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## Impact Estimates for Fort Custer Multi-Tenant Industrial Space

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# Impact Estimates for Fort Custer Multi-Tenant Industrial Space

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## Executive Summary

In support of a grant application to be submitted to the U.S. Economic Development Administration (EDA), Battle Creek Unlimited (BCU) asked the Regional and Economic Planning Services Team at the W. E. Upjohn Institute for Employment Research (Upjohn) to estimate the economic impact of the building and operations of a multi-tenant industrial incubator in Battle Creek, Michigan.

The economic impact of the project is based in both spending and employment. On the spending side, investments in the purchase of the building, renovations to the building, and investments in equipment by tenants are included. On the employment side, four tenants have been identified and estimated employment for each tenant in the first year of occupancy was provided by BCU. Employment is grown at 10% per year over a 10-year forecast of impacts.

Based on first-year investments of \$9.7 million, 70 jobs are forecast to be added to Calhoun County; these jobs will add an estimated \$2.7 million in personal income. In Year 1 of operations, 55 direct jobs yield another 45 indirect and induced jobs, while adding just under \$4.6 million in personal income to the county. Year 10 of operations is forecast to add a total of 232 jobs – 130 direct jobs and 102 indirect and induced jobs – with a forecasted increase in associated personal income of just under \$17 million in the county. Through the forecast period, for every job created within the project, another 0.8 jobs are created in the county, resulting in a 1.78 jobs multiplier.

# Introduction

Battle Creek Unlimited (BCU), in support of a U.S. Economic Development Administration (EDA) grant application, asked the Regional and Economic Planning Services Team at the W.E. Upjohn Institute for Employment Research (Upjohn) to estimate the economic impact of the building and operations of a multi-tenant industrial incubator in Battle Creek, Michigan. BCU provided Upjohn detailed data on project costs to generate the estimates for the economic impact analysis. These data include the costs for construction and operations after construction is complete for the multi-tenant industrial site.

The team at Upjohn used an economic impact model from Regional Economic Models, Inc. (REMI: [www.remi.com](http://www.remi.com)) that was custom designed to estimate the impacts for the study region. The study region for this project was defined as the Battle Creek Metropolitan Statistical Area (MSA). This is a one-county MSA that includes Calhoun County (MI). Impacts are reported for the study region.

There are a few caveats to the data and related impact estimates. First, the build data are collapsed into a single year. This was done for several reasons, the first being that the project will likely occur over two calendar years and REMI is an annualized model. This made it easier to model the project. Next, some costs (usually soft costs such as legal and architectural costs) occur well in advance of the build, but exact timing and expenditures were not available. In addition, there is the condition that anything prior to 2019 would not be able to be modeled in the current version of the REMI model (2.4.3) because 2018 is the last history year in this model. This creates a larger, single-year set of estimates for construction than would occur more organically, however, it is believed to be consistent with the combined set of activities associated with the build.

The second data caveat is that, with any set of pro formas based in the future, the data used as inputs are estimates. Inputs for operations-related impacts are more grounded in experience while the data for out years are based on estimates of growth and change. In all cases of operational inputs, the team at Upjohn worked with BCU to verify and validate the assumptions of the data inputs.

The following sections provide a set of estimates for both construction and investments, as well as operations. While the construction estimates are for a single year, operations estimates are projected out for 10 years. In conversations with the site selection and corporate real estate communities, 10 years seems to be a consistent time frame in which the business sector makes location and investment decisions. The 10-year time frame allows a business to ramp up employment and fully establish its operations.

# Estimating Impacts

## Inputs

Table 1 contains the inputs into the REMI model as provided by BCU staff. Total investment combined into one year of activities is \$9.7 million. Included in these costs were \$3.8 million for the purchase of the building, \$5 million for renovations, and \$900,000 for equipment for each of the four operations. Discussion with BCU staff regarding the type of operations with support of the provided North American Industrial Classification System (NAICS) allowed the firm investment to be used in REMI. For these firm-based investments, individual industry sectors were shocked rather than using the Wholesale Trade policy lever. Again, it was assumed that the purchase, renovations, and firm-based investments would all occur in a 12-month cycle. These are shown in the results as Year 1 (Yr1).

Operations inputs came in the form of estimates of employment for each of the firm operations. The base employment was assumed to fully come online in the second year (Yr2). Jobs in each of the subsequent years were increased by 10% over the prior year through the last year (Yr11) of the estimates. Using the 10% per year escalator, the 55 jobs forecast in Year 1 of operations more than doubles to about 130 jobs in the final year.

## Economic Impacts

Table 2 contains the combined estimated economic impacts from both construction and investment and operations. The first year of construction and investment creates an estimated 70 jobs in the county, 66 of which are in the private sector. The purchase and build out of the facility through direct, indirect, and induced employment adds \$2.7 million in personal income to Calhoun County in the first year.

Estimates of the economic impact of operations increases over time and as expected. Note that all estimates that are reported are in nominal or current dollars that include inflation. Explanations of impact measures are discussed later in this report. Based on 55 total new jobs at firms within the multi-tenant incubator, an additional 45 jobs are also added to the county's economy. The total of 100 direct, indirect, and induced jobs creates a 1.81 jobs multiplier. In the first year of operations for the firms, these jobs will add \$31.1 million in increased output, \$7.3 million in increased value added, and almost \$4.6 million in personal income. Based on an assumption of 10% annual growth in employment over the 10-year period, the incubator will add 130 direct jobs to the county.

In Year 10, it is estimated that the direct jobs will lead to a total of 232 jobs, including direct, indirect, and induced jobs, for a 1.79 jobs multiplier. In nominal dollars it is estimated that operations will add \$96.5 million in output, \$42.2 million in gross regional product or value added, and just under \$17 million in personal income.

Table 1: Inputs into REMI.

	NAICS	Investment	Jobs									
		Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11
Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	\$150,000*	5.0	5.5	6.1	6.7	7.3	8.1	8.9	9.7	10.7	11.8
Other Aircraft Parts and Auxiliary Equipment Manufacturing	336413											
General Warehousing and Storage	493110											
Freight Transportation Arrangement	488510	\$200,000	10.0	11.0	12.1	13.3	14.6	16.1	17.7	19.5	21.4	23.6
Research and Development in the Physical, Engineering, and Life Sciences	541715	\$300,000	10.0	11.0	12.1	13.3	14.6	16.1	17.7	19.5	21.4	23.6
Breweries	312120	\$250,000	30.0	33.0	36.3	39.9	43.9	48.3	53.1	58.5	64.3	70.7
Building		\$5,000,000	0	0	0	0	0	0	0	0	0	0
Purchase		\$3,800,000	0	0	0	0	0	0	0	0	0	0

\*One tenant will produce and store motor vehicle parts, and their investment and employment combine the three NAICS into a single set of inputs.



**Table 2: Estimates of Economic Impact.**

	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11
	Build	Operations									
<b>Total Employment</b>	70	100	109	120	131	144	158	174	192	211	232
<b>Private Non-Farm Employment</b>	66	90	99	108	119	130	143	157	173	190	209
<b>Output</b>	\$14,959,904	\$31,164,272	\$35,220,376	\$39,912,591	\$45,213,745	\$51,255,334	\$58,136,210	\$65,869,699	\$74,804,712	\$84,936,013	\$96,517,471
<b>Value Added</b>	\$7,317,539	\$13,584,469	\$15,346,810	\$17,401,214	\$19,727,288	\$22,389,177	\$25,435,184	\$28,875,603	\$32,808,889	\$37,245,206	\$42,295,663
<b>Personal Income</b>	\$2,707,834	\$4,592,893	\$5,372,272	\$6,245,336	\$7,252,093	\$8,390,191	\$9,688,035	\$11,188,305	\$12,828,475	\$14,754,906	\$16,897,837
<b>Inputs</b>	\$9,700,000	0	0	0	0	0	0	0	0	0	0
<b>Inputs</b>	0	55	61	67	73	81	89	97	107	118	130
<b>Employment Multiplier</b>		1.81	1.80	1.80	1.79	1.79	1.79	1.79	1.79	1.79	1.79

Notes: Employment growth is based on 10% per year. This model assumes all capital expenses, including purchase, rehab, and firm investment, occur in Year 1. All dollars are in nominal values.





## Conclusion

While it is not possible to add jobs from various years together due to the temporal nature of employment across all years this project, including building and operating the facility, the project adds an average of 149 jobs to the local economy. If only the operations-related jobs are included, that number rises to an estimated average of 157 jobs.

Including the purchase and renovations of the building, as well as investments in the buildings by firms, when coupled with operations the 11-year total increase in output in the county is just under \$600 million, the change in value added is just over \$262 million, and just under \$100 million in additional personal income.

## The REMI Model

The Upjohn Institute uses a model to estimate economic impacts developed specifically for the study region by Regional Economic Models, Inc. (REMI, [www.REMI.com](http://www.REMI.com)). The team's project director has over 20 years of experience with REMI to estimate economic impacts across a wide range of economic activity including visitor/tourism activities, industrial development, mixed-use development, and forecasting future economic and labor conditions. The REMI model is the preeminent model of its type and is widely recognized to be at the forefront of modeling, with clients not only in North America but also in the European Union.

REMI is a dynamic model that creates estimates using equations rather than a simple input/output (I/O) table. This allows sensitivity in the analysis for both timing and scale/scope issues that are not found in other models. Features that are unique to REMI include:

- It is calibrated to local conditions using a relatively large amount of local data, which is likely to improve its performance, especially under conditions of structural economic change.
- It has an exceptionally strong theoretical foundation.
- It combines several different kinds of analytical tools (including economic-base, input-output, and econometric models), allowing it to take advantage of each specific method's strengths and compensate for its weaknesses.
- It allows users to manipulate an unusually large number of input variables and gives forecasts for an unusually large number of output variables.
- It allows the user to generate forecasts for any combination of future years, allowing the user special flexibility in analyzing the timing of economic impacts.
- It accounts for business cycles.
- It has been used by many users under diverse conditions and has proven to perform acceptably.

# Definitions of Terms Used in this Study

## Jobs Created or Retained

The estimated number of jobs created or retained by project activities are simply “jobs” as counted by the U.S. Bureau of Economic Analysis (BEA) and can be either full- or part-time positions. They are likely distributed across multiple industries. In any given industry, a “job” may represent a summation of positions across several industries in which each industry has less than one complete position. For example, the impact study may report one “job,” but the spending patterns in the study may generate positions in three industries. However, each industry may require only one-third of a person. In this case, the three industries that employ one-third of a person each to meet demand would sum to one “job” in the REMI model.

Employment is composed of three elements:

- Direct – The employment created by actual investment, growth, or change
- Indirect – The employment created by the need of the new firm to purchase goods and services, essentially the local supply chain
- Induced – The household that supplies goods and services to the workers in the prior two elements. Examples include education, dry cleaners, accountants, gas stations, lawyers, and grocers.

## Gross Domestic Product

Gross domestic product is an economic measure of the value of goods and services produced within the United States. It is the broadest measure of economic activity within a region or country. It consists of compensation of employees; taxes on production and imports, less subsidies; and gross operating surplus. It does not include intermediate inputs; it is a measure of the value contributed by labor and capital to production.

## Personal Income

Income is the goods and services produced by citizens and residents in the study region (i.e., gross national product) minus the consumption of fixed capital (i.e., depreciation).

## Output

Gross output includes both GDP and expenditures on intermediate inputs. In that way, it is considered double counting, but it is an essential statistical tool to understand the interrelationships between industries. Gross output is principally a measure of an industry’s sales or receipts.

## About the Upjohn Institute

The W.E. Upjohn Unemployment Trustee Corporation was incorporated on October 24, 1932, as a Michigan 501(c)(3) nonprofit corporation, and is doing business as the W.E. Upjohn Institute for Employment Research. The W.E. Upjohn Institute for Employment Research has been conducting economic research and consultation for 75 years, since its founding in 1945.

The Upjohn Institute is governed by a Board of Trustees, which employs a President who is responsible for the overall operation of the Institute. The President of the Upjohn Institute is Dr. Michael Horrigan.

The Upjohn Institute currently employs 104 individuals. Upjohn's research and consultation program is conducted by a resident staff of professional social scientists, 12 of whom are Ph.D.-level economists (senior staff). Senior staff is supported by a staff of research analysts and additional support staff. Upjohn also administers the federal and state employment programs for its four-county area through the local Workforce Investment Board. Upjohn also publishes books on economic development, workforce development, and other employment-related topics.

The Ph.D.-level economists have more than 175 years of collective experience, conducting research on a broad variety of economic and employment topics. Their experience includes, but is not limited to, employment program evaluation, labor market dynamics, labor-management relations, employment and training programs, economic and workforce development, income replacement policy, worker adjustment, the role of education in labor markets, employment and compensation, disability, international comparison of labor adjustment policies, site selection experience, and state, regional, and local economic analysis.

The Upjohn Institute also has a Regional Economic and Planning Services team of specialists who provide economic insights and analysis regionally and statewide in Michigan, in other individual states, and nationally. The team has experience in:

- Economic impact analysis
- Fiscal/cost-benefit impact analysis
- Labor market analysis
- Facilitating and conducting effective one-on-one interviews, focus groups, workshops, and charrette sessions in a diverse array of environments
- Economic and workforce development and education strategies
- GIS mapping abilities
- Rural and urban land use and economic development planning services
- Regional data analysis

For questions or information about this report, contact Jim Robey, Director of Regional and Planning Economic Services, 269-365-0450, or [jrobey@upjohn.org](mailto:jrobey@upjohn.org).