

## **The Potential Economic Impact of a Potash Plant in Osceola County**

**Prepared by**

William Knudson  
Michigan State University

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### Executive Summary

Potassium is a critical nutrient for crops for which there is no substitute. Potash is the primary source of potassium used for crop production. However, there are few sources of potash. The vast majority of potash used in the U.S. is imported from other countries, with Canada, Russia, and Belarus being major sources of potash. These three countries accounted for more than 67 percent of global production in 2021. In 2021, the U.S. imports accounted for 93 percent of consumption (Jasinski). Trade sanctions may eliminate Belarus as a source of potash, and the situation in Ukraine may eliminate access to Russian potash. The level of uncertainty in the potash market has increased dramatically.

These factors plus an overall increase in the global demand for potash has increased the price. From 2016 to 2020, the price of potash has increased from about \$225 a ton to about \$725 a ton (Outlaw et al). Potash prices are expected to increase in 2022 and decline only slightly from 2023 through 2025 (Outlaw et al). This is due to increased global demand in addition to limited sources of supply.

Michigan is one of the few places in the world that has a commercial sized potash deposit. A potash extraction and processing facility in Osceola and Mecosta Counties is being considered. This facility would produce about 10 percent of the potash consumed in the U.S. The facility would double U.S. potash production (Jasinski). Salt is also to be extracted at the facility. Total output of potash is estimated by Michigan Potash Company to be 650,000 tons per year; an additional 900,000 tons of salt will also be produced. There are plans to produce up to 975,000 tons of potash, and 1,350,000 tons of salt. The firm also anticipates approximately 260 construction jobs created during the construction phase of the project and 184 jobs at the facility once the facility is operational. It should also be noted that additional capital expenses of \$25 million will be required annually.

IMPLAN, a standard economic impact software package was used to generate the economic impact of construction and operation of the potash facility. It is anticipated that the construction of the facility will generate \$1.1 billion in direct economic activity with a total economic impact of \$1.80 billion. The construction phase will also employ 260 people with a total impact of employment of 416. It should be noted that the construction phase of the project is a one-time impact while the operation of the facility will be ongoing activity.

The impact of on output assuming that 975,000 tons of potash are produced at \$600 a ton and 1,350,000 tons of salt are produced at \$120 a ton yields a figure of \$747 million a year in annual direct economic activity. The total economic activity is estimated to be \$1.24 billion a year. The plant plans to employ 184 workers, generating a total impact on employment of 362 workers. This facility has the potential to be one of the largest employers in the region.

The project will have additional positive outcomes. It will have a major impact in Osceola and Mecosta counties; these counties have considerably lower incomes compared to the state as a whole. This impact includes royalty payments in addition to increased employment. The project also will have a small impact of the price of fertilizer which will improve net farm income.

## Introduction

This report will briefly assess the potash market. Also, assessed will be the potential impact on increased potash production on the cost of production for corn, soybean, wheat, and alfalfa producers. The economic impact of the facility on Michigan's economy is estimated. This includes both the impact on output and employment. The impact on incomes in Osceola and Mecosta counties is also briefly considered.

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IMPLAN, a standard economic impact software package was used to generate the economic impact of construction and operation of the potash facility. It should be noted that the construction phase of the project is a one-time impact while the operation of the facility will be ongoing activity.

There are two economic impacts to assess. The first is a one-time impact resulting from the construction phase of the project. Michigan Potash estimates that it will cost \$1.1 billion to build the facility and 260 workers will be hired to build the plant. The total economic impact is estimated to be \$1.80 billion with a total impact on employment of the state of 416 jobs. Once the facility is constructed, this impact will cease to exist.

The impact of on output assuming that 650,000 tons of potash are produced at \$600 a ton and 900,000 tons of salt are produced at \$120 a ton yields a figure of \$498 million a year in annual direct economic activity. The total economic activity is estimated to be \$824 million a year. The plant plans to employ 184 workers, generating a total impact on employment of 362 workers. This facility has the potential to be one of the largest employers in the region.

Currently, the firm interested in potash producing in the region is contemplating expanding production to 975,000 tons of potash and 1.35 million tons of salt. If that occurs, the direct economic impact is estimated to be \$747 million, and the total economic impact would be approximately \$1.24 billion. If output expands, there would also be a minor additional increase in employment due to indirect and induced economic activity.

## The Potash Market

Imports from other countries account for about 93 percent of the potash used in the U.S. in 2021 (Jasinski). Extraction facilities in New Mexico and Utah are the primary producers in the U.S. and are declining in their level of production. Traditionally the imported sources of potash have come from Canada, Belarus, and Russia. Due to trade restrictions Belarus may no longer be a source of potash after April of 2022, and if the situation between the U.S. and Russia continues to deteriorate, Russia may also stop being a source

of Potash. Offsetting this potential loss of access to potash are new projects being constructed or under operation in Australia, China, Eritrea, Brazil, Ethiopia, and Spain.

Global potash production in 2019 was 72.82 million tons (Government of Canada). The U.S. is not a major producer and farmers are reliant on imported potash. There are no close substitutes for potash in providing potassium to crops. Therefore, the proposed potash plant in Osceola County would significantly reduce U.S. dependence on foreign imports of a resource of which there are no substitutes.

Projecting future prices of potash is difficult. While world production is increasing so is demand as farmers from around the world adopt more fertilizer intensive management practices. Prices are likely to remain high for the foreseeable future. From 2016 to 2020, the price of potash has increased from about \$225 a ton to about \$725 a ton (Outlaw et al). Potash prices are expected to increase in 2022 and decline only slightly from 2023 through 2025 (Outlaw et al).

The major potash firms are Nutrien and Mosaic both located in Canada, and K&S based in Germany. Vertical integration is common. The major firms both extract the potash and sell it as fertilizer. Farmer choice is extremely limited.

### **Potential Impact of Farm Income**

Potash is a globally traded product, the increase in production in Michigan is not likely to have a major impact on the price. However, given the fact that there are no substitutes for potash, an increase in production will have some impact on the price. Assuming the current price of \$725 a ton and a decrease in the price as a result of the new project in Osceola County once it is operating at full capacity of 975,000 tons, it is anticipated that the price will decline to \$675, a decline of approximately 6.9 percent.

To assess the impact on farms, the impact of this decrease in the price is estimated for soybeans, wheat, corn, and alfalfa in the state of Michigan. These figures are based on recommended fertilizer levels in the state. The impact on individual farmers will be different depending on their state and the soil composition of their farms. These figures are intended to give a general idea of the impact of the new potash plant.

In each case 100 acres is the base.

For soybeans the amount of potash used is 65 lbs. per acre, or 6,500 pounds for 100 acres. The net saving is \$162.50 or \$1.62 per acre. Assuming a yield of 50 bushels an acre yields a cost saving per bushel of 3.2 cents.

For corn the amount of potash used is 45 pounds per acre, or 4,500 pounds for 100 acres. The net saving is \$112.50 or \$1.12 per acre. Assuming a yield of 150 bushels per acre yields a cost saving per bushel of 0.75 cents.

For wheat the amount of potash used is 28 pounds per acre, or 2,800 pounds for 100 acres. The net saving is \$70 or 70 cents per acre. Assuming a yield of 80 bushels per acre yields a per bushel saving of 0.88 cents.

For alfalfa the amount of potash used is 200 pounds per acre or 20,000 pounds for 100 acres. The net saving is \$500 or \$5.00 per acre. Assuming a yield of 15 tons per acre yields a per ton savings of 33 cents per ton.

The major beneficiary of the lower potash prices are soybean and alfalfa producers. There is less of a benefit for corn producers because that crop is far more dependent on nitrogen based fertilizers. Wheat is not a major user of potash. Nonetheless, these figures show that even a small increase in global potash production located in Michigan would benefit farmers, especially those located in major soybean producing states and dairy regions of Michigan, Minnesota, and Wisconsin.

## **Economic Impacts**

### ***Construction and Operation of the Extraction Facility***

There are two economic impacts to assess. The first is a one-time impact resulting from the construction phase of the project. Michigan Potash estimates that it will cost \$1.1 billion to build the mine and 260 workers will be hired to build the mine. The total economic impact is estimated to be \$1.80 billion with a total impact on employment of the state of 416 jobs. The impact will be spread out during the time it takes to build the facility which is between 30 to 36 months. Once the facility is constructed, this impact will cease to exist.

The impact on output assuming that 975,000 tons of potash are produced at \$600 a ton and 1,350,000 tons of salt are produced at \$120 a ton yields a figure of \$747 million a year in annual direct economic activity. The total economic activity is estimated to be approximately \$1.24 billion a year. The plant plans to employ 184 workers, generating a total impact on employment of 362 workers. This facility has the potential to be one of the largest employers in the region. These economic impact figures include royalty payments and additional investments in the project to keep it operational. The project will require an additional \$25 million in additional capital investment every year during the life of the facility.

IMPLAN, a standard economic impact software package was used to estimate the economic impacts. IMPLAN uses sales or in the case of construction the cost of building the facility as the direct impact and then estimates the impact of related industries (indirect impact) and consumer spending resulting from the activity (induced impact). The sum of the direct impact, indirect impact, and induced impact generates the total economic impact. The same methodology is used to generate the estimates for the impact on employment.

### ***Impact on Local Communities***

The construction of the project will have a large impact on Osceola and Mecosta counties. In November 2021, the unemployment rate in Osceola County was 4.4 percent, and in Mecosta County, the unemployment rate was 4.8 percent. This project has the potential to dramatically reduce unemployment in the area. In fact, finding workers may be difficult.

The impact on income in the region may be even more dramatic. Per capita income in Osceola County is \$22,692, and in Mecosta County it is \$23,431. Per capita income in Osceola County is approximately 28 percent lower than the state, and per capita income in Mecosta County is approximately 26 percent less than the state's. Median household income in Osceola County is \$13,112 less than the Michigan median household income; and in Mecosta County the median household income is \$12,126 less than the state's.

While the high paying jobs generated at the facility will boost incomes in the area, royalty payments to landowners will also be a source of income in the impacted counties. If the royalty on salt is 4 percent and the royalty on potash is 5 percent, the anticipated royalty payments to landowners is \$35.73 million

per year if the plant operates at full capacity. This will also have a major impact on the level of economic activity in the area. It should be noted that these royalty payments will vary as the price of salt and potash vary.

### Summary

Potassium is a critical nutrient for crops for which there is no substitute. Potash is the primary source of potassium used for crop production. However, there are comparatively few sources of potash. The vast majority of potash used in the U.S. is imported from other countries, with Canada, Russia, and before 2020 Belarus being major sources potash. These three countries accounted for more than 67 percent of global production in 2020 (Jasinski). Trade sanctions may eliminate Belarus as a source of potash, and the situation in Ukraine may eliminate Russia as a source of potash. The level of uncertainty in the potash market has increased dramatically.

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Michigan is one of the few places in the world that have commercial sized potash deposits. A potash extraction facility in Osceola and Mecosta Counties is being considered. This facility would produce more than 10 percent of the potash consumed in the U.S.; salt will also be extracted at the facility.

IMPLAN, a standard economic impact software package was used to generate the economic impact of construction and operation of the potash facility. It is anticipated that the construction of the facility will generate \$1.10 billion in economic activity with a total economic impact of \$1.80 billion. The construction phase will also employ 260 people with a total impact of employment of 416. It should be noted that the construction phase of the project is a one-time impact while the operation of the mine will be ongoing activity.

The impact of on output assuming that 650,000 tons of potash are produced at \$600 a ton and 900,000 tons of salt are produced at \$120 a ton yields a figure of \$498 million a year in annual direct economic activity. The total economic activity is estimated to be \$824 million a year. The plant plans to employ 184 workers, generating a total impact on employment of 362 workers. This facility has the potential to be one of the largest employers in the region. Currently, the plan is to eventually produce 975,000 of potash and 1.135 million tons of salt. If this occurs the sales will rise to \$747 million, and the total economic impact will increase to \$1.24 billion.

This facility has the potential to improve the economic conditions in Osceola and Mecosta counties. Two counties with comparatively low per capita and median household incomes. By creating jobs and paying royalties to landowners, incomes in the region will be enhanced. There will also be a small but real reduction in farm production expenses as a result of the increased potash production.

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