a report by the BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Economic Impact of the Calumet Montana Refineries

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Introduction

Since acquiring the petroleum refinery in Great Falls, Montana owned by Connacher Oil and Gas Ltd. in 2012, Calumet Specialty Products, an Indianapolis-based company specializing in petroleum-based fuels, lubricants and solvents, has carried out several large-scale projects that have expanded and transformed the facility. In 2016 the company completed a $450 million project, said to be the largest capital project ever carried out in Cascade County, that more than doubled its capacity to refine crude oil to 25,000 barrels per day. And in the spring of 2023 the newly formed Montana Renewables subsidiary began full scale production of renewable fuels at a reconfigured facility that continued to devote approximately half of its capacity to the production of crude oil-based petroleum products.

Those investments have changed the size and nature of the facility's economic footprint. An economic assessment conducted by the University of Montana Bureau of Business and Economic Research (BBER) in 2021 that was based on its operations in 2019 estimated that facility ultimately supported almost 2,650 permanent, year-round jobs and more than $223 million in annual household income across the Montana economy. That study, which is described in greater detail in this report (the full report is found in Appendix A), detailed how the high value-added nature of refining, the high compensation rates for its employees, and its significant tax payments to state and local government, combined to produce an overall economic impact that was significantly higher than the jobs and income of the facility itself.

The newly re-configured facility, consisting of a traditional crude oil-based refinery (Calumet Montana Refining, or CMR) operating jointly with renewable fuels production (Montana Renewables, or MR), presents different production technologies, input requirements, and types of products to the local economy. It also offers opportunities for third party investments in production of the oils and fats that form the feedstock for the MR portion of the business. Those changes have motivated this analysis.

This report updates the analysis for the refining activity of the two Calumet Specialty Products subsidiaries that operate jointly in Great Falls. We consider the actual operations of the facility in addressing the basic research question: how does the employment, wages, production, vendor spending, and tax payments of the traditional and renewable refineries affect the Montana economy? Since the renewable fuel production at the facility presents opportunity for third-party investment in the production of oils and fats that comprise the MR facility's feedstock, we consider an additional question. How would subsequent investment in feedstock

production affect jobs, income, production and other economic flows? The economic impacts presented here represent the jobs, income, production and other economic flows in the state economy that exist because of the operations of the Calumet Montana refineries.

Summary of Findings

The basic finding of this report is that the operations of the crude oil-based and renewable fuel refineries in Great Falls by the CMR and MR subsidiaries of Calumet Specialty Products ultimately support a state economy that has significantly more jobs, income, production and population. As new investments, the impact of the construction and operation of the renewable fuels portion of the facility are expected to grow over time as labor markets, investment, and population adjust to the new economic opportunities. Thus we report impacts to the economy for 2023, the first year of full operation of the transformed facility, as well as 2028, when the economy has more fully adjusted to the facility's operations.

Table 1 The Economic Impact of the Calumet Montana Refineries

		Year	
Category	Units	2023	2028
Total Employment.....	Jobs	3,144	3,465
Personal Income.....	$ Millions	$189.6	$247.5
Disposable Personal Income.....	$ Millions	$161.9	$210.5
Selected State Revenues.....	$ Millions	$54.0	$76.1
Output.....	$ Millions	$1,147.3	$1,208.3
Population	People	2,001	4,435

The additions to jobs, income, government revenues, economic output, and population in the state economy, as summarized for the base case in Table 1, are substantial. The base case reflects the operations of the refineries as they operate today, with no third-party investment in seed crushers or other feedstock producers. By year 2028, the operations of the refineries will ultimately support:

- 3,465 additional permanent, year-round jobs, spread across a wide range of industries and occupations;
- $247.5 million more in annual income received by households, of which $204 million is after-tax income available for spending in the local economy;
- more than $1.2 billion in annual gross receipts (economic output) received by business and non-business organizations in Montana;
- an additional $76.1 million in tax and non-tax revenue received by the state of Montana; and
- a population which is more than 4,400 higher, consisting primarily of working-aged families and their children.

The current operations of the Montana Renewables LLC (MRL) refinery utilizes feedstock that is transported from outside Montana via rail. An additional analysis was performed to examine the economic impacts of the construction and operation of a seed crushing facility in north central Montana. While this is a hypothetical exercise – no plans for construction or operation of any specific facility have been announced – the operations of MRL provide an incentive for such investments to take place. Thus, this analysis is relevant to understanding how the presence of MRL could ultimately create additional economic impact.

Table 2 The Economic Impact of an Oilseed Processing Facility

Category	Units	2027	2031
Total Employment.....	Jobs	435	548
Personal Income.....	$ Millions	$24.2	$36.1
Disposable Personal Income.....	$ Millions	$20.2	$30.6
Output.....	$ Millions	$220.1	$237.8
Population.....	People	157	570

The economic impact of a modest sized canola oilseed processing facility, producing 2,000 barrels per day of feedstock, would satisfy about 12% of MRL's demand. Yet even this relatively small facility would ultimately support the creation of 548 additional jobs by the fifth year of operation, as shown in Table 2. These findings can inform how actual investments can add to the economic contributions of the refining facilities described in Table 1.

How These Results Were Produced

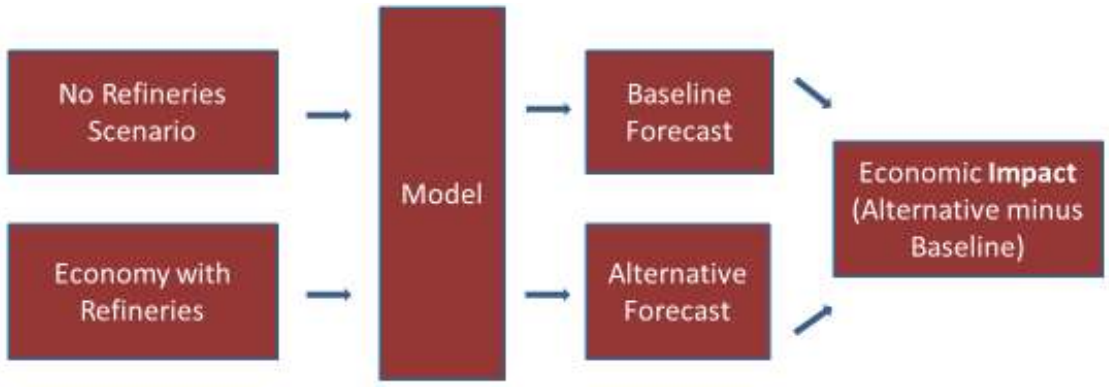
These analytical findings can be understood as the total of three different impacts:

- the direct impact of the Calumet Montana refineries – e.g., the jobs, wages, vendor payments and other economic flows that represent the activity of the facility itself;
- the indirect impacts, defined as the spending and employment that takes place because of the presence of the refineries, but are not part of the facility (e.g., seed crusher construction and operation); and
- the induced impacts that come about as those who receive as income the wages, vendor spending, tax payments and other economic flows in the first two categories re-spend a portion of that income on goods and services in the local economy, creating more jobs and income in unrelated industries.

The employment, wages, benefits, production, tax payments and purchasing data for the refineries were obtained from the two subsidiaries for the most recent operating year. In the case of the renewable fuels refinery, a projection for the full year was made. Assumptions for the indirect impacts of a canola seed crusher were derived from similar project completed in other states, as described in this report.

The induced impacts of these activities are estimated with the use of BBER's policy analysis model, which has been designed and calibrated for this purpose. The REMI model, leased by BBER from Regional

Figure 1 Policy Analysis with the REMI Model



Economic Models, Inc., is one of the best known and most respected analytical tools in the policy analysis arena, and has been used in more than 100 previous studies as well as in dozens of peer-reviewed articles in scholarly journals. The model captures the connections between spending and production at the refineries and the broader regional and state economies.

The use of the model is depicted in Figure 1. Two projections of the economy are made: a "no refineries" projection, where the activities of the refineries are not present, and a "with refineries" projection that includes all of the spending, production, and employment the facility is responsible for. The difference between these two projections represents the economic impact of the refineries.

About This Report

This study was produced by the University of Montana Bureau of Business and Economic Research (BBER) in the spring of 2023. The results are based in part on detailed operational information on the traditional and the renewable fuels refineries operated by the subsidiaries of Calumet Specialty Products at its facility in Great Falls. The authors of this report are Patrick M. Barkey and Derek Sheehan of the BBER. All of the analysis and conclusions of this report are those of BBER, which is solely responsible for any errors or omissions. The study was commissioned by Calumet Specialty Products.

The Bureau of Business and Economic Research is the preeminent business research center in Montana. Established in the University of Montana's College of Business in 1948, the BBER is involved in survey research, economic analysis, industry studies and its long-running Economic Outlook Seminar programs, now in their 48th year. The BBER mission is to provide an understanding of the economic environment in which Montanans live and work.

The Calumet Montana Refineries

The oil refinery and renewable fuel production complex on the north bank of the Missouri River in Great Falls, Montana that is owned by Calumet Specialty Products has undergone many changes since its origins in 1922. The scale and pace of those changes increased significantly with the 2012 purchase of what was then a 10,000 bpd producer of gasoline, middle distillates and asphalt from Connacher Oil and Gas Ltd., a Canadian company.

Operated by the subsidiary Calumet Montana Refining (CMR), the company completed a $450 million expansion in 2016 that more than doubled its capacity to 25,000 bpd. The refinery processed heavy crude from Alberta received via pipeline, producing petroleum-based products to local markets in Washington, Montana, Idaho, and Alberta delivered by truck and rail. In 2019, when the economic impact of its operations were studied by BBER, the facility employed 180 workers where were paid average compensation of $122,667 per year. Its operations were estimated by BBER to ultimately support about 2,600 jobs and $224 million in annual personal income in the state (see Appendix A).

Beginning in February 2023 with the scaling up to full production of the new renewable fuels refinery, the nature of the activities at the overall facility has changed significantly. The traditional crude oil-based refinery operated by CMR continues as before, but with capacity of roughly half of its 2019 level. A new investment in a second refinery on the same site, operated by the newly formed subsidiary Montana Renewables LTD (MRL), receives oil seed and other renewable feedstock via rail and produces bio-diesel fuel, sustainable aviation fuel, and other products.

Currently, the source of the oils and tallow that is refined by MRL is from outside of Montana. However, there is ample opportunity for Montana suppliers to develop and sell product to the refinery. Those third-party investments would yield additional economic impact as their spending, production, and wages

propagate through the regional economy. Since these indirect impacts would occur because of the presence of MRL, we have included an example of a modest-sized project to serve MRL in this analysis.

The combined operations of the two refineries at the facility today employ a total of 280 people, with average annual compensation of $128,500. The renewable products produced by MRL are delivered by truck and rail to regional customers, with biodiesel primarily directed at the California market.

The Economic Impact of the Calumet Montana Refineries

The economic impact of the legacy and the renewable refineries in Great Falls, Montana that are owned by Calumet Specialty Products is characterized in this study as consisting of two distinct phases:

- the construction phase in years 2021-22, during which $1.3 billion project to site, install, and test the components of the renewable fuels refinery take place, and
- the operations phase when both the CMR and MRL refineries are operating at capacity, commencing in 2023.

During the construction phase, the legacy, crude oil-based refinery operated by CMR continues to operate, at roughly half of its 2019 capacity. The construction phase thus contains a mixture of significant, while temporary, construction activity associated with the development of the renewable refinery, together with the ongoing production of CMR.

The spending, production and jobs associated with both of these phases brings about significant impacts to the overall economy. We have summarized those impacts in Table 1. Further insights can be obtained on how the newly transformed facility produces those impacts by a more detail examination of the economic changes the refineries bring about.

Employment Impacts

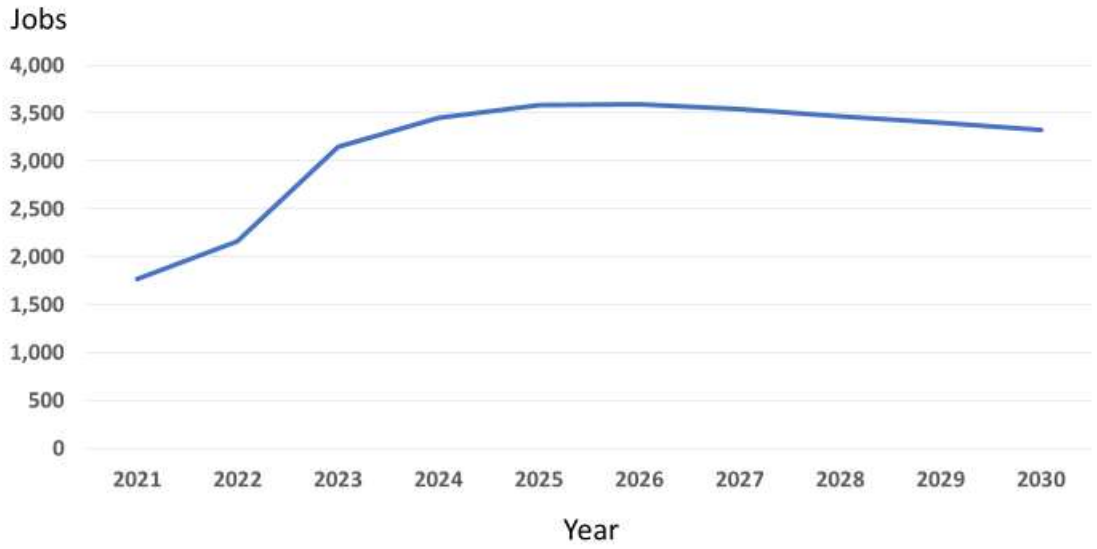
One of the most basic ways to assess economic activity is to measure changes in employment. In the larger Montana economy that exists because of the presence of the refineries in Great Falls, the number of jobs is higher than would be the case if the refinery did not exist. The difference between total employment between the “with refineries” and “no refineries” scenarios is not constant over time, as shown in Figure 2. This occurs for three reasons.

The jobs impacts are smaller during the construction period because the direct impact of spending at the facility itself are different. There is a significant, but temporary, increase in construction-related activity associated with the development of the renewable fuels refinery during 2021 and 2022. While much of the spending on the project goes to out-of-state providers of specialized equipment and services, the increased demand for construction related items from Montana businesses is sizable. During 2021 and 2022 the legacy crude oil-based refinery operates at roughly half its 2019 capacity, while the renewable refinery is not yet in production.

There are two additional reasons which jointly operate in different ways to produce job impacts that first rise slightly, then decline slightly during the operational phase 2023-2030 shown in the figure.

First, there is a lagged response of population and investment to the increased economic opportunities created from the expanded activity at the refineries. As more people locate in Montana, demand for goods and services increases and additional jobs are supported. Investment behavior exhibits a similar behavior.

Figure 2 Employment Impacts, 2021-2030



The second force tends to slightly contract the jobs impact over time. That is the rising productivity of the workforce, especially the workers at the refineries. Process improvements that result in higher productivity can either boost output with the same number of workers, or allow constant output with a slightly smaller workforce. We have assumed the latter, which gives the time profile of job impacts the modest declines in the latter part of the decade.

Looking at the employment impacts in greater detail for two years – 2023 and 2028 – reveals how the economic activity at the refineries propagates across the spectrum of industries in the economy. The impacts by industry shown in Table 3 show that construction, government, and manufacturing are the three industries with the largest job impacts from the refineries. Included in the manufacturing category are the jobs at the refineries themselves.

Table 3 Employment Impacts by Industry, 2023 and 2028

	Year	
Industry	2023	2028
Construction	727	668
Manufacturing	323	311
Petroleum and coal products manufacturing	280	265
Retail Trade	272	291
Transportation and Warehousing	115	112
Professional and Technical Services	137	161
Administrative and Waste Services	146	143
Health Care and Social Assistance	192	199
Arts, Entertainment, and Recreation	49	52
Accommodation and Food Services	192	259
Other Services, except Public Administration	137	143
Government	564	839
Total	**3,144**	**3,465**

The size of the job impacts in unrelated industries, such as retail trade or health care, reflect the magnitude of spending by the refineries and their workers as it reverberates throughout the local and state economy.

Personal Income Impacts

The job impacts are better understood when one examines the fuel for the spending that supports the new jobs. The additional earnings that are received by Montana households annually because of the presence of the refineries, detailed in Table 4, reveal a sizable increase in household spending power. By year 2028, households receive in aggregate $247.5 million more in personal income, of which $210.5 is after-tax income available for spending in the local and state economy.

Table 4 Personal Income Impacts, Millions of Dollars

Category	Year 2023	2028
Total Earnings by Place of Work	**$206.6**	**$235.5**
Total Wage and Salary Disbursements	129.1	154.5
Supplements to Wages and Salaries	54.2	63.5
Employer contributions for employee pension and insurance funds	35.4	41.4
Employer contributions for government social insurance	18.8	22.1
Proprietors' income with inventory valuation and capital consumption adjustments	23.3	17.5
Less:		
Contributions for government social insurance	31.2	37.2
Employee and self-employed contributions for government social insurance	12.3	15.1
Employer contributions for government social insurance	18.8	22.1
Plus:		
Adjustment for residence	0.1	(0.0)
Gross In	10.1	11.8
Gross Out	10.0	11.8
Equals: **Net earnings by place of residence**	**$175.6**	**$198.3**
Plus:		
Property Income	9.8	26.9
Dividends	3.7	8.8
Interest	4.1	13.2
Rent	2.0	4.9
Personal Current Transfer Receipts	4.2	22.3
Equals: **Personal Income**	**$189.6**	**$247.5**
Less:		
Personal Current Taxes	27.7	37.0
Equals: **Disposable Personal Income**	**$161.9**	**$210.5**

Even though the largest portion of the increased income to households comes from increased earnings – income due to employment – there is also a rise in dividends, interest and rent because of the refineries as well. This comes about because a larger economy has more property income as well, due to higher levels of financial and real estate wealth.

Output Impacts

Business revenue across the economy sees significant impacts from the presence of the refineries as well. Economic output in this report is defined as gross receipts for business and non-business organizations, with the exception of wholesale and retail trade businesses, where markup is used instead. The impacts of the refineries on output across industries, shown in Table 5 for the years 2023 and 2028, illustrate how the presence of the refineries affects business revenue across a wide spectrum of industries.

Table 5 Output Impacts, Millions of Dollars

Industry	Year 2023	2028
Construction	96.7	92.3
Manufacturing	749.4	751.6
Petroleum and Coal Manufacturing	738.7	738.9
Retail Trade	27.5	34.0
Transportation and Warehousing	22.7	22.4
Professional and Technical Services	19.8	24.9
Administrative and Waste Services	15.4	15.3
Health Care and Social Assistance	24.7	28.6
Arts, Entertainment, and Recreation	2.7	3.1
Accommodation and Food Services	13.1	19.0
Other Services, except Public Administration	9.5	10.8
Other Private	97.3	100.6
Government	68.5	105.8
Total	**$1,147.3**	**$1,208.3**

More than half of the $1.2 billion in increased economic output in 2028 comes from the increased output of the petroleum and coal manufacturing industry that contains the refineries themselves. The more uneven distribution of output impacts across industries, compared to the employment impacts shown in Table 3, reflects differences in the capital intensity and productivity across the different sectors.

Table 5 shows how businesses in unrelated industries are ultimately affected by the refineries. Health care businesses, for example, see $28.6 million in revenues in 2028 because of the refineries.

State Revenue Impacts

A larger economy has higher revenues for state government. In this analysis we consider revenue impacts from taxes as well as from other sources, such as transfers from the Federal government. The categories of revenue shown in Table 6 are those used by the Census of Governments. Some of the categories of revenue, such as insurance trust revenue directed to retirement plans, are earmarked for specific uses. Others, such as personal income tax receipts flow to the state's general operating fund and are thus available for any purpose.

The drivers of the revenue impacts shown in the table depend on the nature of the revenue, but most revenues are driven by population, income, and spending. The larger economy that comes about with the presence of the CMR and MRL refinery operations in Great Falls grows the base for these tax and non-tax revenues.

Table 6 State Revenue Impacts, Millions of Dollars

Category	Year 2023	2028
Intergovernmental Revenue	7.7	17.0
Selective Sales Tax	5.3	6.8
License Taxes	1.3	1.7
Individual Income Tax	8.5	10.3
Corporate Income Tax	2.0	2.2
Other Taxes	2.1	2.8
Current Charges	2.9	3.8
Miscellaneous General Revenue	2.3	3.0
Utility Revenue	0.2	0.3
Liquor Store Revenue	0.5	0.7
Insurance Trust Revenue	21.2	27.6
Total	**54.0**	**76.1**

Population Impacts

The increased economic opportunity for both investment and employment that comes about with the operations of the Calumet owned refineries in Great Falls has an important impact on population. The larger population that results from the operations of the refineries represents both new people moving to the state as well as the retention of residents who may have otherwise moved away to pursue economic opportunity.

The demographic reaction to the refineries differs in some ways from the economic relationships that drive increased in production, income and wages. The increase in net in-migration takes place over a longer interval of time, and is dominated by working aged people and their children, as can be seen from the age profile of the population impacts show in Table 7. The lagged response is apparent from the total population gains, which more than double over the first five years of projected full operations of the refineries.

Table 7 Population Impacts, by Age

Age Cohort	Year 2023	2028
Ages 0-14	496	1,160
Ages 15-24	399	595
Ages 25-64	1,098	2,604
Ages 65+	7	76
Total	**2,001**	**4,435**

The population response has important implications for the economic impacts. Higher population produces higher demand for both publicly and privately produced goods and services. The age composition of the new residents has significant implications for public schools.

Summary and Discussion

This analysis has revealed that the joint operations of the two refineries in Great Falls owned by Calumet Specialty Products supports economic activity that is far in excess of the refinery jobs and spending themselves. While all of the impacts reported here are statewide, the largest portion occur in the north central region of the state in which the refineries are located.

These estimates are based on actual operations, for the case of the legacy crude oil-based refinery operated by CMR, and a projection of 2023 operations for the renewable fuels production at RML. The assumption of

the analysis presented above is that this description of operations remains the same for subsequent years, with improvements in technology slightly reducing labor requirements. New developments that would increase the scale of operations are not considered. However, we do consider one important alternative that would increase the economic impact of the refinery, and that is the local supply of at least a portion of the feedstock for RML.

The current operations of the renewable fuels refinery make use of beef tallow from meat processing, as well as smaller amount of purified used cooking oil for technical reasons. Plans are already being implemented to move to other feedstocks, including unrefined used cooking oil, canola oil, and other seed products. Currently all of these are sourced outside of Montana, from Canada and states to the east.

The Economic Impact of an Oil Crushing Facility to Support the Renewable Fuels Refinery

Given the location of the refinery in the middle of what is the most productive agricultural land in the state, it is reasonable to predict that one or more third party investors will take advantage of proximity to a source of demand and develop the capacity to develop feedstock for the MRL refinery. With no precise knowledge of what kind of investment might take place, we have chosen to analyze a modest investment, as a means of illustrating what kinds of additional impacts might occur.

The impact of a seed crushing facility on the state economy will depend largely on the size of the operation, the level of local sourcing, and local economic conditions. First the size of the operations was conservatively modeled to produce about 2,000 barrels per day (bpd) of feedstock oils. A facility of this size would be about 500 bpd less than the smallest facility in the region located in Alberta, Canada and could provide about 12% of MRL's current feedstock demand.

The economic impact of this facility will depend on the type of oilseed. Feedstock oils currently used by the facility include distiller's corn oil, canola oil, tallow (rendered animal fats), and soybean oil. The facility is able to produce fuels from a variety of other sources such as used cooking oil, and camelina oil but to date are not incorporated into MRL's current supply chain. Given Montana's proximity to dense canola growing region in Canada, we model a generic canola seed processing facility.

Determining the size of a seed crusher involves estimating the annual sales volume of the new facility in real dollar terms. To estimate the annual sales value of a 2000-bpd seed processing facility we used USDA's estimates for wholesale canola oil and canola meal prices from 2008 to 2023 (USDA Economic Research Service 2023). The annual sales of this facility are largely the result of the market value of the canola oil estimated to be $163 per barrel. A 2,000-bpd facility is expected to sell $162.3 million per year in canola oil and canola meal combined.

Production is assumed to begin in year 2027, but could occur at an earlier date depending on the speed of investment and construction. The economic impacts are estimated using the same process as the refinery impacts discussed above, with a comparison of a "with crusher" and "no crusher" scenario for the state economy. These results are additive – the economic impacts of the refineries presented above when a canola seed crusher is developed in Montana to serve the facility are the sum of the results presented here and the refinery results presented in the earlier section.

We find that a modest sized canola seed crusher in north central Montana that serves approximately 12% of the feedstock demand of the MRL refinery would add to the state economy in the fifth year of operation:

- 548 permanent, year-round jobs, both at the crusher facility and elsewhere in the economy;
- $36.1 million in additional, annual personal income, including $30.6 million in after-tax income available for spending;
- $237.8 million in additional annual economic output; and

- an addition of 570 people to the population of the state.

A seed crushing facility considered in this analysis would be classified in the food manufacturing industry, and a 2,000 bpd facility is estimated to have employment of 126 people at startup. The employment impacts by industry shown in Table 8 reveal induced demand for a wide spectrum of industries, including construction and state and local government.

Table 8 Employment Impacts, by Industry, Canola Seed Crusher Operation

Industry	Year	
	2027	2031
Construction	54	82
Manufacturing	4	5
Food manufacturing	129	127
Mining (except oil and gas)	1	1
Retail trade	30	39
Transport and warehousing	33	31
Professional, scientific, and technical services	11	15
Administrative and waste services	14	15
Health care and social assistance	26	29
Arts, entertainment, and recreation	7	8
Accommodation and food services	21	33
Other services, except public administration	19	20
Other private	37	41
Government	47	102
Total	**435**	**548**

Summary and Conclusion

The continued operations of the refinery complex now owned by Calumet Specialty Products in Great Falls, Montana continues to be an important driver of the regional and state economies. With the ramp up to full operation of the renewable fuels refinery co-located on the site with the legacy crude oil refinery in February 2023, its connection to the economy has evolved, and its economic impact has grown. The impact will continue to grow in the very likely event that the new demand for seed and tallow based feedstock spurs new investment in local production that would enable the refinery to source its purchases from the region.

This study has carried out a detailed, extensive examination of how the operations of the two refineries ultimately support jobs, income, spending and population in the state economy. Based on the analysis described in this study, by the year 2028 the facility will bring about a state economy that is larger by:

- nearly 3,500 permanent, year-round jobs, across a wide spectrum of industries and occupations;
- $247.5 million in annual personal income received by Montana households, of which $210.5 million is after-tax income available for spending;
- more than $1.2 billion in annual gross receipts to business and non-business organizations in the state, extending to almost every industry;
- a increase in state tax and non-tax revenues of more than $76 million annually; and

- an increase in the population of the state of more than 4,400 people, consisting primarily of working-aged families and their children.

There are the impacts to the state of Montana as a whole – the impacts on Great Falls and the north central region of the state will capture the bulk of these increases.

Additionally, we find that a hypothetical, but representative investment in production capacity in the local economy to meet a portion of the feedstock demand of the renewable refinery would add to these already large economic impacts. Specifically, a modestly size canola seed processor that could meet about 12% of the feedstock needs of the refinery would add another 548 jobs, $36.1 million in annual personal income, and 548 people to the Montana economy by the fifth year of its full operation.

These remarkable economic outcomes trace their origins to a 86 acre site on the north bank of the Missouri River in north central Montana. The capital-intensive, high value-added nature of the production activity at this site, together with the high pay of the jobs it creates, translates into a significant overall economic contribution as its considerable spending reverberates throughout the economy.

Appendix A
The Economic Contributions of Calumet Montana Refining
2019 Report

Calumet Montana Refining LLC has operated a refinery producing gasoline, middle distillates and asphalt for markets in Montana, Idaho and Washington in Great Falls, Montana since acquiring the facility in 2012. After investing more than $600 million to expand its processing capacity from 10,000 barrels per day (bpd) of crude oil to 30,000 bpd, the refinery has grown in importance as employer of a highly compensated, unionized workforce, a supplier of refined petroleum products to markets, and as a taxpayer to local and state governments.

The Bureau of Business and Economic Research at the University of Montana (BBER) was commissioned by Calumet to assess how its presence in the Great Falls economy ultimately makes the economy larger, more prosperous, and more populous. This analysis will examine (i) the operations of the refinery – its employment, vendor purchases, production and tax payments, (ii) the activity of other production activity not operated by Calumet but linked to the presence of the refinery, including pipelines and other linked activities, and (iii) the impact of the refinery's production on product markets and prices paid by consumers of its output.

This summary report details the BBER findings on the first component of the analysis – the economic contributions of the refinery operations.

Economic Contributions: Summary

The continued operation of the petroleum refinery owned and operated by Calumet Montana Refinery LLC in Great Falls, Montana makes a large contribution to the economy of the region, and to the entire state. Statewide contributions are reported here. The spending of the company's 180 well compensated employees, the company's considerable spending on goods and services, as well as the sizable tax payments made by the company and its employees to state and local governments, help produce an economy which has more jobs, more income and more people than would be the case if the refinery was not present.

Table A1: The Economic Contributions of Calumet Refining: Summary

Category	Units	Impact
Total Employment.....	Jobs	2,643
Personal Income.....	$ Millions	223.6
Disposable Personal Income.....	$ Millions	195.9
Selected State Revenues.....	$ Millions	58.4
Output.....	$ Millions	1,054.7
Population	People	4,222

Specifically, this report finds that the presence of the Calumet refinery ultimately adds:

- almost 2,650 permanent, year-round jobs, across a broad spectrum of industries;
- $223.5 million more in annual income received each year by Montana households, of which $195.9 million is after-tax income, available for spending on goods and services;
- more than $58 million in tax and non-tax revenue collected by state government;

- over a billion dollars in annual output, or gross receipts received by Montana business and nonbusiness organizations, realized by companies across the entire economy, and

- more than 4,200 additional people

than would exist in the Montana economy if the refinery was not operating. These contributions are significantly in excess of the jobs and direct spending of the facility itself. They come about because of (i) the high levels of compensation of the 180 refinery workers and 75 contract workers, (ii) the highly capitalized, high value-added nature of the manufacturing process, and (iii) the significant spending on inputs, goods and services by the refinery, many of which have a significant made-in-Montana component.

Economic Contributions: Employment Impacts

The fact that the 2,643 jobs which exist in the Montana economy today because of the continued operations of the Calumet Montana Refinery can be found in industries across the entire economy illustrates how the spending flows that are linked to refinery operations propagate as those who receive spending as income add their own production and jobs to the economy.

Thus, as shown in the Table A2, the presence of the refinery in the economy ultimately supports hundreds of jobs in industries such as health care, accommodations and food, and retail trade, that have no direct connection with refining. The larger economy that comes about because of the refinery, there is more income and more spending for the goods and services that ultimately employ more and produce more to support that demand.

Another dynamic that produces job gains across the range of economic activity is the increase in population that ultimately comes about because of the refinery's operations. The improved economic opportunities in Montana due to the presence of the refinery attracts and retains more people to the state. The population increase is dominated by working-aged people and their families, creating demand for both private and public services. The latter increase helps explain the sizable increase in government jobs that are ultimately due to the refinery

Table A2: Employment Impacts

Industry	Impact
Construction	367
Manufacturing	279
Mining	28
Retail Trade	243
Transportation and Warehousing	65
Professional and Technical Services	149
Administrative and Waste Services	104
Health Care and Social Assistance	189
Arts, Entertainment, and Recreation	36
Accommodation and Food Services	190
Other Services, except Public Administration	112
Other Private	209
Government	673
TOTAL	2,643

Economic Contributions: Compensation Impacts

Another way to appreciate what the presence of the Calumet refinery in Great Falls contributes to the state economy is to examine the income flows to Montana households that would not occur if the refinery did not exist. Because of the refinery, Montana workers earn $116.5 million more in wages and salaries annually, as shown in Table A3. These wages come from jobs at the refinery itself, but also from the hundreds of other jobs in seemingly unrelated industries that are larger due to the refinery's presence.

Table A3: Compensation Impacts

Category	Units	Impact
Wages and Salaries.....	$ Millions	116.5
Compensation.....	$ Millions	170.3
Earnings.....	$ Millions	183.2
Earnings per Job, New Jobs.....	$ Dollars	$69,302

When the cash value of benefits paid to those workers is included, the total compensation supported by the refinery grows to $170.3 million. Finally, when business owner income and the income of the self-employed are added, the total earnings of Montanans is $183.2 million higher each year because of the Calumet refinery. Thus each of the 2,463 jobs that are present in the economy today because the refinery is operating represent average annual earnings of $69,302 per job.

Economic Contributions: Conclusion

As large as these contributions to the state economy are, they form only part of the picture of how the refinery's presence makes the Montana economic pie larger. A more complete analysis of how a potential shutdown in the Calumet refinery in Great Falls would impact the local and state economies must also take into account the impact on non-Calumet production activities that would come to a halt if the refineries operations were to cease, as well as the impact of its closure on the availability and affordability of refined products to businesses and consumers across the state. The analysis would also consider the cancellation of the sizable investments planned and underway for processing Montana-sourced renewable feedstock for renewable diesel products. This work is ongoing.

How These Findings Were Derived

These estimated economic contributions were produced by the Bureau of Business and Economic Research (BBER) at the University of Montana by applying its policy analysis model to address the research question: what would the economy of the state of Montana look like if the Calumet refinery in Great Falls did not exist? The REMI model, leased from Regional Economic Models, Inc. and calibrated specifically for this purpose, has been employed in hundreds of published studies and peer-reviewed professional articles. It is well suited for this research.

The model is used to construct a "no refinery" scenario for the state economy, which removes the spending flows, production, employment, and tax payments which occur as part of refinery operations. Information on these operational aspects of the refinery were obtained from Calumet. The model reconstructs the level of activity in the economy when this spending is removed, and the economy reaches a new equilibrium, or resting point, with lower levels of investment, output, employment and income. Comparing this no-refinery economy to the actual economy reveals the economic contributions of the refinery, which are reported here.