An Analysis of the Estimated Economic Impact of the Mammoth Grazing Lands Solar Project

in Pulaski County, IN

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Report Overview

INTRODUCTION

This report presents the results of an analysis undertaken by Baker Tilly US, LLP (the "Baker Tilly") and estimates the economic impact of the development and current operations of the new Mammoth Grazing Lands Solar Project (the "Project") in Pulaski County, Indiana. Data used as input to the analysis was provided by Mammoth Grazing Lands LLC to Baker Tilly and from third party sources such as the USDA. If any changes were to be made to the overall projections and/or assumptions to development costs or revenue projections, the overall economic impacts listed in this analysis would present a different outcome.

PROJECT DESCRIPTION

Mammoth Grazing Lands LLC ("Mammoth Grazing Lands") proposes the development of a 945 MWac utility-scale solar energy project in Pulaski County, Indiana. Pulaski County is a predominantly rural county in north-central Indiana, located about 90 miles south of Chicago and 75 miles north of Indianapolis. This Project represents one of the most innovative dual-use (agrivoltaic) installations in the United States. The Project will utilize bi-facial solar modules, single-axis trackers, and central inverters, consistent with today's highest industry standards for efficiency and reliability.

Of the approximately 8,776 acres under lease, only about 60% (5,265.6 acres) will be fenced for solar arrays, preserving substantial open space and agricultural use. The project secured its MISO point of interconnection in 2022 and is progressing toward finalizing its Generator Interconnection Agreement. Once operational, Mammoth Grazing Lands will generate enough clean electricity to power more than 210,000 households annually.

A First-of-its-Kind Agrivoltaic Model

Mammoth Grazing Lands will be the first project of its size to fully implement the American Farmland Trust's (AFT) Smart Solar program as outlined in their Solar Soil Health Guide[1]. This commitment ensures that the project will safeguard and enhance Pulaski County's farmland for future generations, improve soil health, and integrate productive agriculture within and around the solar facility.

Outside the Fence

- 200 acres dedicated to supporting disadvantaged or young farmers with limited access to land, both local and from across Indiana, for food production. Local farmers will be prioritized for this program.
- Farming of setback areas with specialty crops, maintaining the rural landscape while keeping land in production.

Inside the Fence

- A comprehensive agrivoltaics program combining renewable energy generation with livestock grazing (sheep, kune-kune pigs, poultry), specialty crops, vegetables, and herbs.
- A 200-acre Mammoth Agrivoltaic Research Center dedicated to testing crop and livestock production efficiencies under different solar panel array configurations, in collaboration with universities, schools, and research organizations.
- A soil and land stewardship program designed to improve soil health over the life of the project.

[1] *https://farmlandinfo.org/publications/solar-soil-health-guide/*

METHODOLOGY

The economic impact of the Project is calculated for the (1) construction activity, and (2) the operation of the project.

Baker Tilly applied IMPLAN (a computer-based economic input-output model) to estimate the total direct[1], indirect and induced economic impacts of the Project. This includes job creation, economic output and household earnings (or compensations to employees), and federal, state and local taxes. The direct economic activity ripples through the local and state economies supporting additional economic impacts in the form of indirect and induced effects including jobs, output and household income.

The tables throughout the analysis show the economic impacts of the individual aspects of the Project. The impacts are considered "Direct, Indirect or Induced" and will be presented for "Employment, Labor Income, Value Added, and Output", which are defined as such:

Direct effects from initial spending or from operations of the project business(s).

Indirect effects are the results of business-to-business transactions indirectly caused by the direct effects.

Induced effects are the results of increased personal income caused by the direct and indirect effects.

Employment consists of a count of jobs that include both full-time and part-time workers.

Labor Income consists of wages and salaries, employer-provided benefits, and proprietors' income.

Value Added represents the difference between the value of goods and the cost of materials or supplies that are used in producing them. Value added is defined as the gross receipts of a firm minus the cost of goods and services purchases from other firms. Value added includes wages, salaries, interest, depreciation, rent, taxes and profit.

Output can be thought of as the value of goods and services sold in the economy or revenues for businesses in the economy.

[1] The definition of "direct jobs" through IMPLAN used in this report should not be confused with the concept of "direct job" creation measurable by Forms I-9, payroll records or other similar documentation. When economists use the term "direct" jobs in the context of an econometric methodology such as IMPLAN, what is meant are jobs created directly by either expenditures or revenues. For example, if a building is constructed or renovated, the employees of the various unaffiliated tenants of that building would be considered "direct" jobs in the context of an econometric report. The tenants' employees are not "direct" employees of the project developer or LLC.

Contents

Study Highlights

The purpose of this analysis is to estimate the economic impact of the Mammoth Grazing Lands Solar Project (the "Project") on the Pulaski County economy as well as to estimate the associated negative impact for farmers and suppliers related to the conversion of farmland to solar use.

PROJECT CONSTRUCTION / INSTALLATION IMPACT

Mammoth Grazing Lands proposes the development of a 945 MWac utility-scale solar energy project in Pulaski County, Indiana. Sited across approximately 8,776 acres, only an estimated of approximately 60% (5,265.6 acres) of the leased land will be fenced for solar arrays—preserving substantial open space and agricultural activity.

Use of Funds	Amount ($)
Construction and Equipment	$1,139,000,000
Solar Modules	$425,000,000
Interconnection	$34,000,000
Pre-NTP / Construction Development Expenses	$34,000,000
Indirect Costs During Construction	$68,000,000
Total	**$1,700,000,000**

During the development phase, the Project is estimated to create 8,636 temporary direct, indirect, and induced jobs, with a total economic output of $2.1 billion, and generating $706.9 million in total labor income.

ONE-TIME, TEMPORARY IMPACT

Development Period Impact

EMPLOYMENT

8,636

Temporary jobs during construction

ECONOMIC OUTPUT

$2.1B

Economic output from construction activity

LABOR INCOME

$706.9M

Labor income over the construction period

SOLAR OPERATIONS IMPACT

ANNUAL IMPACT FROM OPERATIONS

Operational Impact

EMPLOYMENT

20

Direct jobs employed

ECONOMIC OUTPUT

$32.5M

Direct economic output

LABOR INCOME

$1.3M

Direct labor income

Total Annual Impact

EMPLOYMENT

54

Direct, indirect, and induced jobs

ECONOMIC OUTPUT

$53.9M

Annual economic output (sales)

LABOR INCOME

$4.6M

Annual labor income

Annual solar energy production operations are estimated to support an estimated 54 total jobs (direct, indirect, and induced), contributing $53.9 million in economic output, including $4.6 million in total labor income.

For every 1 solar operational job in the county, **1.7 additional jobs** are estimated to be created in the form of indirect and induced employment elsewhere in Pulaski County, IN.

REDUCTION IN FARMLAND IMPACT

The Project will reduce the available farmland in Pulaski County and reduce farm output by an estimated $3.8 million per year. This analysis estimates the total economic impact of this reduction in farm output to calculate the additional negative impact that may be felt by suppliers and other businesses in the county as well as a basis to compare to the potential positive impact of the estimated solar operations of the Project.

While the portion of the project fenced in for Solar Use is an estimated 5,265.6 acres, much of that land is planned to be available for agricultural use. The developer estimates that only 35% of the acreage will be occupied by the solar operations. This would leave 3,422.6 acres of available land for agricultural use within the fenced area. Per this plan, only an estimated 1,843.0 acres of farmland will be converted to solely solar energy generation use.

Total Project Acreage	8,776.0
Acreage Outside of the Fence	3,510.0
Acreage Fenced for Solar Use	5,265.6
Available Acreage for Agricultural Use	3,422.6
Physical Ground Space for Solar Use	1,843.0

Baseline Farmland Impact
(Prior to Solar Conversion)

EMPLOYMENT

27

Direct, indirect, and induced jobs

ECONOMIC OUTPUT

$3.8M

Annual economic output (sales)

LABOR INCOME

$1.1M

Annual labor income

ANNUAL SOLAR VS FARM USE COMPARISON

Based on the analysis contained in this report and summarized in Table 1, the following comparisons can be made.

- Solar Use will result in a gain of approximately 27 jobs and $3.6 million in labor income from direct, indirect, and induced sources.
- Solar Use jobs support a greater number of indirect and induced workers per direct job, with Solar Use supporting 1.7 and Farm use supporting 0.2 respectively.
- Solar Use will increase value added by $9.9 million over the estimated value added from Farm Use.
- The direct economic output for Solar Use is 11.0 times greater than the direct economic output of Farm Use.

TABLE 1

Comparison of Total Annual Economic Impact of Solar Use vs Farm Use

	Annual Solar Use Impact	Annual Farm Use Impact	Difference
Jobs:			
Direct	20	23	-3
Indirect & Induced	34	4	30
Total Jobs	54	27	27
Labor Income:			
Direct	$1,312,312	$857,426	$454,886
Indirect & Induced	$3,332,189	$230,278	$3,101,911
Total Labor Income	$4,644,501	$1,087,704	$3,556,797
Value Added:			
Direct	$1,312,312	$1,325,703	-$13,391
Indirect & Induced	$10,404,764	$454,758	$9,950,006
Total Value Added	$11,717,076	$1,780,461	$9,936,615
Economic Output:			
Direct	$32,500,000	$2,943,654	$29,556,346
Indirect & Induced	$21,408,481	$836,542	$20,571,940
Total Economic Output	$53,908,481	$3,780,196	$50,128,286

Note: Solar Use will include a one-time construction impact of $2.1 billion in economic output not reflected in this table

Estimated Economic Impacts of the Mammoth Grazing Lands Solar Project

The economic impact of the construction and installation of the Project was estimated using the projected expenditures prepared by the developer and the calculations prepared by Baker Tilly using the IMPLAN input-output model. This analysis utilizes 2023 IMPLAN multipliers for Pulaski County, Indiana to estimate the broader economic effects of the Project, including its impact on employment, labor income, value added, and total economic output.

The developers provided estimates of total spending along with information on land use, projected revenue and power generation for the solar component and qualitative information about the Project.

If any changes were to be made to the overall projections and/or assumptions to development costs or revenue projections, the overall economic impacts listed in this analysis would present a different outcome.

ESTIMATED CONSTRUCTION / INSTALLATION IMPACT

The Project will include an estimated $1.7 billion in expenditures during the development period. The developers anticipate spending $1.1 billion on general equipment and construction, $425.0 on solar modules, $68.0 million in interconnection and other development expenses, and an additional $68.0 million in indirect costs. Based on current industry statistics in Pulaski County, an estimated 17%[1] of the necessary supply chain for construction and installation is available within the county, approximately $289.0 million in labor, materials, and other services. As such, the remaining 84% of the expenditures are estimated to be spent outside of Pulaski County.

This section provides an overview of development expenditures and the economic impacts they are projected to create.

TABLE 2

Projected Construction / Installation Expenditures

Use of Funds	Amount ($)
Construction and Equipment	$1,139,000,000
Solar Modules	$425,000,000
Interconnection	$34,000,000
Pre-NTP / Construction Development Expenses	$34,000,000
Indirect Costs During Construction	$68,000,000
Total	**$1,700,000,000**

The development of the Project is projected to generate substantial economic activity, supporting job creation and income growth throughout the construction phase. In total, the Project is estimated to create 8,636 temporary direct, indirect, and induced jobs, contributing an estimated $2.1 billion in total economic output, including $706.9 million in labor income.

TABLE 3

Economic Impacts of Development of the Project

Impact	Employment	Labor Income	Value Added	Output
1 - Direct	4,893	$451,962,425	$736,577,339	$1,234,824,000
2 - Indirect	1,478	$118,585,236	$232,017,212	$462,479,446
3 - Induced	2,265	$136,363,873	$249,702,078	$404,947,479
Total	**8,636**	**$706,911,534**	**$1,218,296,629**	**$2,102,250,925**

[1] *Baker Tilly's application of the Lightcast - Business Case report.*

ESTIMATED ANNUAL OPERATIONAL IMPACT

The Project is projected to create 20 full-time equivalent (FTE) employees, supporting sustained economic activity in the region. These jobs are estimated to support $1.3 million in labor income, $10.2 million in value added economic benefit, and $32.5 million in annual economic output.

This section provides an overview of annual operations and the anticipated annual economic impacts they are projected to support.

Estimated Annual Economic and Tax Impacts

Annual operations activity is estimated to support an additional 34 spin-off jobs in the form of indirect and induced workers in the county economy. In total, the employment impact is estimated to be 54 jobs. This activity is expected to support 1.7 additional jobs for every direct job.

TABLE 4

Economic Impacts of Annual Operations

Impact	Employment	Labor Income	Value Added	Output
1 - Direct	20	$1,312,312	$10,181,185	$32,500,000
2 - Indirect	19	$2,434,045	$8,760,126	$18,741,340
3 - Induced	15	$898,144	$1,644,638	$2,667,141
Total	**54**	**$4,644,501**	**$20,585,949**	**$53,908,481**

The table below presents the 20 industry groups with the greatest projected impact from the solar facility's annual operations.

TABLE 5

Annual Economic Impact of the 20 Most Impacted Industries by Employment

Impact	Employment	Labor Income	Value Added	Output
42 - Electric power transmission and distribution	21.3	$1,529,330	$10,912,372	$34,384,177
35 - Electric power generation - Fossil fuel	8.5	$1,494,836	$6,426,008	$13,710,357
454 - Employment services	1.9	$90,816	$121,488	$200,915
491 - Full-service restaurants	1.1	$32,582	$54,220	$105,341
472 - Hospitals	1.1	$101,939	$123,089	$224,901
492 - Limited-service restaurants	0.9	$21,551	$40,304	$92,603
429 - Other real estate	0.7	$80,052	$105,589	$186,222
465 - Offices of physicians	0.6	$81,097	$77,673	$111,610
446 - Scientific research and development services	0.6	$53,054	$110,427	$192,612
394 - Retail - General merchandise stores	0.6	$20,045	$32,619	$48,762
20 - Oil and gas extraction	0.5	$1,076	$5,263	$215,420
402 - Scenic and sightseeing transportation and support activities for transportation	0.5	$35,967	$28,727	$40,162
493 - All other food and drinking places	0.4	$14,469	$21,329	$34,165
473 - Nursing and community care facilities	0.4	$20,916	$23,450	$38,450
55 - Maintenance and repair construction of nonresidential structures	0.4	$29,016	$44,863	$85,849
475 - Individual and family services	0.4	$14,441	$13,469	$19,309
423 - Monetary authorities and depository credit intermediation	0.4	$32,828	$67,942	$122,876
389 - Retail - Food and beverage stores	0.4	$13,103	$24,360	$34,399
437 - Legal services	0.3	$32,617	$64,012	$78,897
38 - Electric power generation - Wind	0.3	$51,860	$438,173	$764,685

Impact of Loss of Farmland

The Project will reduce the available farmland in Pulaski County and reduce farm output by an estimated $3.6 million per year. This analysis estimates the total economic impact of this reduction in farm output to calculate the additional negative impact that may be felt by suppliers and other businesses in the county as well as a basis to compare to the potential positive impact of the estimated solar operations of the Project.

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Total Project Acreage	8,776.0
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Acreage Fenced for Solar Use	5,265.6
Available Acreage for Agricultural Use	3,422.6
Physical Ground Space for Solar Use	1,843.0

To estimate the reduction in farm output, Baker Tilly relied on data from the USDA Census of Agriculture. The 2022 Census of Agriculture[1] reports $369.2 million of agriculture product sales produced in Pulaski County. After applying a annual inflation of two percent per year, the value of products produced in 2025 is estimated to be $391.9 million. Pulaski County contains 245,345 farm acres of land resulting in a metric of $1,597 of agricultural product sales per acre. The reduction in direct farm output is obtained by applying the per-acre metric to the number of total farm acres converted to solar use.

TABLE 6

Estimated Reduction in Farm Output

Farm Acres Converted to Solely Solar Use	1,843.0
Market Value of Ag Products Sold (2022)	$369,273,000
Market Value of Ag Products Sold (2025)[2]	$391,875,462
Total Farm Acres in Pulaski County	245,345
Agricultural Product Sales per Acre	$1,597
Estimated Reduction in Farm Output	**$2,943,654**

The total economic impact associated with the reduction in farmland, including indirect and induced activity is summarized below. In short, the economic impact of the reduction in farmland includes 27 jobs, $1.1 million in labor income, and $3.8 million in economic output annually.

TABLE 7

Economic Impacts of the Reduction in Farmland

Impact	Employment	Labor Income	Value Added	Output
1 - Direct	23	$857,426	$1,325,703	$2,943,654
2 - Indirect	3	$168,808	$299,391	$592,083
3 - Induced	1	$61,470	$155,368	$244,458
Total	**27**	**$1,087,704**	**$1,780,461**	**$3,780,196**

The total economic impact includes the reduction in direct farm revenues as well as the reduction in indirect supplier revenues and the reduction in worker spending throughout Pulaski County.

[1] *2022 Census of Agriculture Data, USDA - National Agricultural Statistics Service*
[2] *Baker Tilly used an annual inflation rate of 2% in this calculation.*

The table below illustrates the 20 most impacted industry groups from the reduction of farmland.

TABLE 8

Annual Economic Impact of the 20 Most Impacted Industries by Employment

Impact	Employment	Labor Income	Value Added	Output
10 - All other crop farming	21.3	$810,532	$1,253,197	$2,782,658
19 - Support activities for agriculture and forestry	1.1	$52,320	$55,490	$57,846
383 - Wholesale - Other nondurable goods merchant wholesalers	0.3	$21,744	$55,403	$109,904
426 - Insurance carriers, except direct life	0.2	$9,763	$35,274	$94,602
427 - Insurance agencies, brokerages, and related activities	0.2	$7,534	$18,061	$45,685
492 - Limited-service restaurants	0.2	$3,269	$6,216	$15,774
399 - Truck transportation	0.1	$12,494	$17,949	$33,670
423 - Monetary authorities and depository credit intermediation	0.1	$9,866	$20,716	$41,382
2 - Grain farming	0.1	$13,069	$18,995	$65,728
391 - Retail - Gasoline stores	0.1	$4,621	$8,575	$12,847
438 - Accounting, tax preparation, bookkeeping, and payroll services	0.1	$2,210	$3,287	$6,261
473 - Nursing and community care facilities	0.1	$3,657	$4,117	$7,082
470 - Home health care services	0.1	$2,587	$2,748	$3,955
389 - Retail - Food and beverage stores	0.1	$2,801	$4,792	$6,798
430 - Tenant-occupied housing	0.1	$3,299	$6,651	$8,426
385 - Retail - Motor vehicle and parts dealers	0.1	$3,984	$8,305	$11,872
491 - Full-service restaurants	0.1	$839	$1,598	$4,267
429 - Other real estate	0.1	$1,818	$2,183	$8,194
378 - Wholesale - Machinery, equipment, and supplies	0.1	$3,957	$6,235	$12,426
403 - Couriers and messengers	0.0	$6	$29	$277

ABOUT IMPLAN

IMPLAN is a regional economic analysis software application that is designed to estimate the impact or ripple effect (specifically backward linkages) of a given economic activity within a specific geographic area through the implementation of its Input-Output model. Studies, results, and reports that rely on IMPLAN data or applications are limited by the researcher's assumptions concerning the subject or event being modeled. Studies such as this one are in no way endorsed or verified by IMPLAN Group, LLC unless otherwise stated by a representative of IMPLAN.

IMPLAN provides the estimated indirect and induced Effects of the given economic activity as defined by the user's inputs. Some Direct Effects may be estimated by IMPLAN when such information is not specified by the user. While IMPLAN is an excellent tool for its designed purposes, it is the responsibility of analysts using IMPLAN to be sure inputs are defined appropriately and to be aware of the following assumptions within any I-O Model:

- Constant returns to scale
- No supply constraints
- Fixed input structure
- Industry technology assumption
- Constant byproducts coefficients
- The model is static

By design, the following key limitations apply to Input-Output Models such as IMPLAN and should be considered by analysts using the tool:

Feasibility: The assumption that there are no supply constraints and there is fixed input structure means that even if input resources required are scarce, IMPLAN will assume it will still only require the same portion of production value to acquire that input, unless otherwise specified by the user. The assumption of no supply constraints also applies to human resources, so there is assumed to be no constraint on the talent pool from which a business or organization can draw. Analysts should evaluate the logistical feasibility of a business outside of IMPLAN. Similarly, IMPLAN cannot determine whether a given business venture being analyzed will be financially successful.

Backward-linked and Static model: I-O models do not account for forward linkages, nor do I-O models account for offsetting effects such as cannibalization of other existing businesses, diverting funds used for the project from other potential or existing projects, etc. It falls upon the analyst to take such possible countervailing or offsetting effects into account or to note the omission of such possible effects from the analysis.

Like the model, prices are also static: Price changes cannot be modeled in IMPLAN directly; instead, the final demand effects of a price change must be estimated by the analyst before modeling them in IMPLAN to estimate the additional economic impacts of such changes.

ABOUT BAKER TILLY

Baker Tilly provides high-quality economic research, specializing in economic and fiscal impact analyses. The company is highly focused on supporting economic development professionals and organizations through its consulting services and software. Baker Tilly has conducted thousands of economic impact analyses of new businesses, retention and expansion projects, developments, and activities in all industry groups throughout the U.S.

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