



Pennsylvania Manufacturers' Association

IMPLAN Economic Analysis:
Encina, Northumberland County, PA

Originally published: April 2022

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Overview

Encina's advanced manufacturing facility in Point Township, Pennsylvania, will be the first of its kind in the region. This state-of-the-art, \$1.1 billion manufacturing facility will convert post-use materials into feedstock for new products. From sneakers and sports equipment to laundry detergent and deodorant, Encina's technology will help address the challenges of post-use product and reduce the need for virgin materials to advance a circular, sustainable economy.

While the goods produced by manufacturing plants such as the one proposed in this study are manufactured goods themselves, they are the feedstock for many other manufacturing processes and thus, the multiplier effect of these facilities is immense. As the Manufacturing Institute, the education and workforce arm of the National Association of Manufacturers, reported,

*The backward linkage (or multiplier effect) shows how much additional output is generated by a dollar's worth of final demand for each industry. Every dollar in final sales of manufactured products supports \$1.33 in output from other sectors—this is the largest multiplier of any sector. Manufacturing plants, therefore, have a powerful and positive impact on economic development.*¹

This study serves to quantify the magnitude of Encina's \$1.1 billion investment in Northumberland County, Pennsylvania, by estimating the number of jobs, labor income, value added, and total output.

Methodology

This study focuses on two major economic events: the “construction of manufacturing facility” jobs added; and, the new, permanent “other basic organic chemical manufacturing” jobs added in Northumberland County, Pennsylvania.

The impacts of these economic activities are assessed using IMPLAN. IMPLAN is a platform that combines a set of extensive databases, economic factors, multipliers, and demographic statistics with a highly refined modeling system. This software and robust data assess an industry's contributions to a region, quantify the impact of a shock to an economy, examine the effects of a new or existing business, model the impacts of expected growth or changes, or study any other event specific to the economy of a particular region and how it will be impacted.

To build a facility of this magnitude, the upfront capital investment is \$1.1 billion for the plant, located in Northumberland County, Pennsylvania. Construction of the facility will last approximately 24 months and will require roughly 750 “construction of new manufacturing facility” (NAICS: 236220; IMPLAN code: 51) jobs throughout the process. Once complete, there

¹ Manufacturing Institute. “Manufacturing's Multiplier Effect is Stronger than Other Sectors'.” April, 2014. Last accessed March 2020, <http://www.themanufacturinginstitute.org/Research/Facts-About-Manufacturing/Economy-and-Jobs/Multiplier/Multiplier.aspx>.

will be approximately 300 “other basic organic chemical manufacturing” jobs (NAICS: 325119; IMPLAN 167), as full-time employment within the county.

These inputs were obtained from direct sources with Encina. This study was prepared using information publicly available at the time of completion. Business plans constantly change and the inputs and outputs from these models could be less or more than anticipated in an ever-changing economy.

Results

Based on the findings generated by IMPLAN, the direct, indirect, and induced jobs created by the construction total 990. This represents \$101,549,902 in labor income, \$122,826,806 in value added, and \$271,212,084 million in total output over the 24 months of construction completion in 2022-dollar values.

The direct, indirect, and induced jobs created by the sustained manufacturing activity account for 966 jobs, and \$138,383,208 in labor income, \$196,675,937 in value added, spurring \$613,602,900 in total output, per year, in 2022 dollars, not accounting for natural inflation.

Five-year projection: The combined total of the construction and operations over the next five years will result in 1,956 jobs supported, \$516,699,526 in labor income, \$712,854,617 in value added, and \$2,112,020,784 in total output, not accounting for inflation. These totals are not necessarily inclusive of the \$1.1 billion upfront investment by Encina, but some of these totals will be inclusive of this estimate.

TABLE 1: FIVE-YEAR PROJECTION

| Jobs Supported | Labor Income | Value Added | Output |
|----------------|---------------|---------------|-----------------|
| 1,956 | \$516,699,526 | \$712,854,617 | \$2,112,020,784 |

Detailed Results – Graphics

TABLE 2: Addition of 750 “construction of manufacturing facility” jobs
Economic Indicators by Impact

| Impact | Employment | Labor Income | Value Added | Output |
|---------------|------------|-----------------|-----------------|------------------|
| 1 - Direct | 750.00 | \$39,749,110.61 | \$42,085,122.63 | \$97,560,138.71 |
| 2 - Indirect | 129.68 | \$6,570,147.47 | \$10,933,215.68 | \$23,079,561.31 |
| 3 - Induced | 110.31 | \$4,455,692.79 | \$8,395,065.61 | \$14,966,342.41 |
| Totals | 989.99 | \$50,774,950.87 | \$61,413,403.92 | \$135,606,042.42 |

TABLE 3: Top 10 industries impacted by the addition of 750 “construction of manufacturing facility” jobs listed by estimated growth percentage

Industries by Estimated Growth Percentage

| | Display Code | Display Description | Industry Total Output | Impact Output | Estimated Growth |
|----|--------------|---|-----------------------|-----------------|------------------|
| 1 | 51 | Construction of new manufacturing structures | \$14,298,650.47 | \$97,560,138.71 | 682.30% |
| 2 | 204 | Ready-mix concrete manufacturing | \$10,997,379.29 | \$2,586,589.58 | 23.52% |
| 3 | 453 | Commercial and industrial machinery and equip... | \$10,206,894.24 | \$1,048,445.74 | 10.27% |
| 4 | 395 | Wholesale - Machinery, equipment, and supplies | \$34,329,229.97 | \$3,003,523.42 | 8.75% |
| 5 | 29 | Sand and gravel mining | \$3,444,409.93 | \$265,768.11 | 7.72% |
| 6 | 394 | Wholesale - Household appliances and electrical ... | \$7,760,350.99 | \$417,388.47 | 5.38% |
| 7 | 396 | Wholesale - Other durable goods merchant whol... | \$24,261,533.39 | \$1,145,447.98 | 4.72% |
| 8 | 28 | Stone mining and quarrying | \$30,373,257.93 | \$1,186,285.32 | 3.91% |
| 9 | 477 | Landscape and horticultural services | \$12,000,720.27 | \$447,584.99 | 3.73% |
| 10 | 456 | Accounting, tax preparation, bookkeeping, and p... | \$15,854,642.59 | \$552,307.43 | 3.48% |

TABLE 4: Top 10 indirect employment jobs added by the addition of 750 “construction of manufacturing facility” jobs

| | Impact | 2 - Indirect |
|----|--|-------------------|
| | Industry Display | Impact Employment |
| 1 | 417 - Truck transportation | 13.90 |
| 2 | 395 - Wholesale - Machinery, equipment, and supplies | 12.43 |
| 3 | 456 - Accounting, tax preparation, bookkeeping, and payroll services | 10.36 |
| 4 | 465 - Advertising, public relations, and related services | 8.73 |
| 5 | 455 - Legal services | 6.78 |
| 6 | 204 - Ready-mix concrete manufacturing | 6.77 |
| 7 | 477 - Landscape and horticultural services | 5.08 |
| 8 | 396 - Wholesale - Other durable goods merchant wholesalers | 4.84 |
| 9 | 457 - Architectural, engineering, and related services | 4.62 |
| 10 | 453 - Commercial and industrial machinery and equipment rental and leasing | 4.19 |

TABLE 5: Top 10 induced employment jobs added by the addition of 750 “construction of manufacturing facility” jobs

| | Impact | 3 - Induced |
|----|---|-------------------|
| | Industry Display | Impact Employment |
| 1 | 521 - Religious organizations | 6.07 |
| 2 | 493 - Individual and family services | 5.84 |
| 3 | 510 - Limited-service restaurants | 5.33 |
| 4 | 406 - Retail - Food and beverage stores | 4.67 |
| 5 | 491 - Nursing and community care facilities | 3.95 |
| 6 | 509 - Full-service restaurants | 3.88 |
| 7 | 413 - Retail - Nonstore retailers | 3.61 |
| 8 | 448 - Tenant-occupied housing | 3.60 |
| 9 | 483 - Offices of physicians | 2.80 |
| 10 | 490 - Hospitals | 2.72 |

TABLE 6: Addition of 300 “other basic organic chemical manufacturing” jobs
Economic Indicators by Impact

| Impact | Employment | Labor Income | Value Added | Output |
|---------------|------------|------------------|------------------|------------------|
| 1 - Direct | 300.00 | \$108,567,336.28 | \$141,956,278.73 | \$508,317,981.96 |
| 2 - Indirect | 334.08 | \$17,001,958.04 | \$29,493,240.14 | \$60,467,338.86 |
| 3 - Induced | 332.25 | \$12,813,914.05 | \$25,226,418.53 | \$44,817,579.62 |
| Totals | 966.33 | \$138,383,208.37 | \$196,675,937.39 | \$613,602,900.44 |

TABLE 7: Top 10 industries impacted by the addition of 300 “other basic organic chemical manufacturing” jobs listed by estimated growth percentage
Industries by Estimated Growth Percentage

| | Display Code | Display Description | Industry Total Output | Impact Output | Estimated Growth |
|----|--------------|--|-----------------------|------------------|------------------|
| 1 | 163 | Other basic organic chemical manufacturing | \$2,093,337,122.54 | \$508,337,498.54 | 24.28% |
| 2 | 10 | All other crop farming | \$3,263,270.80 | \$382,555.02 | 11.72% |
| 3 | 2 | Grain farming | \$25,490,282.40 | \$2,889,281.22 | 11.33% |
| 4 | 400 | Wholesale - Other nondurable goods merc... | \$52,936,445.30 | \$5,648,425.15 | 10.67% |
| 5 | 415 | Rail transportation | \$20,598,090.49 | \$2,158,106.42 | 10.48% |
| 6 | 479 | Waste management and remediation servi... | \$35,032,984.60 | \$3,025,703.56 | 8.64% |
| 7 | 515 | Commercial and industrial machinery and ... | \$10,428,168.02 | \$838,581.48 | 8.04% |
| 8 | 476 | Services to buildings | \$17,949,834.47 | \$1,279,038.23 | 7.13% |
| 9 | 47 | Electric power transmission and distribution | \$54,852,645.49 | \$3,444,332.34 | 6.28% |
| 10 | 49 | Water, sewage and other systems | \$21,447,341.04 | \$1,332,523.41 | 6.21% |

TABLE 8: Top 10 indirect employment jobs added by the addition of 300 “other basic organic chemical manufacturing” jobs

| Impact | 2 - Indirect |
|---|-------------------|
| Industry Display | Impact Employment |
| 1 417 - Truck transportation | 43.18 |
| 2 10 - All other crop farming | 20.97 |
| 3 400 - Wholesale - Other nondurable goods merchant wholesalers | 19.53 |
| 4 413 - Retail - Nonstore retailers | 16.48 |
| 5 469 - Management of companies and enterprises | 15.40 |
| 6 2 - Grain farming | 14.97 |
| 7 476 - Services to buildings | 13.96 |
| 8 479 - Waste management and remediation services | 13.86 |
| 9 512 - Automotive repair and maintenance, except car washes | 9.50 |
| 10 515 - Commercial and industrial machinery and equipment repair | 8.31 |

TABLE 10: Top 10 induced employment jobs added by the addition of 300 “other basic organic chemical manufacturing” jobs

| | Impact | 3 - Induced |
|----|--|-------------------|
| | Industry Display | Impact Employment |
| 1 | 510 - Limited-service restaurants | 17.38 |
| 2 | 493 - Individual and family services | 14.88 |
| 3 | 521 - Religious organizations | 14.52 |
| 4 | 491 - Nursing and community care facilities | 14.24 |
| 5 | 509 - Full-service restaurants | 13.49 |
| 6 | 406 - Retail - Food and beverage stores | 13.46 |
| 7 | 490 - Hospitals | 10.33 |
| 8 | 448 - Tenant-occupied housing | 9.77 |
| 9 | 413 - Retail - Nonstore retailers | 9.43 |
| 10 | 412 - Retail - Miscellaneous store retailers | 8.29 |

Glossary of terms

- **Jobs** - An Industry-specific mix of full-time, part-time, and seasonal employment. An annual average that accounts for seasonality and follows the same definition used by the Bureau of Labor Statistics and Bureau of Economic Analysis.
- **Direct Effects** – The set of expenditures applied to the I-O multipliers for impact analysis. It is one or more production changes or expenditures made by producers/consumers because of an activity or policy. Direct effects can be positive or negative. These initial changes are determined by an analyst to be a result of this activity or policy being analyzed. Applying these initial changes to the multipliers in IMPLAN will then display how the Region will respond economically to these initial changes.
- **Indirect Effects** – Economic Effects stemming from business-to-business purchases in the supply chain.
- **Induced Effects** - Economic Effects stemming from household spending of Labor Income, after removal of taxes, savings, and commuter income.
- **Labor Income** - All forms of Employment income, including Employee Compensation (wages, salaries, and benefits) and Proprietor Income.
- **Value Added** - The difference between an Industry's or establishment's total Output and the cost of its Intermediate Inputs; it is a measure of the contribution to GDP. Value Added is a large portion of Output, as it encompasses Labor Income (LI), Other Property Income (OPI), and Taxes on Production and Imports (TOPI).
- **Output** - For all Industries, output equals the value of Industry production, which is equal to sales plus net inventory change. In IMPLAN these are annual production estimates for the year of the dataset in producer prices. Note that for wholesale and retail sectors, Output is equal to gross wholesale margin or gross retail margin, respectively, not gross sales. The value of production for wholesale and retail sectors is the value of the services they provide; it does not include the value of the items sold within their establishment.