



ECONOMIC IMPACT ANALYSIS PROGRAM

Potential Economic Impact of Hemp Processing in Waseca, Minnesota

The 2014 Farm Bill established a legal definition of hemp. This allowed states to launch pilot programs to grow hemp for research purposes. Subsequently, the Minnesota Department of Agriculture (MDA) launched its hemp growing pilot program in 2016. The 2018 Farm Bill further expanded the definition of industrial hemp. As a result, industrial hemp is now an agricultural commodity regulated by the United States Department of Agriculture. In addition, Minnesota passed a statute in 2019 that allows the sale of hemp-derived CBD oil in Minnesota.

One CBD oil processor is located in Waseca, Minnesota. The operation has increased in size and currently processes industrial hemp grown on 645 acres. The company's owners would like to continue the operation's growth, and they are considering a \$13 million investment in CBD hemp extraction and formulation. If this occurs, the increase in CBD production would add 24 new jobs and \$1.2 million in payroll. Formulation would add up to 100 new jobs with a payroll of an estimated \$6.3 million. Acreage processed would increase from 645 acres to 1,500.

The City of Waseca was interested in understanding how this expansion would affect economic activity in the area. Thus, they hired University of Minnesota to conduct a basic economic impact analysis. The analysis was supported by the EDA Center at the University of Minnesota. This report is a summary of results.

SUMMARY OF FINDINGS

Investments in CBD oil processing and formulation will create both short- and long-term impacts. Initially, the facility will add to the economy during the construction phase. Once construction is complete, these effects will dissipate. Following construction, the processing and formulation facility will begin daily operations. Operations will have long-term annual effects on the economy, so long as the facility operates at projected levels. Because of these temporal differences, the impacts of construction and operations were analyzed separately.

Significant findings include:

- Investors plan to spend \$10 million to expand the current CBD oil processing facility. In total, this investment would generate an estimated \$12.6 million in economic activity in the county. This includes \$5.2 million in labor income. Construction work will also support an estimated 110 jobs.
- Under the proposed expansion, investors estimate annual revenues will increase by \$12.6 million. In total, the increased CBD oil production will create an estimated \$14.5 million in

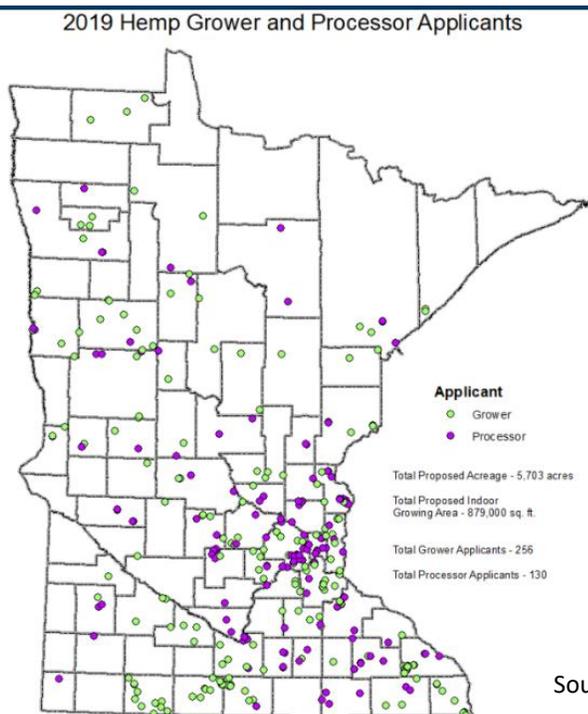
additional economic activity in Waseca County. This includes \$1.8 million in new labor income. Production will support a projected 40 jobs.

- The CBD company plans a capital investment of \$3 million to launch new CBD oil formulation work. In total, the investment will generate an estimated \$3.8 million in new economic activity in the county. This includes \$1.6 million in labor income. The investment will also support 34 jobs.
- The Waseca-based company anticipates the CBD oil formulation facility will hire 100 employees. In total, the expansion of CBD oil formulation will increase total economic activity in the county by an estimated \$46.6 million. This includes \$8.9 million in labor income. The expansion will support an estimated 170 jobs in the county.

HEMP PRODUCTION IN MINNESOTA

National and state legal changes regarding hemp have increased interest in growing industrial hemp and processing CBD oil in Minnesota. In 2019, the MDA licensed 343 growers and 206 processors/handlers. Growers planted 8,000 acres of industrial hemp, 78 percent of which was intended for processing into CBD oil.¹

Map 1: 2019 Hemp Grower and Processor Applicants



Source: Minnesota Department of Agriculture

Growers across the state are raising hemp (Map 1). However, there does appear to be a concentration of hemp growers in southern Minnesota. The Minnesota Department of Agriculture

¹ <https://www.mda.state.mn.us/sites/default/files/inline-files/20191115%20MDA%20Hemp%20Program.pdf>

map shows only a few growers in Waseca County. There are multiple growers, however, in Blue Earth, Faribault, and Martin Counties. This is consistent with reports from the company that it buys from places like Winnebago and Madelia. By and large, these hemp growers are still relatively small. The average size (based on total acreage divided by the number of growers) is 23 acres. The company reports multiple growers in the five-acre range.

ECONOMIC IMPACT OF HEMP PROCESSING IN WASECA

Investments in CBD oil processing and formulation will create both short- and long-term impacts on the economy. Initially, the facility will add to the economy during the construction phase. Once construction is complete, these effects will dissipate. Following construction, the processing and formulation facility will begin daily operations. Operations will have long-term annual effects on the economy, so long as the facility operates at projected levels. Because of these temporal differences, this analysis quantified the impact of construction and operations separately.

Economic impact is comprised of direct, indirect, and induced effects.

Direct effects refer to the new economic activity that can be tied directly to the project under consideration. In this analysis, direct effects included spending for construction and operations of the facility. They were entered into the input-output model IMPLAN.² The model then calculated the indirect and induced effects.

Indirect effects are those associated with a change in economic activity due to spending for goods and services directly tied to the new facility. During construction, these are the changes in the local economy occurring because construction firms purchase goods (e.g., cement, wood, and nails) and related services (e.g., landscaping, accounting, and legal). As construction firms make purchases, this creates an increase in purchases across the supply chain. Indirect effects are the summary of these changes across an economy. Once the facility is operational, indirect effects are changes in the economy due to spending to run the facility, such as raw hemp, electricity, and accounting services.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. These are economic changes related to spending by people directly employed to construct the expanding CBD oil processing facility. Once operations begin, spending by employees of the facility will drive induced effects. Induced effects also include household spending related to indirect effects.

Indirect and induced impacts only reflect spending within the study area (in this instance, Waseca County). Expenditures by the construction firm, the CBD oil processing and formulation facility, and their employees outside of Waseca County do not create these effects in the county. The input-output model adjusts accordingly.

² IMPLAN version 3.1 with type SAM multipliers and 2017 data was used for the analysis. Visit www.implan.com for more information.

CBD Oil Production

Construction Effects

Investors plan to spend \$10 million to expand their current CBD oil processing facility. CBD oil production will correspondingly increase to 300 kilograms per month. The IMPLAN model estimates \$10 million in direct construction spending will result in 90 people hired to do the work and \$4.5 million in labor income paid to those workers. These are the direct effects in Table 1.

Table 1: Potential Economic Impact of Expanded CBD Oil Processing in Waseca County, Construction Effects

	Direct	Indirect	Induced	Total
	At Site	Business-Business	Consumer-Business	
Output (millions)	\$10,000,000	\$734,780	\$1,870,420	\$12,605,200
Employment	90	5	15	110
Labor Income (millions)	\$4,494,180	\$259,340	\$493,600	\$5,247,120

Estimates by the Extension Center for Community Vitality

In total, a \$10 million investment in the expansion of the CBD oil production process would generate an estimated \$12.6 million in economic activity. This includes \$5.2 million in labor income. Construction work will also support an estimated 110 jobs in the county.

These impacts will last during the construction phase. Once construction is complete, the impacts will dissipate.

Operational Effects

Under the proposed expansion, investors estimate revenues will increase by \$12.6 million. They plan to hire 25 workers and pay \$1.3 million in additional labor income. These are the direct effects in Table 2.

In total, the increased CBD oil production will create an estimated \$14.5 million in additional economic activity in Waseca County. This includes \$1.8 million in new labor income. Production will support a projected 40 jobs.

These impacts are ongoing and will continue annually, as long as the plant operates at projected levels.

Table 2: Potential Economic Impact of Expanded CBD Oil Processing in Waseca County, Operational Effects

	Direct	Indirect	Induced	Total
	At Site	Business-Business	Consumer-Business	
Output (millions)	\$12,600,000	\$1,201,790	\$668,200	\$14,469,990
Employment	25	10	5	40
Labor Income (millions)	\$1,250,000	\$412,680	\$176,440	\$1,839,120

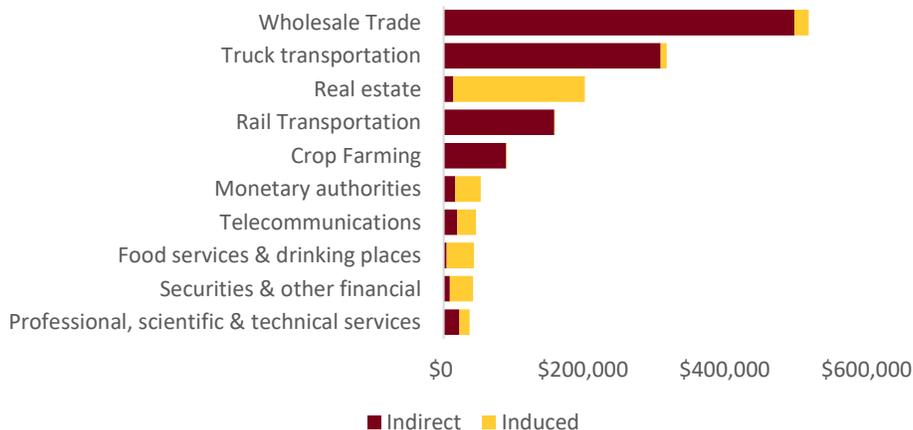
Estimates by the Extension Center for Community Vitality

Extension’s analysis indicates \$1.8 million of economic activity will be generated at Waseca County businesses other than at the processing plant itself (the indirect and induced effects). The top industries predicted to be affected are shown in Chart 1.

The business-to-business effects are anticipated to be highest in the wholesale trade, transportation, and farming industries. Crop farming includes the purchase of industrial hemp from county growers. As the hemp growing industry is new, there are not many growers in the county. As production and harvesting techniques evolve, and with the demand from a local processing plant, one would expect additional growers to enter the market. As this happens, the economic impact would likely increase as more hemp is sourced locally. For purposes of this analysis, Extension estimated 5 percent of raw hemp purchases by the processor will be from Waseca County farmers.

Induced, or consumer-to-business impacts, are highest in the real estate (housing), financial, and food services and drinking industries.

Chart 1: Potential Economic Impact of Expanded CBD Oil Processing in Waseca County, Top Industries Affected



Source: IMPLAN

Formulation

Construction Effects

In addition to the CBD oil processor expansion, the Waseca-based company is also looking to expand CBD oil formulation. The quality, effectiveness, and marketability of a CBD oil product depends significantly on the extraction and formulation of the product. According to the Agricultural Utilization Research Institute (AURI), there are a number of approaches to extraction that can affect purity and potency.³ Formulations (the mix of ingredients in the product) also vary widely depending on final use for the product.⁴ Thus, the Waseca-based company is looking to invest in technology to develop and produce new CBD oil formulations.

The company plans a capital investment of \$3 million to launch new CBD oil formulation work. The model estimates there would be 27 construction jobs at the site and \$1.3 million in labor income paid to those workers. This is the direct effect in Table 3.

In total, the investment will generate an estimated \$3.8 million in new economic activity in the county. This includes \$1.6 million in labor income. The investment will also support 34 jobs.

Table 3: Potential Economic Impact of Expanded CBD Oil Formulation in Waseca County, Construction Effects

	Direct	Indirect	Induced	Total
	At Site	Business-Business	Consumer-Business	
Output (millions)	\$3,000,000	\$220,430	\$561,130	\$3,781,560
Employment	27	2	5	34
Labor Income (millions)	\$1,348,250	\$77,800	\$148,080	\$1,574,130

Estimates by the Extension Center for Community Vitality

Operational Effects

The Waseca-based company anticipates the CBD oil formulation facility will hire 100 employees. It is likely these jobs will be a combination of both research and development (for experimentation) and manufacturing (for scaling up to production). Based on these assumptions, the model estimates that 100 CBD oil formulation jobs will produce \$38.1 million in output and \$6.3 million in labor income (Table 4).

In total, the expansion of CBD oil formulation will increase total economic activity in the county by an estimated \$46.6 million. This includes \$8.9 million in labor income. The expansion will support an estimated 170 jobs in the county.

³ <https://www.auri.org/wp-content/uploads/2019/08/AURI-HempReport-Final-111919-sm.pdf>

⁴ <https://rhizosciences.com/cbd-product-formulation-and-development/>

Table 4: Potential Economic Impact of Expanded CBD Oil Formulation in Waseca County, Operational Effects

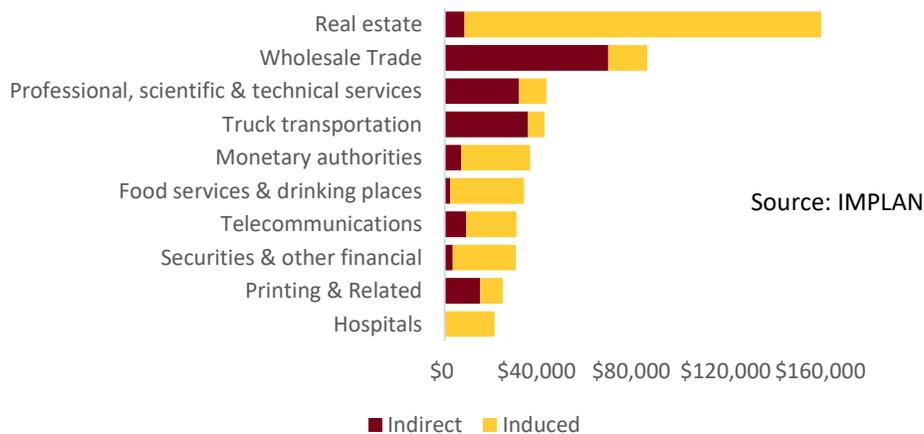
	Direct	Indirect	Induced	Total
	At Site	Business-Business	Consumer-Business	
Output (millions)	\$38,140,130	\$5,258,790	\$3,170,830	\$46,569,750
Employment	100	40	30	170
Labor Income (millions)	\$6,348,300	\$1,728,520	\$837,240	\$8,914,060

Estimates by the Extension Center for Community Vitality

The expanded CBD oil production is predicted to generate \$8.4 million in economic activity at businesses other than at the production plant. The top industries in Waseca County likely to be affected are shown in Chart 2. The highest indirect impacts are expected to be in wholesale trade, professional, scientific, and technical services, and truck transportation.

The highest induced impacts are expected to be in real estate, food services and drinking places, and securities and other financial services.

Chart 2: Potential Economic Impact of Expanded CBD Oil Formulation in Waseca County, Top Industries Affected

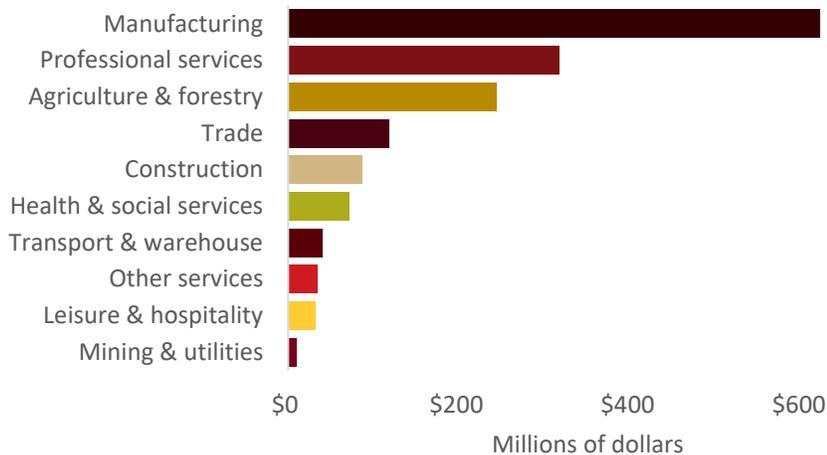


HEMP PROCESSING IN THE CONTEXT OF WASECA COUNTY'S ECONOMY

In 2017, businesses in Waseca County generated \$1.7 billion of output. Leading industries included manufacturing, professional services, and agriculture and forestry (Chart 3).

The Waseca-based hemp processing company contributes to these three major industries, as it is a manufacturing company. Its indirect effects are highest in professional services and agriculture. In 2017, a manufacturing company that employed nearly 30 percent of all manufacturing workers in Waseca closed. This negatively affected Waseca’s manufacturing sector. The CBD processor occupies the facility vacated by the company.⁵

Chart 3: Output by Industry, Waseca County



PREPARED BY UNIVERSITY OF MINNESOTA EXTENSION

Brigid Tuck, senior economic impact analyst, tuckb@umn.edu, 507-389-6979

Jennifer Hawkins, Extension educator, hawki044@umn.edu, 507-280-5575

DATE

April 2020

⁵ <https://conservancy.umn.edu/handle/11299/197837>

APPENDIX: ASSUMPTIONS AND TERMS

Economic impact analysis is based on several critical assumptions. An understanding of these assumptions ensures results are interpreted properly. The following are key assumptions made in Extension's analysis for Waseca County.

- One job is one job, regardless if the job is full-time, part-time, or seasonal. The jobs considered here are not full-time equivalents. Therefore, it is not unusual for industries with high levels of part-time employment to experience higher employment impacts.
- The model is linear. A one unit change in output or employment will have a fixed unit change in the other measures.
- The model assumes all employees of the facility live in the county. It does, however, make adjustments for where their incomes are spent. If the regional hub is located in a nearby county, the model will adjust to assume employees spend some of their wages and salaries in the nearby county. This may be an issue here, as Waseca County is located near Mankato, which is a regional economic hub.
- The database is built on publicly available data. When data is not available for a specific industry, say due to data disclosure issues, econometric models are used to create estimates for the industry.

The following are a few key terms used in economic impact analysis.

Output

Output is measured in dollars and is equivalent to total sales. The output measure can include significant double counting. For example, think of hemp. The value of the hemp is counted when it is sold to the CBD oil processor and again when it is sold to the CBD oil user. The value of the hemp is built into the price of each of these items and then sales for each of these items are added up to get total sales (or output).

Employment

Employment includes full- and part-time workers and is measured in annual average jobs. Total wages and salaried employees, as well as the self-employed, are included in employment estimates in IMPLAN. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

In the model, one job is one job, regardless if the job is full-time, part-time, and seasonal.

Labor Income

Labor income measures the value that is added to the product by the labor component. For example, in the hemp example, when the hemp is sold, a certain percentage of the sale goes to the farmer for his/her labor. Then when the CBD oil processor sells the oil, it includes a markup for its labor costs in the price. These individual value increments for labor can be measured. This is labor income. Labor income does not include double counting.

Direct Impact

The direct impact is equivalent to the initial change in the economy.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occur due to **spending for inputs** (goods and services) by the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in output by the plant. As the plant increases output, it must also purchase more of its inputs, such as electricity, steel, and equipment. As it increases its purchase of these items, its suppliers must also increase production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts.

Induced Impact

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

Total Impact

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