862.4	3443.1	53,319	2,417.7

Appendix D: NAICS

North American Industry Classification System (NAICS) and Specialize Mining Input Definitions:

Construction Services Purchases – uses the NAICS definition for 23 - Construction as follows:

This sector comprises establishments primarily engaged in constructing, repairing and renovating buildings and engineering works, and in subdividing and developing land. These establishments may operate on their own account or under contract to other establishments or property owners. They may produce complete projects or just parts of projects. Establishments often subcontract some or all of the work involved in a project, or work together in joint ventures. Establishments may produce new construction, or undertake repairs and renovations to existing structures.

A construction establishment may be the only establishment of an enterprise, or one of several establishments of an integrated real estate enterprise engaged in the land assembly, development, financing, building and sale of large projects.

There are substantial differences in the types of equipment, work force skills, and other inputs required by establishments in this sector. To highlight these differences and variations in the underlying production functions, this sector is divided into three subsectors. Establishments are distinguished initially between those that undertake projects that require several different construction activities (known as trades) to be performed, and establishments that specialize in one trade.

The former are classified in subsectors 236 Construction of buildings and 237 Heavy and civil engineering construction, depending upon whether they are primarily engaged in the construction of buildings or in heavy construction and civil engineering projects. Establishments in these subsectors complete projects using their own labour force, by subcontracting, usually to trade contractors or a combination of own account and subcontracting activities. Establishments classified in these subsectors are known by a variety of designations, such as general contractor, design-builder, speculative builder, operative builder and construction manager. The designation depends on the scope of the projects they undertake, the degree of responsibility and risk that they assume, the type of structure that they produce, and whether they work on contract for an owner or on their own account.

General contractors typically work under contract to a client (the owner of the land and the building or structure to be constructed), and undertake projects that require several specialized construction activities to be performed. Often the general contractor will subcontract some of the specialized tasks to other establishments.

Design-builders are similar to general contractors. However, in a design-build project a single contract is signed with the owner that makes the contractor responsible for providing the architectural and engineering designs. The design-builder therefore is responsible for the design of the project as well as its construction.

Construction establishments that build on their own account, for sale to others, are known as speculative builders, operative builders or merchant builders. They are most often engaged in the construction of residential buildings.

Construction managers provide oversight and scheduling services to the owner, for the most part during the actual construction process. This type of service is sometimes referred to as agency construction management, to distinguish it from a type of general contracting known as at-risk construction management. On the other hand, project management, which is a turnkey-type service involving the entire project, including feasibility studies, the arranging of financing, and the management of the contract bidding and selection process, is classified in 54133 Engineering services when it is the primary activity of an establishment.

Establishments that specialize in one particular construction activity, or trade, are generally classified in subsector 238 Specialty trade contractors. However, in order to conform to the generally accepted distinctions made by construction businesses themselves, some types of specialized establishments involved in road building and civil engineering are classified in subsector 237 Heavy and civil engineering construction.

Subsector 238, Specialty trade contractors, comprises establishments engaged in trade activities generally needed in the construction of buildings and structures, such as masonry, painting, or electrical work. Specialty trade contractors usually work under contract to another construction establishment but, especially in renovation and repair construction, they may contract directly with the owner of the property.

A significant amount of construction work is performed by enterprises that are primarily engaged in some business other than construction, for these enterprises' own use, using employees and equipment of the enterprise. This activity is not included in the construction sector unless the construction work performed is the primary activity of a separate establishment of the enterprise. However, if separate establishments do exist, they are classified in the construction sector.

Logistics Purchases – uses the NAICS definition for 48-49 Transportation and Warehousing as follows: This sector comprises establishments primarily engaged in transporting passengers and goods, warehousing and storing goods, and providing services to these establishments. The modes of transportation are road (trucking, transit and ground passenger), rail, water, air and pipeline. These are further subdivided according to the way in which businesses in each mode organize their establishments. National post office and courier establishments, which also transport goods, are included in this sector. Warehousing and storage establishments are subdivided according to the type of service and facility that is operated.

Many of the establishments in this sector are structured as networks, with activities, workers, and physical facilities distributed over an extensive geographic area.

Manufactured Goods Purchases – uses the NAICS definition for 31-33 - Manufacturing as follows: This sector comprises establishments primarily engaged in the chemical, mechanical or physical transformation of materials or substances into new products. These products may be finished, in the sense that they are ready to be used or consumed, or semi-finished, in the sense of becoming a raw material for an establishment to use in further manufacturing. Related activities, such as the assembly of

the component parts of manufactured goods; the blending of materials; and the finishing of manufactured products by dyeing, heat-treating, plating and similar operations are also treated as manufacturing activities. Manufacturing establishments are known by a variety of trade designations, such as plants, factories or mills.

Manufacturing establishments may own the materials which they transform or they may transform materials owned by other establishments. Manufacturing may take place in factories or in workers' homes, using either machinery or hand tools.

Factory-less goods producers (FGPs) that completely outsource the transformation process but own the input materials are classified to the manufacturing sector. FGPs that completely outsource the transformation process but do not own the materials are classified to merchant wholesalers in Sector 41 Wholesale trade. These units are in fact buying the completed goods from the producer with the intention to resell it. These units may design the goods being manufactured, and may have some say in the manufacturing process.

Certain activities involving the transformation of goods are classified in other sectors. Some examples are post-harvest activities of agricultural establishments, such as crop drying; logging; the beneficiating of mineral ores; the production of structures by construction establishments; and various activities conducted by retailers, such as meat cutting and the assembly of products such as bicycles and computers.

Sales branches or offices (but not retail stores) maintained by manufacturing, refining, or mining enterprises apart from their plants or mines for the purpose of marketing their products are included in Sector 41 Wholesale trade as merchant wholesalers.

Professional Services Purchases – uses the NAICS definition for 54 – Professional, Scientific and Technical Services as follows:

This sector comprises establishments primarily engaged in activities in which human capital is the major input. These establishments make available the knowledge and skills of their employees, often on an assignment basis. The individual industries of this sector are defined on the basis of the particular expertise and training of the service provider.

The main components of this sector are legal services; accounting, tax preparation, bookkeeping and payroll services; architectural, engineering and related services; specialized design services; computer systems design and related services; management, scientific and technical consulting services; scientific research and development services; and advertising, public relations, and related services.

The distinguishing feature of this sector is the fact that most of the industries grouped in it have production processes that are almost wholly dependent on worker skills. In most of these industries, equipment and materials are not of major importance. Thus, the establishments classified in this sector sell expertise. Much of the expertise requires a university or college education, though not in every case.

Establishments primarily engaged in providing instruction and training in a wide variety of subjects and those primarily engaged in providing health care by diagnosis and treatment are not included in this sector.

Utilities Purchases – uses the NAICS definition for 22 – Utilities as follows:

This sector comprises establishments primarily engaged in operating electric, gas and water utilities. These establishments generate, transmit, control and distribute electric power; distribute natural gas; treat and distribute water; operate sewer systems and sewage treatment facilities; and provide related services, generally through a permanent infrastructure of lines, pipes and treatment and processing facilities.

Source: (Dictionary of Mining, Mineral and Related Terms) for all except chemicals and consumables

Chemicals (manufacturing): This industry group comprises establishments primarily engaged in manufacturing chemicals, using basic processes such as thermal cracking and distillation. Chemicals produced in this industry group are usually separate chemical elements or separate chemically-defined compounds.

Chemicals (Wholesalers and distributors): This industry group comprises establishments primarily engaged in wholesaling industrial and household chemicals, cleaning compounds and preparations, plastics resins, plastic basic forms and shapes, and industrial gases.

Fuel: A substance that can be economically burned to produce heat energy for domestic or industrial purposes. Fuels include compounds of carbon and hydrogen and exclude other substances that can be burned. Fuels can be subdivided into recent plant fuels, fossil fuels, such as peat and coal, and products of distillation of plant or fossil fuels. According to their state of aggregation, fuels can be subdivided into solid, liquid, and gaseous fuels.

Milling: The grinding or crushing of ore. The term may include the operation of removing valueless or harmful constituents and preparation for market. A combination of open-cut and underground mining, wherein the ore is mined in open cut and handled underground.

Mining: The science, technique, and business of mineral discovery and exploration. Strictly, the word connotes underground work directed to severance and treatment of ore or associated rock. Practically, it includes opencast work, quarrying, alluvial dredging, and combined operations, including surface and underground ore treatment.

Mining/Milling Consumables: goods that are intended to be used up relatively quickly and replaced (e.g. fuel, ball bearings)

Mobile Equipment: Applied to all equipment that is self-propelled or that can be towed on its own wheels, tracks, or skids. See also Transportable Equipment.

Stationary Equipment: Stationary equipment is installed in a given location and is not moved from that location in performing its function. This includes equipment such as substations, pumps, and storage-battery charging stations.

Transportable Equipment: Machines or equipment that can be moved from one part of a mine to another by mechanical means, such as but not by self-propulsion, on a track, or on attached wheels