

MEMORANDUM

To: FLO
From: BW Research Team
Date: June 6, 2022
Re: Economic Impact of EV Charger Manufacturing Facility

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ABOUT FLO

FLO is a leading North American electric vehicle (EV) charging network operator and a smart charging solutions provider. The company fights climate change by accelerating EV adoption through a vertically integrated business model and delivering EV drivers the most dependable charging experience from curbside to countryside. Every month, the company enables more than 750,000 charging events, thanks to over 60,000 fast and level 2 EV charging stations deployed at public, commercial and residential locations. FLO employees are located across North America, from its headquarters in Quebec City, to assembly plants in Shawinigan, to offices in Montreal, Vancouver, and Sacramento, and they also work remotely in key U.S. and Canadian markets.

At its core, FLO's mission is to fight climate change by accelerating EV adoption across North America. FLO believes wherever consumers may be – from countryside to curbside – they should have access to reliable and dependable charging stations year after year. FLO charging stations are strategically integrated into the communities they serve to ensure maximum utilization, while still blending into the cityscape without disrupting traffic patterns.

As demand for EVs grows, FLO is creating easy-to-use chargers that encourage widespread consumer adoption, easing the transition from “filling up” to “topping off.” FLO's world-class customer service ensures a focus on uptime that offers an intuitive mobile app with a strong, seamless roaming network.

For more information, visit flo.com.



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EXECUTIVE SUMMARY

This report and the research completed in support of it was done on behalf of FLO. The employment outputs provide an estimate of the total number of jobs created as a result of investments into the EV charger manufacturing facility from 2022 to 2028.

Since 2020, sales of new EVs in the U.S. increased by 85 percent and automotive executives believe more than half their sales will be EVs by 2030. Additionally, increasing adoption of pro-EV policies will cultivate an EV-friendly environment, helping businesses drive the development of America's charging network. President Biden's Infrastructure Investment and Jobs Act included \$5 billion in funding to build a national charging network that will put the U.S. on the path to make EVs accessible to all Americans for both local and long-distance trips. As more EVs are adopted by American consumers, access to dependable charging stations will become a critical infrastructure need as more drivers rely on charging stations to stay on the road.

At the heart of the auto industry, FLO's Auburn Hills, Michigan facility will operate as FLO's United States' (U.S.) manufacturing foothold, helping the EV charging company strengthen America's electrification infrastructure and meet the increasing charging demands of EV consumers.

Employment output results show that by the 2023 fiscal year (ending on March 31, 2023), investments into the manufacturing facility will sustain 133 jobs in Michigan. As the facility expands and sales of EV chargers scale by a factor of 33 by 2028, Gross State Product, employment, and tax revenues resulting from investments and sales increase.



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By 2028, the manufacturing facility is estimated to annually generate:



730 jobs

more than the Ford Motor Company Rawsonville Plant in Ypsilanti.¹ Of these jobs,

500

Jobs in industries directly and indirectly related to activities in the manufacturing facility

230

Jobs in industries unrelated to the manufacturing facility that benefits from the increased economic activity in Michigan

\$3.8 million

in state and local tax revenues from the construction and operations of the manufacturing facility. The state of Michigan can potentially reinvest these dollars into programs that directly benefit residents of Michigan, like building better public infrastructure, repairing schools, and providing health care services.

¹ Ford, Rawsonville Plant. <https://corporate.ford.com/operations/locations/global-plants/rawsonville-components-plant.html>



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\$76.3 million

in Gross State Product in the state of Michigan.
This represents an increase of 0.1% over
Michigan's 2021 Gross State Product²



\$51.7 million

in labor income for Michigan workers that benefit
from the construction and operations of the
manufacturing facility



The research team used sales, projected employment, and expenditures data from FLO as input into the model. The outputs presented in this report represent the impact that the EV charger facility will have in Michigan's economy. The construction and operations of the facility supports 500 high-wage jobs for residents in administrative roles, construction, engineering, marketing, and sales. Wages earned by these workers flow through the regional economy to boost activity and support the 230 induced jobs. The total added income to Michigan workers is close to \$52 million, and residents will likely spend this income locally. With the local jobs and revenue created, FLO becomes an important player in the regional economy and a strong source of tax revenues.

² St. Louis Fed Economic Data, FRED. Michigan's Gross State Product for 2021: \$568,413 million.



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INTRODUCTION

FLO engaged BW Research to estimate the state and federal economic impacts resulting from the construction and operations activities of an electric vehicle charger manufacturing facility. The facility will operate in Michigan, with sales across the United States. Employment figures are presented at the state level to include all facility employees in the Capital Expenditures (CAPEX) and Operations and Maintenance (O&M) phases. Tax revenue resulting from EV charger sales are presented at the national level. This report provides quantifiable insight into the economic impacts of constructing and operating an EV charger manufacturing facility between 2022 and 2028.

SUMMARY OF METHODOLOGY

The research team processed the data shared by FLO on construction and maintenance costs, annual sales, operations employment, and other project components. The findings are split into two project phases, “Capital Expenditures” (CAPEX) and “Operations and Maintenance” (O&M), due to the different nature of investments and employee requirements during the different phases of project construction and operations. **Over time there is an increase in jobs sustained by the CAPEX and O&M phases of the manufacturing facility as there is growing investment and sales of EV chargers in later years.** Both phases of the project happen nearly simultaneously since retrofitting and upgrades to the facility start in 2022 and production activities start in the 2023 fiscal year. FLO reports data using March 31st as the final day of the fiscal year; therefore, results are presented using this timeframe. These are modeled separately to account for the differences between the labor and cost qualities of each phase.

The modeling efforts for this report use economic multipliers for Michigan at the local and state level from the IMPLAN Input-Output modeling software for 546 different industries. Results provided in this analysis are limited to the margin of error in the IMPLAN software, and job estimates are rounded to the nearest whole number.

The Capital Expenditures (CAPEX) phase includes investments to upgrade, maintain, and acquire physical assets, and therefore includes costs and labor for construction efforts at the facility. This includes both the inventory and construction materials necessary for constructing and operating an EV charger manufacturing facility. This phase requires a variety of construction occupations such as laborers, carpenters, and electricians.³

The Operations and Maintenance (O&M) phase includes all costs and employment that result from the daily operations of the facility, including manufacturing of EV chargers, maintenance of machinery, and administrative and sales activity. The activity of this operations phase is based on projected costs and employment at the manufacturing facility, provided by FLO. The occupations in this phase include sales, administration, marketing, manufacturing, and maintenance employees.⁴

The research team modeled the annual economic impacts of the construction and operations of the facility between 2022 and 2028 using the data shared by FLO. This model does not incorporate any additional federal or state incentives for the production of EV chargers that may come to fruition.

³ Construction occupations are estimated using staffing pattern JobsEQ data for NAICS code 23

⁴ Operations occupations are estimated using staffing pattern JobsEQ data for NAICS codes 42, 53, 31, 33



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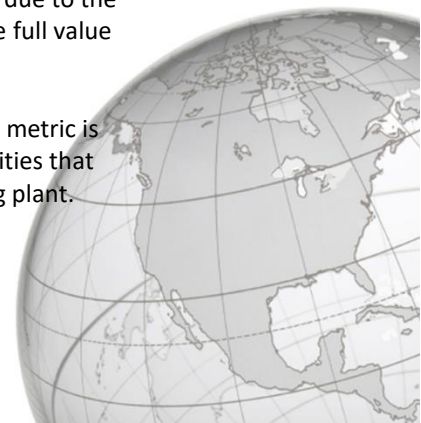
ECONOMIC IMPACT DEFINITIONS

Employment and economic impacts for both phases are divided into direct, indirect, and induced effects across the local economy. This section provides an overview of the types of economic impacts discussed in the findings.

- **Direct effects** show the change in the economy associated with the initial job creation and or initial economic activity. For the purposes of this research, direct jobs range from construction workers involved in building and improving the manufacturing facility to sales, administrative and production employees in the O&M phase.
- **Indirect effects** include all the backward linkages or the supply chain responses resulting from the initial direct economic activity. An example of an indirect job added to the local economy would be a new worker at steel factory hired to handle the increased demand for steel required for machinery that results from the initial investment on the CAPEX phase. An example of indirect effects during the O&M phase would be a new shipping clerk hired to meet the higher demand for machine parts going to the manufacturing facility. Other examples of indirect jobs are truck drivers, electricians, software engineers, and welders.
- **Induced effects** refer to the effects of increased household spending and are the result of direct and indirect workers spending their wages within the local economy. An example of an induced job would be a local restaurant hiring more staff because construction workers during the construction phase and salespeople during the operations phase have new disposable income and eat at this local restaurant.

Other metrics used in this economic impact analysis are:

- Labor Income** The total value of monetary paychecks and benefits received by relevant parties. This metric demonstrates the impact on local employees hired for activities related to the plant and expected earnings from these jobs.
- Value Added** Gross output less intermediate inputs. This is equivalent to Gross State Product (GSP). This is the net economic activity generated by the construction or operations of developments, less the cost of input materials to avoid double-counting economic activity. The Value Added or GSP resulting from the manufacturing plant is the most useful metric to demonstrate the dollar value of economic activities in the plant.
- Output** The total economic impact, which includes value added and intermediate expenses (money spent on materials or goods from other industries). This metric encompasses all the money flowing through the economy due to the manufacturing plant’s activities. It is helpful in contextualizing the full value of the initial investment.
- Tax Revenue** Tax revenues are shown at the local, state, and federal level. This metric is important in showing the fiscal contribution of all economic activities that result from the construction and operations of the manufacturing plant.

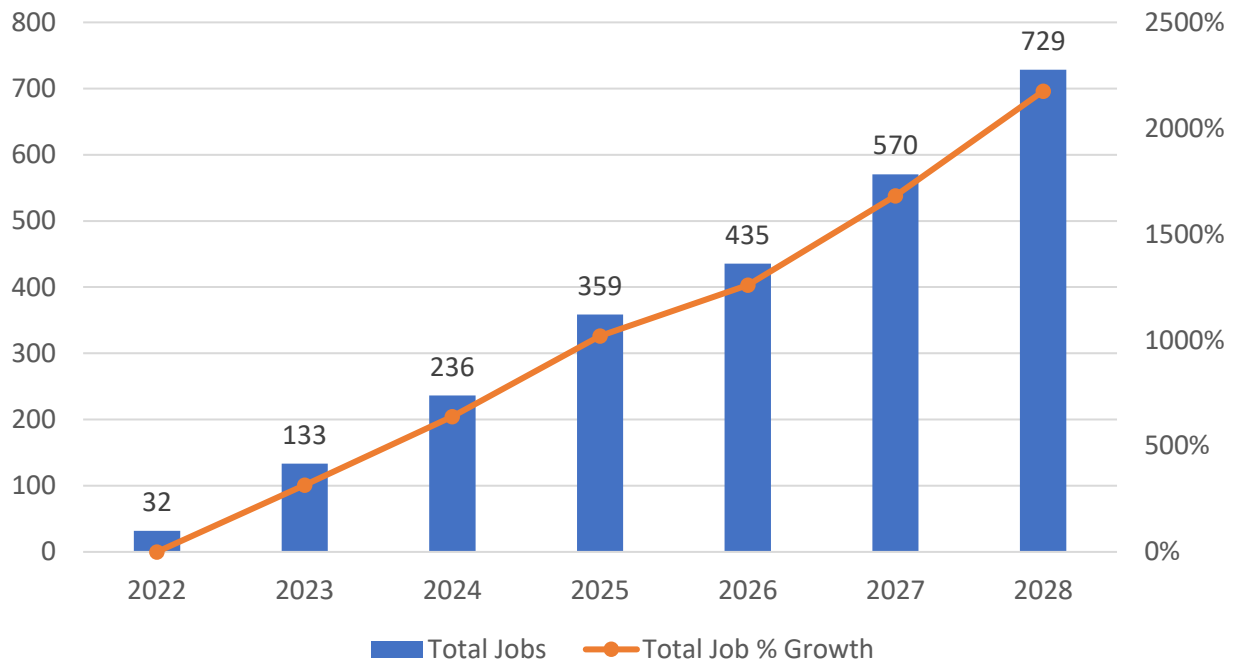


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ECONOMIC IMPACTS OF MANUFACTURING FACILITY IN MICHIGAN

Michigan’s diverse and abundant workforce, business-friendly environment and access to global supply chain assets are critical as FLO brings its first U.S.-based manufacturing plant online. This first section outlines the economic impacts for the combined CAPEX and O&M phases of the EV charger manufacturing facility at the state level.

Figure 1. Total Jobs and Job Growth Generated in Both Phases of the EV Charger Manufacturing Facility



OVERALL EMPLOYMENT OUTPUTS

A total of **133 direct, indirect, and induced jobs** will be created and supported in Michigan in 2023 as a result of the manufacturing facility activities; 125 jobs created from operations and maintenance and 8 from construction and retrofitting activities. Jobs related to the manufacturing facility include electricians, operations managers, iron and steel workers, quality assurance managers, industrial engineers, and semiconductor technicians.

Driven by increasing sales, employment grows to **435 jobs by 2026**, a **330% increase** over three years. Of these jobs, almost **300 are direct and indirect jobs** supported by the manufacturing facility, and close to **140 induced jobs** result from increased local economic activity. By **2028** there will be close to **730 jobs** supported by economic activities related to the manufacturing facility (**230 induced and 500 in direct and indirect** activities), an **increase of 2,178% from 2022**. Of those direct and indirect jobs, more than one-third (36%) are in Professional Services, 32% are in Other Supply Chain⁵, one-fifth (20%) are in Manufacturing, and more than one-tenth (13%) in Construction.

⁵ Other supply chain includes employment in industries such as finance, real estate, wholesale and retail trade, transport, distribution, utilities, and other services.

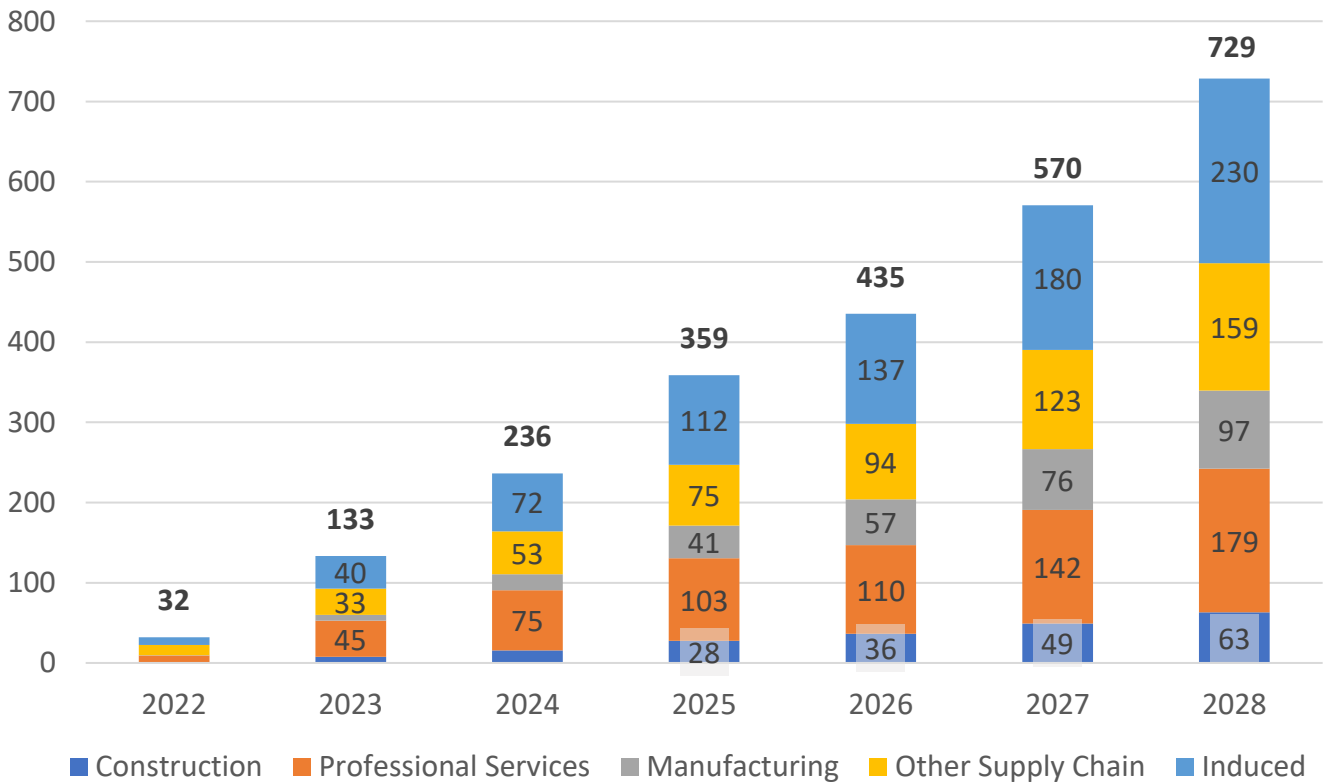


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Jobs supported by the construction and operation of the EV charger manufacturing facility in Michigan are presented in Figure 2 below and split into Construction, Professional Services, Manufacturing, Other Supply Chain, and Induced employment.

- The Construction category includes occupations in construction- or maintenance-related activities, such as electricians, construction laborers, and equipment installers and repairers.
- Professional Services encompasses all occupations in services provided to the economic activity such as lawyers, architects, management firms, or computer programmers.
- The Manufacturing category includes occupations such as electrical component manufacturing, metal work manufacturers, builders of machinery.
- The Other Supply Chain category includes the remaining industries along the supply chain for the manufacturing facility, such as finance, real estate, wholesale and retail trade, transport, and distribution.

Figure 2. Jobs Generated in Both Phases of the EV Charger Manufacturing Facility



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Capital Expenditures (CAPEX) PHASE OUTPUTS

Expenditures during this project phase include materials, installation and construction labor, insurance, and development services such as engineering and design. CAPEX phase activities include retrofitting of the manufacturing facility, procurement of materials required for this construction, improvements to output capacity by adding machinery, and related employment. Cumulative expenditures in the CAPEX phase across the six years of the study total **\$5.5 million**. CAPEX activities result in **\$29,000 annual state tax revenue and \$13,000 annual local tax revenue in 2023** during the first year of production. Tax revenues increase annually as investment and sales grow, reaching upwards of **\$48,000 in state tax revenue and \$22,000 in local tax revenue in the final year (2028)** of the CAPEX phase.

The **Gross State Product (GSP)** resulting from the CAPEX phase of the manufacturing facility and the EV chargers starts at \$74,000 in 2022, then jumps to over **\$737,000 by 2023**. Annual GSP from the CAPEX phase starts at \$74,000 in 2022, and it reaches close to **\$1.2 million in 2028**.

The following table shows the annual investments in the CAPEX Phase of the manufacturing facility and the ripple effect that it has in Michigan in the form of GSP and State and Local Tax Revenue.

Table 1. CAPEX Phase Annual Investments and Economic Benefits

	2022	2023	2024	2025	2026	2027	2028
Total Investment	\$ 62,712	\$ 696,695	\$ 656,796	\$ 973,884	\$ 708,124	\$ 1,011,211	\$ 1,357,247
State Tax Revenue	\$ 2,797	\$ 29,064	\$ 24,352	\$ 36,230	\$ 25,052	\$ 36,140	\$ 47,895
Local Tax Revenue	\$ 1,195	\$ 12,887	\$ 11,107	\$ 16,463	\$ 11,591	\$ 16,633	\$ 22,097

Michigan’s additional GSP resulting from the CAPEX phase is further broken down by direct, indirect, and induced effects in the table below.

Table 2. Annual Gross State Product in Michigan as a Result of the CAPEX Phase⁶

	2022	2023	2024	2025	2026	2027	2028
Direct	\$ 38,103	\$ 379,029	\$ 296,267	\$ 442,399	\$ 294,930	\$ 429,111	\$ 563,935
Indirect	\$ 13,512	\$ 135,488	\$ 126,154	\$ 189,308	\$ 134,137	\$ 193,767	\$ 260,619
Induced	\$ 22,590	\$ 222,846	\$ 177,344	\$ 265,327	\$ 177,667	\$ 258,624	\$ 340,958
Total	\$ 74,206	\$ 737,362	\$ 599,766	\$ 897,034	\$ 606,734	\$ 881,502	\$ 1,165,513

⁶ Values may not sum perfectly due to rounding



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Operations and Maintenance (O&M) Phase Outputs

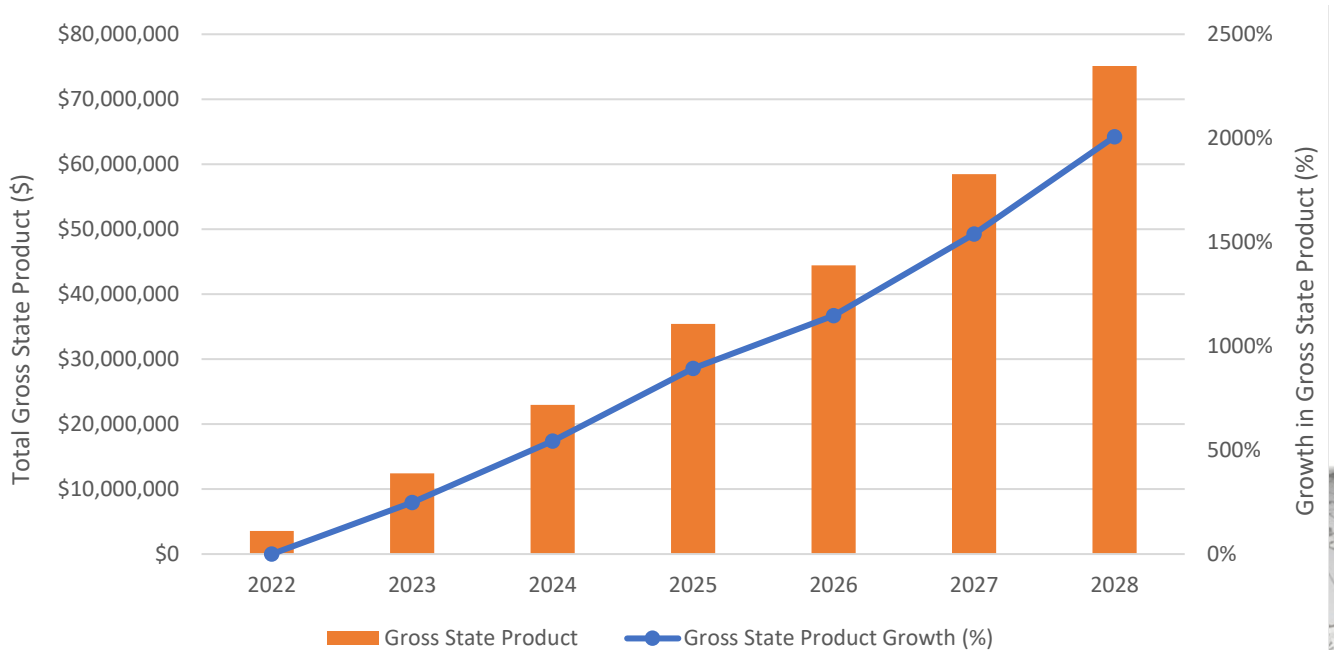
The impacts of the Operations and Maintenance Phase also increase as investment and sales grow over time as production increases. The facility will have employees in the head office in 2022 but will only start production in 2023 when manufacturing and operations employees begin activities. Total annual costs of operation are about **\$1.1 million in 2023**, including wages and rent. Labor and plant rent costs increase over time as the facility adds staff and functional factory space, reaching **\$12.5 million in 2028**. In 2022 there are 15 total employees, all of which are in the head office. By 2023, there will be a total of 57 employees, 11 of which are involved in production. By 2028 the manufacturing facility is expected to have 277 employees, including 131 who in production and 146 in the head office.

The **GSP** resulting from the O&M phase of the manufacturing facility totals **\$3.6 million in 2022**, largely from wages and property income and their ripple effect in the statewide economy. Figure 3 shows that once production begins in **2023**, GSP jumps **250%** to **\$12.4 million** and keeps increasing annually until reaching **\$75.1 million** in 2028, an **increase of 2,000%** since 2022. Similarly, taxes on production amount to almost **\$670,000 in 2023** when production begins and increase along with the facility’s production activities to reach over **\$3.8 million in 2028**.

Table 3. Operations and Maintenance Phase Annual Economic Benefits

	2022	2023	2024	2025	2026	2027	2028
Total costs	\$ -	\$1,111,855	\$2,776,949	\$5,225,391	\$7,249,637	\$9,724,539	\$12,533,184
Employees	15	57	98	142	168	218	277
Taxes on Production	\$ -	\$666,500	\$1,190,123	\$1,797,920	\$2,261,671	\$2,967,647	\$3,804,710

Figure 3. Annual Increase in Gross State Product



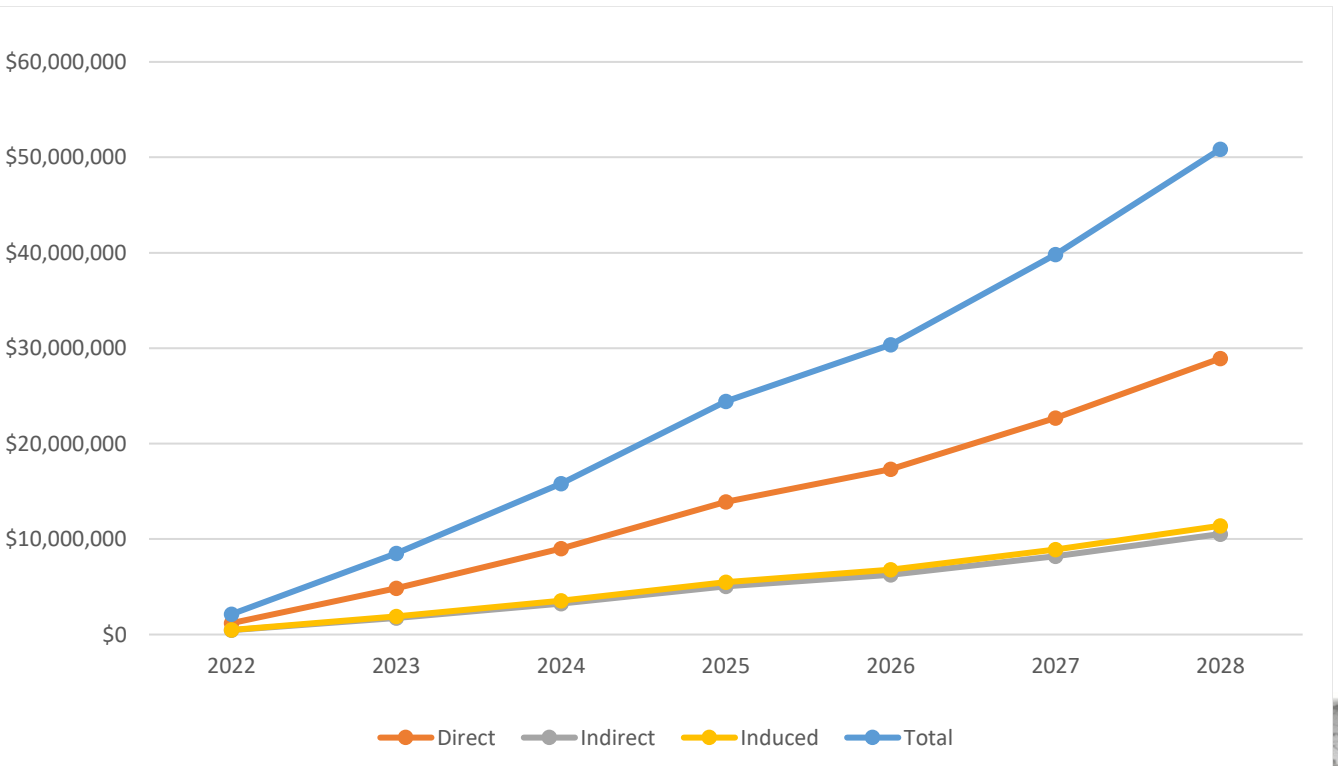
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The following table and figure provide a breakdown of the Labor Income benefits to Michigan as a result of the O&M phase. Labor Income is a component of the GSP made up of employee compensation (wages) and proprietor income (payments received by business owners), that generate the induced effects throughout Michigan’s economy. Wages from direct activities in the O&M phase total **\$1.2 million in 2022** and close to **\$29 million in 2028** as the manufacturing facility scales, an increase of 2,331%. This also results in more wages in indirect industries, totaling \$10.5 million, and \$11.4 million in induced labor wages by 2028.

Table 4. Annual Labor Income Benefits in Michigan from Operations and Maintenance Phase

	2022	2023	2024	2025	2026	2027	2028
Direct	\$1,190,259	\$4,859,894	\$9,015,548	\$13,912,037	\$17,328,451	\$22,690,222	\$28,929,534
Indirect	\$455,338	\$1,739,487	\$3,249,812	\$5,038,236	\$6,244,138	\$8,203,044	\$10,531,046
Induced	\$477,978	\$1,908,076	\$3,544,583	\$5,472,773	\$6,807,835	\$8,922,254	\$11,397,585
Total	\$2,123,576	\$8,507,457	\$15,809,942	\$24,423,047	\$30,380,424	\$39,815,521	\$50,858,165

Figure 4. Annual Labor Income Benefits in Michigan from Operations and Maintenance Phase



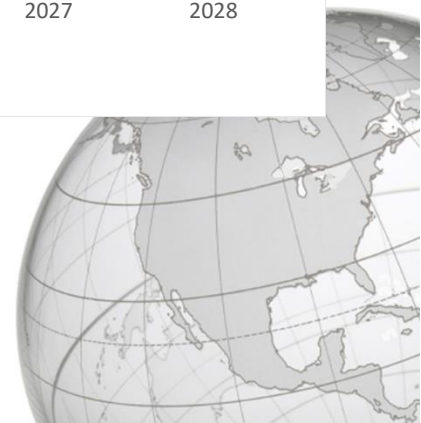
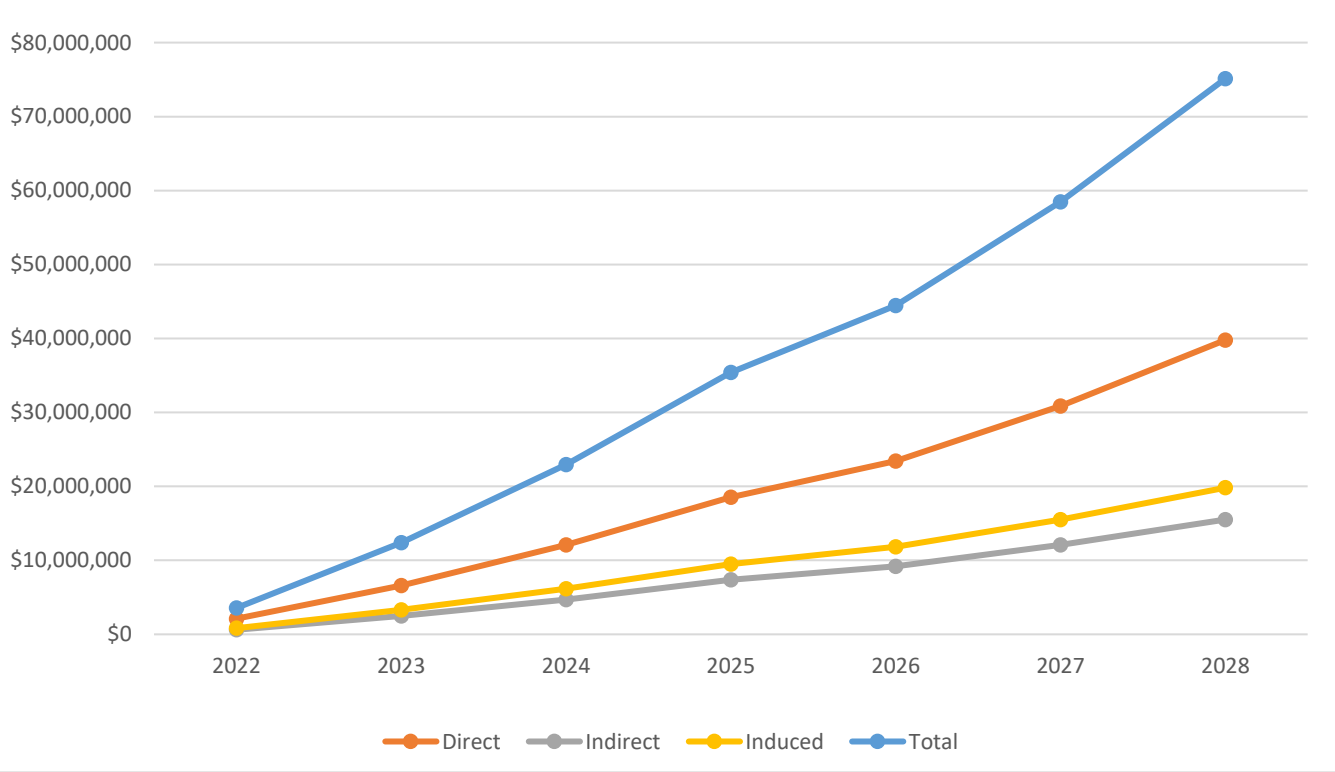
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The following table and figure provide a breakdown of the resulting annual GSP in Michigan from the O&M phase. Gross State Product shows the value created in the O&M phase in the state of Michigan. **Direct GSP** impacts are \$2.1 million in 2022 but grow annually to reach close to **\$40 million in 2028** in economic production within the state. This affects other sections of the economy, such as the supply chain required to operate and maintain the EV charger facility and the induced effects resulting from the increased local economic activity. Indirect GSP reaches \$15.5 million in 2028, and induced GSP from the increased income flowing through Michigan’s economy is almost **\$20 million in 2028**.

Table 5. Annual Gross State Product in Michigan from Operations and Maintenance Phase

	2022	2023	2024	2025	2026	2027	2028
Direct	\$2,113,931	\$6,616,252	\$12,104,930	\$18,522,324	\$23,412,445	\$30,869,853	\$39,783,058
Indirect	\$620,111	\$2,469,368	\$4,703,174	\$7,377,051	\$9,187,414	\$12,083,011	\$15,513,090
Induced	\$830,800	\$3,317,226	\$6,162,634	\$9,515,422	\$11,836,751	\$15,513,080	\$19,816,878
Total	\$3,564,842	\$12,402,846	\$22,970,738	\$35,414,797	\$44,436,610	\$58,465,944	\$75,113,026

Figure 5. Annual Gross State Product in Michigan from Operations and Maintenance Phase



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MODEL METHODOLOGY

IMPACT MODEL DATA ASSUMPTIONS AND ESTIMATES

The research team estimated the local economic impacts of the EV charger manufacturing facility using IMPLAN. IMPLAN is an input-output (I/O) economic impact modeling tool that uses built-in complex models of industry spending patterns, demand for commodities, and industry links at the local level to track the flow of money throughout a regional economy. IMPLAN uses a combination of data sets to build their social accounting matrix, primarily using data from the Bureau of Economic Analysis (BEA) and Bureau of Labor Statistics (BLS). The research team decided to use IMPLAN over other economic impact analysis tools because of its geographic and industry granularity, which allows for a more customized model, best fit to estimate the impacts generated specifically from an EV charger manufacturing facility in Michigan. The economic impacts of each year of the study were modeled for the state of Michigan, to account for in-state multipliers and tax revenues.

The IMPLAN I/O modeling tool provides an economy-wide overview of the ripple effects of an initial investment, in this case the manufacturing facility in the state of Michigan. IMPLAN's database on multipliers for a variety of industries and economic indicators makes it optimal to analyze interdependent relationships between all sectors of Michigan's economy to provide an overall picture of the economic impact of this manufacturing facility.

The research team created a crosswalk of IMPLAN industry categories to 6-digit North American Industry Classification System (NAICS) codes for each of the 28 sub-sectors by each of the value chain categories as defined in the employment outputs (Construction, Professional Services, Manufacturing, and Other Supply Chain). This helps move the modeling efforts from the 546 IMPLAN industries towards a more digestible categorization of industries involved in the construction and operations of the manufacturing facility.

The main source of data for modeling the economic impacts came from documents provided by FLO. The research team used the sales, employment, investment, and cost data presented by FLO in their projections for 2022 through 2028. Data from FLO provided insight into projected O&M headcount for the facility for the following occupations that were allocated to different IMPLAN industries:

- Commercial Sales Representative
- Field Support
- First Line Support to Users
- Marketing
- Administration
- Product Lifecycle Management (PLM)

Three separate IMPLAN models were developed: a model for the CAPEX phase, a model for the O&M phase, and national sales model. These models generated outputs for Gross State Product, earnings, industry-specific employment, and tax revenues that were split into state and national effects for both phases of the project. The three models illustrate the interdependent relationships between the different sectors of Michigan's economy following investments for an EV charger manufacturing facility with the projected cost and employment inputs from 2022 until 2028.

