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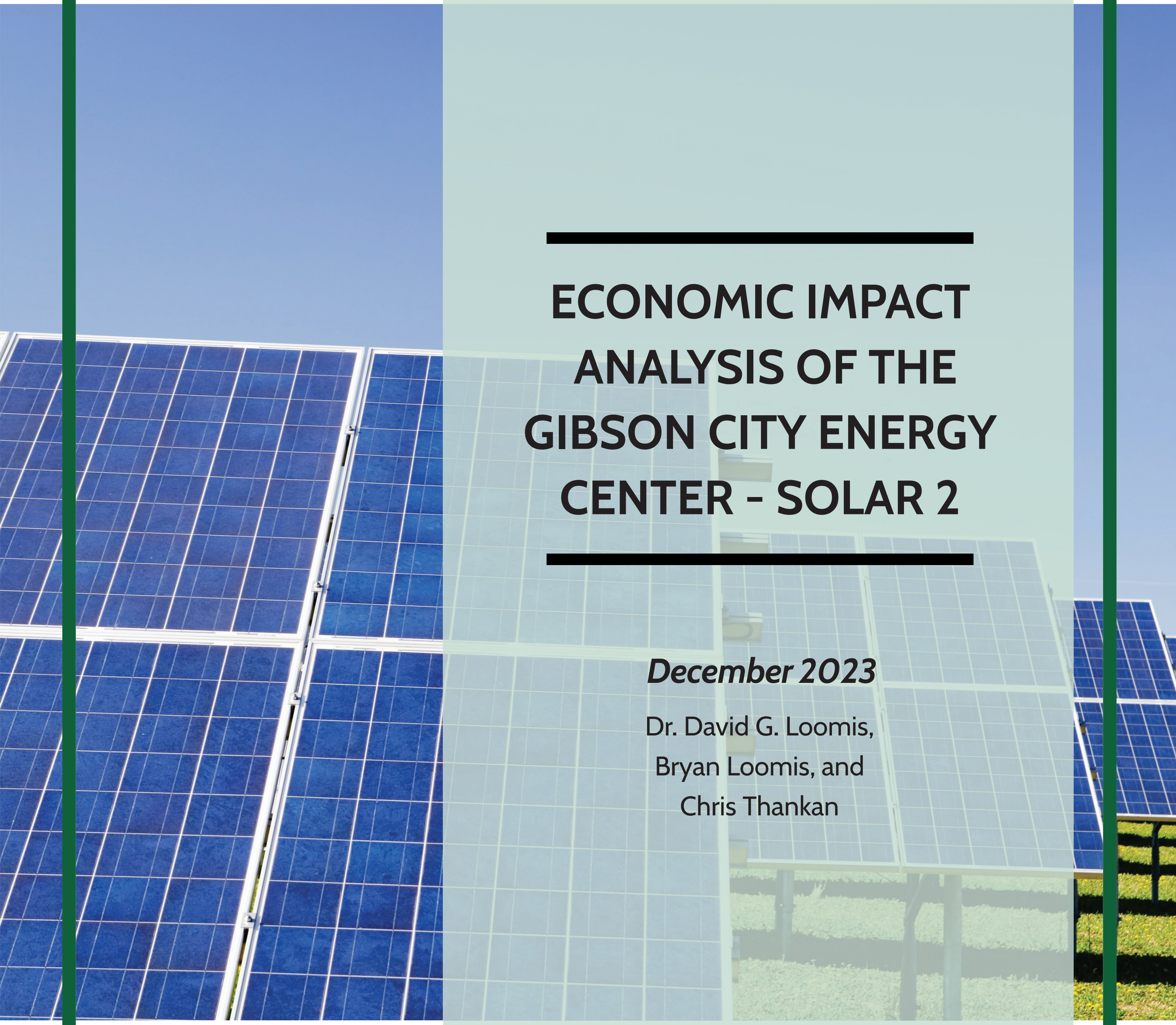

ECONOMIC IMPACT ANALYSIS OF THE GIBSON CITY ENERGY CENTER - SOLAR 2

December 2023

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Dr. David G. Loomis is Professor Emeritus of Economics at Illinois State University and Co-Founder of the Center for Renewable Energy. He has over 20 years of experience in the renewable energy field. He has served as a consultant for 43 renewable energy development companies. He has testified on the economic impacts of energy projects before the Illinois Commerce Commission, Iowa Utilities Board, Missouri Public Service Commission, Illinois Senate Energy and Environment Committee, the Wisconsin Public Service Commission, Kentucky Public Service Commission, Ohio Public Siting Board, and numerous county boards. Dr. Loomis is a widely recognized expert and has been quoted in the Wall Street Journal, Forbes Magazine, Associated Press, and Chicago Tribune as well as appearing on CNN.

Dr. Loomis has published 40 peer-reviewed articles in leading energy policy and economics journals. He has raised and managed over $7 million in grants and contracts from government, corporate and foundation sources. He received the 2011 Department of Energy's Midwestern Regional Wind Advocacy Award and the 2006 Best Wind Working Group Award. Dr. Loomis received his Ph.D. in economics from Temple University in 1995.

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Bryan has been conducting economic impact, property tax, and land use analyses at Strategic Economic Research since 2019. He has performed or overseen over 100 wind and solar analyses, and has also provided expert testimony for permitting hearings and open houses in many states, including Colorado, Kansas, Indiana, Illinois, and Iowa. He improved the property tax analysis methodology at SER by researching various state taxing laws and implementing depreciation, taxing jurisdiction millage rates, and other factors into the tax analysis tool. Before working with SER, Bryan ran a consulting agency, working with over 30 technology startups on growth and marketing. Bryan received his MBA from Belmont University in 2016.

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Strategic Economic Research, LLC (SER) provides economic consulting for renewable energy projects across the U.S. We have produced over 250 economic impact reports in 31 states. Research Associates who performed work on this project include Ethan Loomis, Madison Schneider, Zoë Calio, Patrick Chen, Kathryn Keithley, Morgan Stong, Mandi Mitchell, Coryell Birchfield, Tim Roberts, Russell Piontek, Drew Kagel, Cedric Volkmer and Paige Afram.

Table of Contents

Table of Contents - Figures

Table of Contents - Tables

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I. Executive Summary

Earthrise Energy is developing the Gibson City Energy Center - Solar 2 in Ford County, Illinois. The purpose of this report is to aid decision makers in evaluating the economic impact of this project on Ford County and the State of Illinois. The basis of this analysis is to study the direct, indirect, and induced impacts on job creation, wages, and total economic output.

The Gibson City Energy Center - Solar 2 is a 135-megawatt alternating current (MWac) utility-scale solar powered-electric generation facility that will utilize photovoltaic (PV) panels installed on a single-axis tracking system. The total Project represents an investment in excess of $306 million. The total development is anticipated to result in the following:

Economic Impact

Jobs – all numbers are full-time equivalents

- 36 new local jobs during construction for Ford County
- 200 new local jobs during construction for the State of Illinois
- 18.0 new local long-term jobs for Ford County
- 40.0 new local long-term jobs for the State of Illinois

Output

- Over $6.3 million in new local output during construction for Ford County
- Over $37.5 million in new local output during construction for the State of Illinois
- Over $6.1 million in new local long-term output for Ford County annually
- Over $10.3 million in new local long-term output for the State of Illinois annually

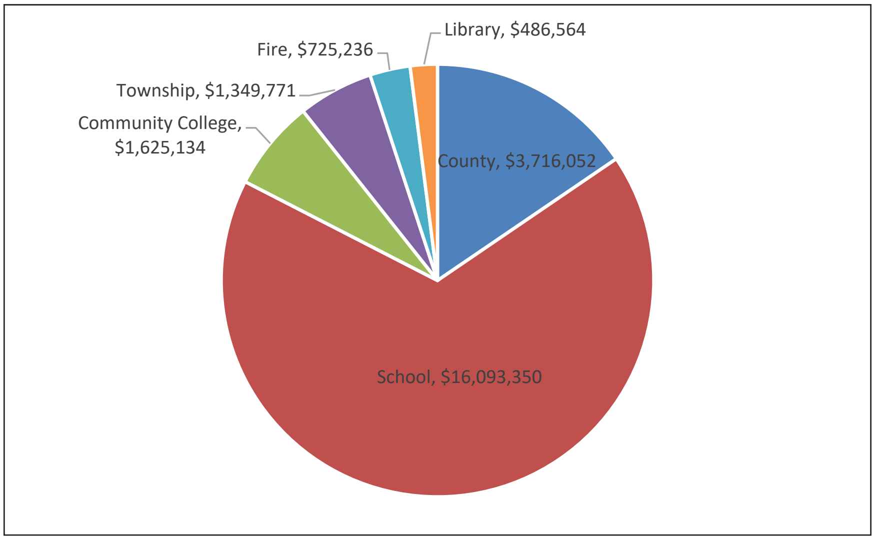
Earnings

- Over $3.9 million in new local earnings during construction for Ford County
- Over $21.9 million in new local earnings during construction for the State of Illinois
- Over $1.6 million in new local long-term earnings for Ford County annually
- Over $3.1 million in new local long-term earnings for the State of Illinois annually

Property Taxes

- Over $16.0 million in total school district revenue over the life of the Project
- Over $3.7 million in total county property taxes for Ford County over the life of the Project
- Over $23.9 million in property taxes in total for all taxing districts over the life of the Project

Figure 1 – Total Property Taxes Paid by the Gibson City Energy Center - Solar 2



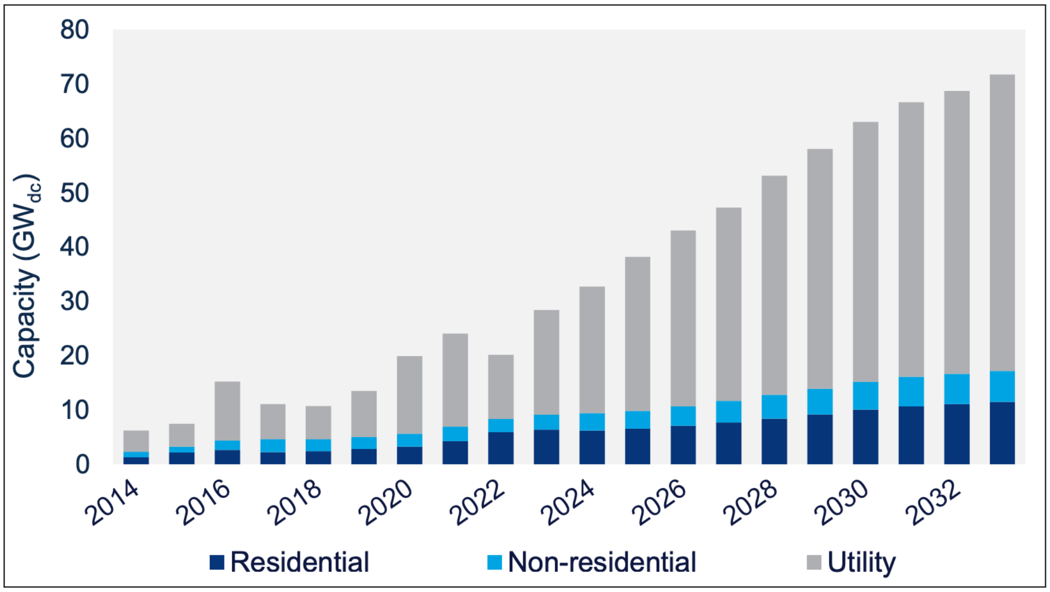
II. U.S. Solar PV Industry Growth and Economic Development

a. U.S. Solar PV Industry Growth

The U.S. solar industry is growing at a rapid but uneven pace. Solar energy systems are installed for onsite use, including residential, commercial and industrial properties, and utility-scale solar powered-electric generation facilities intended for wholesale distribution. The Gibson City Energy Center - Solar 2 is a utility-scale solar PV project intended for wholesale markets through the transmission grid. From 2013 to 2018, the amount of electricity generated from solar had more than quadrupled, increasing 444% (SEIA, 2020). The industry has continued to add increasing numbers of PV systems to the grid. In the first half of 2021, the U.S. installed over 11,000 MW direct current (MWdc) of solar PV driven mostly by utility-scale PV which exceeds most of the annual installations in the last decade. Figure 2 shows the historical capacity additions as well as the forecasted additions into 2033. The primary driver of this overall sharp pace of growth is large price declines in solar equipment. According to Figure 3, utility-scale solar fixed tilt and single-axis tracking have decreased from an average of $6/watt in 2010 to slightly more than $1/watt in 2022. Solar PV also benefits from the Federal Investment Tax Credit (ITC) which provides a tax credit for residential and commercial properties.

Utility-scale PV leads the installation growth in the U.S. Just under 12 GWdc of utility PV projects were completed in 2022. According to Figure 4, there are 90,300 MWdc of contracted utility-scale installations that have not been built yet.

Figure 2 – Annual U.S. Solar PV Installations, 2014 – 2033E



Source: Solar Energy Industries Association, Solar Market Insight Report 2022 Year in Review

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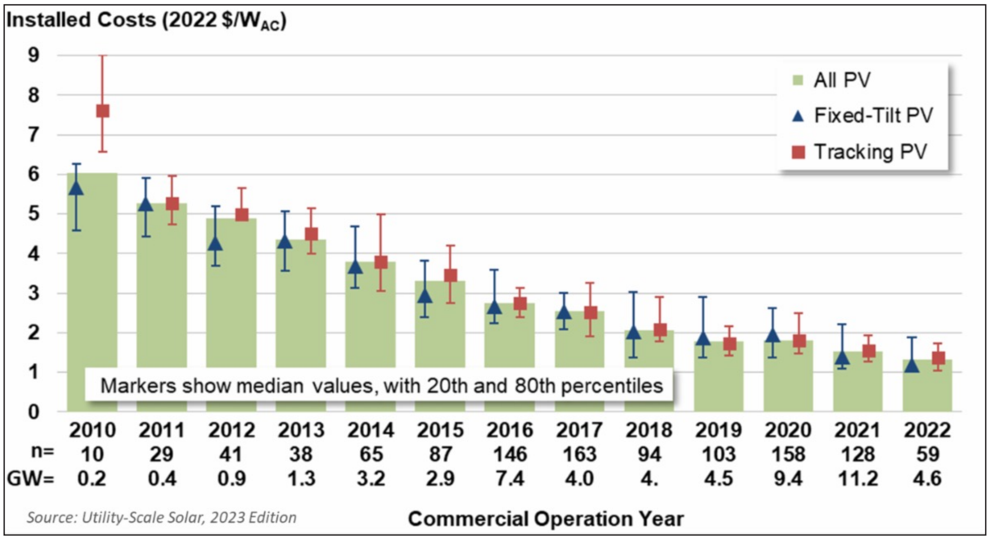
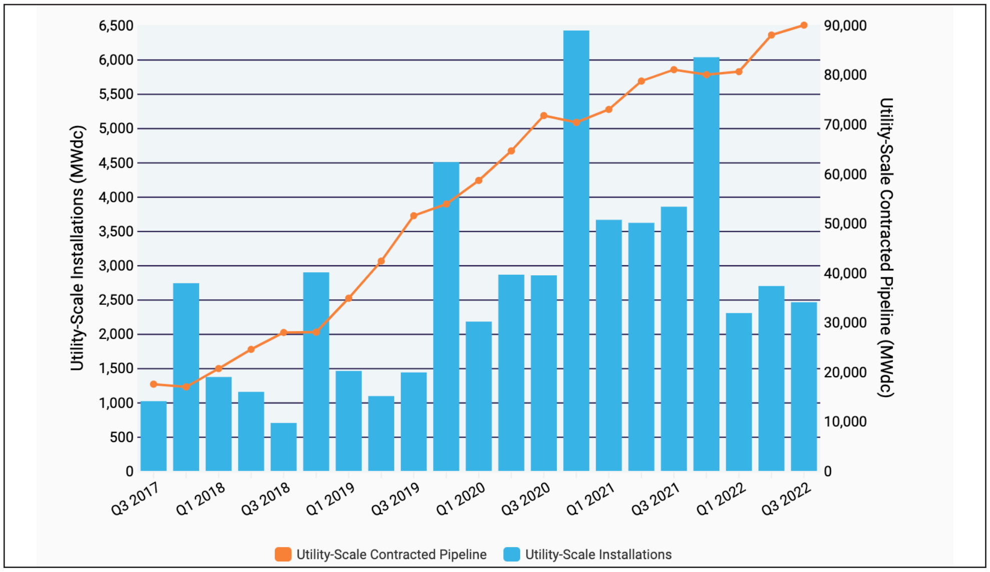
Figure 3 – Installed Costs of Utility-Scale Solar from 2010 to 2022 (adjusted for inflation)



Source: Lawrence Berkeley National Laboratory, Utility-Scale Solar, 2023 Edition

Figure 4 – U.S. Utility PV Installations vs. Contracted Pipeline



Source: Solar Energy Industries Association, Solar Market Insight Report Q4 2022

b. Illinois Solar PV Industry

According to SEIA, Illinois is ranked 15th in the U.S. in cumulative installations of solar PV. California, Texas, and Florida are the top 3 states for solar PV which may not be surprising because of the high solar irradiation that they receive. However, there are other states with similar solar irradiation to Illinois that rank highly, including New York (8th), New Jersey (9th), Virginia (10th), and Massachusetts (11th). In 2022, Illinois installed 571 MW of solar electric capacity bringing its cumulative capacity to 2,212 MW.

Illinois has great potential to expand its solar installations. Illinois has several utility-scale solar farms in operation, including Prairie Wolf Solar (200 MW) in Coles County; Big River Solar (149 MW) in White County; Amazon Solar (100 MW) in Lee County; Dressor Plains Solar (99 MW) in Fayette County; Prairie State Solar (99 MW) in Perry County; and Mulligan Solar (70 MW) in Logan County.[1] The 135 MW Gibson City Energy Center - Solar 2 will be one of the largest installations in Illinois to date.

There are 341 solar companies in Illinois including 73 manufacturers, 107 installers/developers, and 161 others.[2] Figure 5 shows the locations of solar companies in Illinois as of the time of this report. Currently, there are 5,652 solar jobs in the State of Illinois according to SEIA.

Figure 6 shows the Illinois historical installed capacity by year according to the SEIA. Huge growth was seen in 2021 and is forecasted to continue to grow in 2023 and beyond. Over the next five years, solar in Illinois is projected to grow by 6,959 MW.

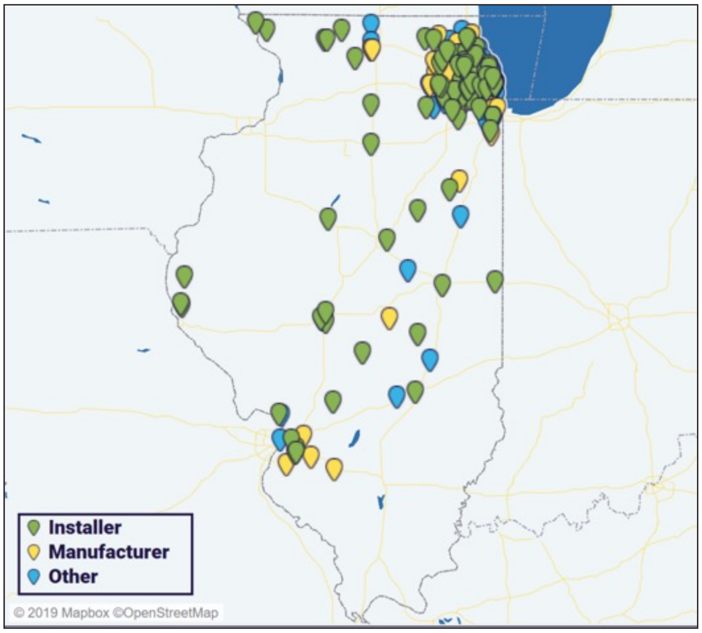
The Energy Information Administration (EIA) calculated the number of megawatt-hours generated from different energy sources in 2022. As shown in Figure 7, the greatest percentage of electricity generated in Illinois comes from nuclear energy with 52.1% followed by coal with 21.5% and natural gas with 12.8%. Approximately 0.9% of the total electricity power generated in Illinois came from solar thermal and solar PV in 2022.

The U.S. Department of Energy sponsors the U.S. Energy and Employment Report each year. Electric Power Generation covers all utility and non-utility employment across electric generating technologies, including fossil fuels, nuclear, and renewable technologies. It also includes employees engaged in facility construction, turbine and other generation equipment manufacturing, operations and maintenance, and wholesale parts distribution for all electric generation technologies. According to Figure 8, employment in Illinois in the solar energy industry (6,579) trails behind wind electric generation (9,285) but is larger than natural gas generation (4,340) and nuclear generation (4,099).

[1] The megawatts listed in this paragraph are MWac. To convert to MWdc, multiply the MWac by 1.3 to get the approximate MWdc capacity.

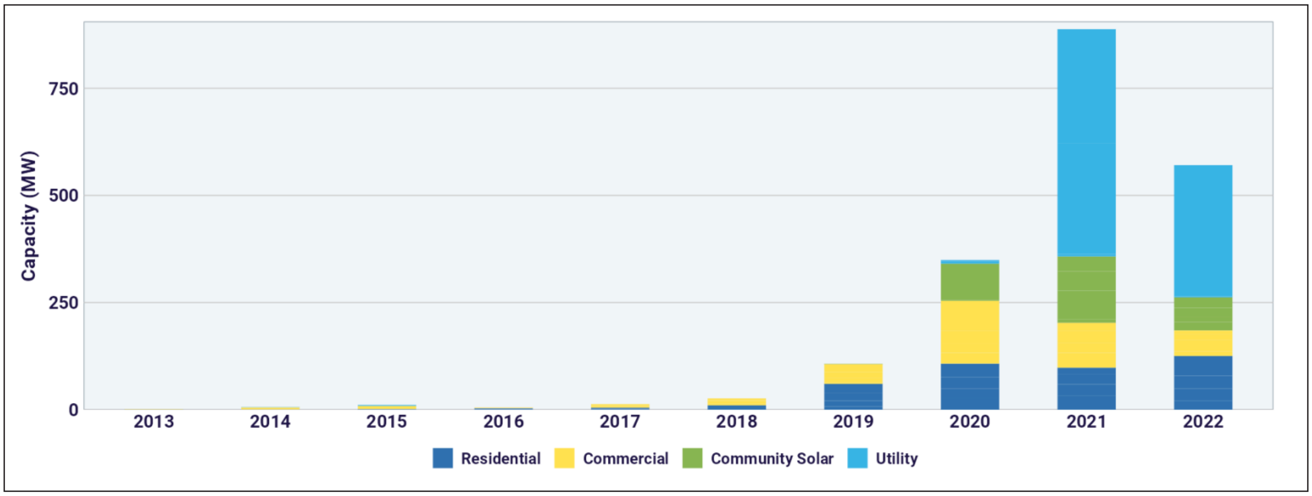
[2] "Other" includes Sales and Distribution, Project Management, and Engineering.

Figure 5 – Solar Company Locations in Illinois



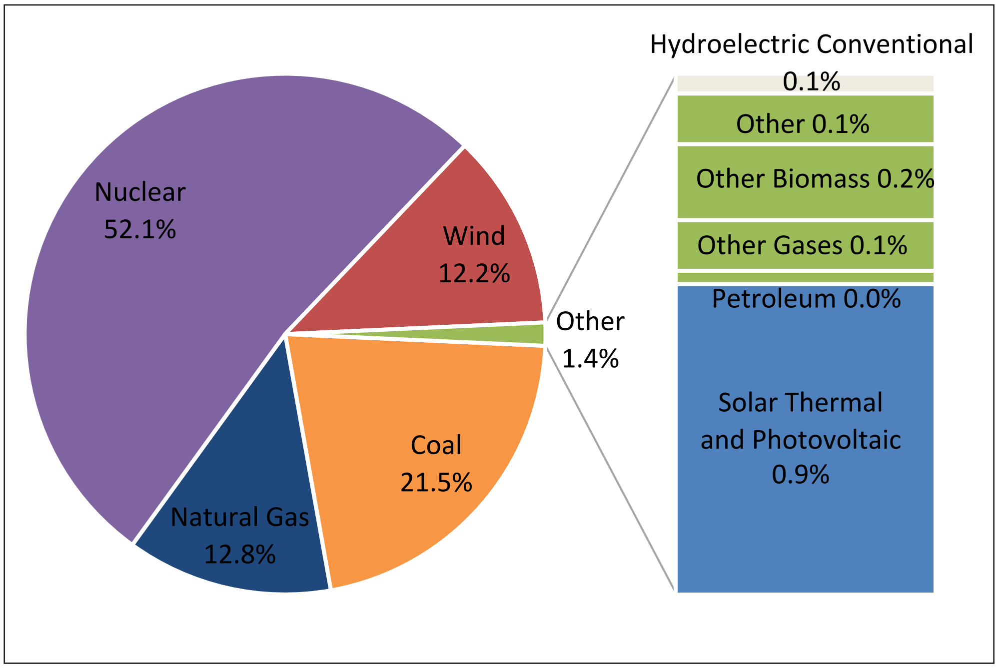
Source: Solar Energy Industries Association, Solar Spotlight: Illinois, Q2 2023

Figure 6 – Illinois Annual Solar Installations



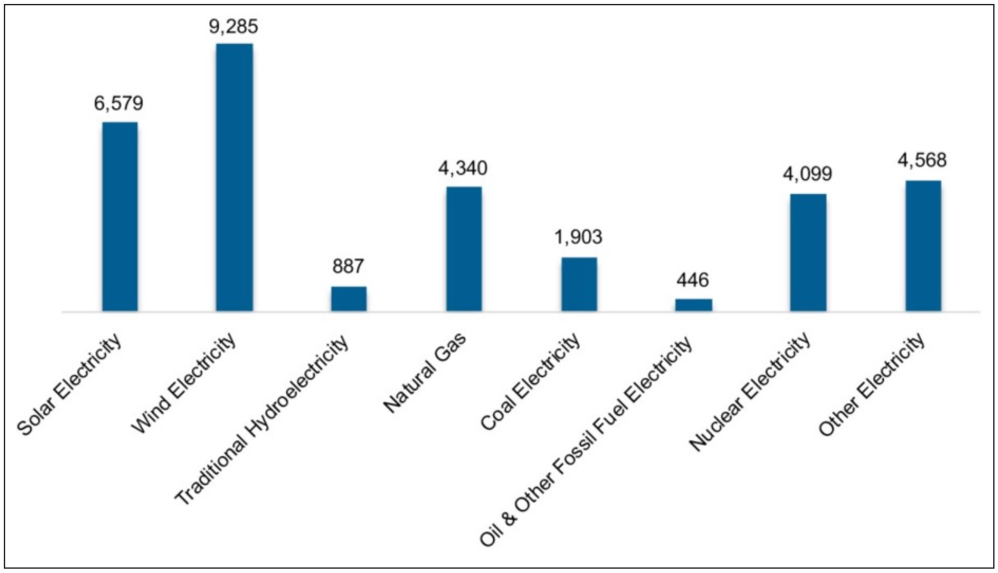
Source: Solar Energy Industries Association, Solar Spotlight: Illinois, Q2 2023

Figure 7 – Electric Generation by Fuel Type for Illinois in 2022



Source: U.S. Energy Information Association (EIA): Illinois, 2022

Figure 8 – Electric Generation Employment by Technology



Source: U.S. Energy and Employment Report 2023: Illinois

c. Economic Benefits of Utility-Scale Solar PV Energy

Utility-scale solar powered-electric generation facilities have numerous economic benefits. Solar PV installations create job opportunities in the local area during both the short-term construction phase and the long-term operational phase. In addition to the workers directly involved in the construction and maintenance of the solar energy project, numerous other jobs are supported through indirect supply chain purchases and the higher spending that is induced by these workers. Solar PV projects strengthen the local tax base and help improve county services, and local infrastructure, such as public roads.

Numerous studies have quantified the economic benefits of solar PV projects across the United States and have been published in peer-reviewed academic journals using the same methodology as this report. Some of these studies examine smaller-scale solar systems, and some examine utility-scale solar energy. Croucher (2012) uses NREL's Jobs and Economic Development Impacts ("JEDI") modeling methodology to find which state will receive the greatest economic impact from installing one hundred 2.5 kW residential systems. He shows that Pennsylvania ranked first supporting 28.98 jobs during installation and 0.20 jobs during operations. Illinois ranked second supporting 27.65 jobs during construction and 0.18 jobs during operations.

Jo et al. (2016) analyzes the financing options and economic impact of solar PV systems in Normal, IL and uses the JEDI model to determine the county and state economic impact. The study examines the effect of 100 residential retrofit fixed-mount crystalline-silicone systems having a nameplate capacity of 5kW. Eight JEDI models estimated the economic impacts using different input assumptions. They found that county employment impacts varied from 377 to 1,059 job-years during construction and 18.8 to 40.5 job-years during the operating years. Each job-year is a full-time equivalent job of 2,080 hours for a year.

More recently, Michaud et al., (2020) performed an analysis of the economic impact of utility-scale solar energy projects in the State of Ohio. They detail three scenarios: low (2.5 GW), moderate (5 GW) and high (7.5 GW). Using the JEDI model, they find that between 18,039 and 54,113 jobs would be supported during construction and between 207 and 618 jobs would be supported annually during operations. In addition, between $22.5 million and $67.5 million annually in tax revenues would come from these projects.

Loomis et al. (2016) estimates the economic impact for the State of Illinois if the state were to reach its maximum potential for solar PV. The study estimates the economic impact of three different scenarios for Illinois – building new solar installations of either 2,292 MW, 2,714 MW or 11,265 MW. The study assumes that 60% of the capacity is utility-scale solar, 30% of the capacity is commercial, and 10% of the capacity is residential. It was found that employment impacts vary from 26,753 to 131,779 job years during construction and from 1,223 to 6,010 job years during operating years.

Several other reports quantify the economic impact of solar energy. Bezdek (2006) estimates the economic impact for the State of Ohio and finds the potential for PV market in Ohio to be $25 million with 200 direct jobs and 460 total jobs. The Center for Competitive Florida (2009) estimates the impact if the state were to install 1,500 MW of solar and finds that 45,000 direct jobs and 50,000 indirect jobs could be created. The Solar Foundation (2013) uses the JEDI modeling methodology to show that Colorado's solar PV installation to date created 10,790 job-years. They also analyze what would happen if the state were to install 2,750 MW of solar PV from 2013 to 2030 and find that it would result in nearly 32,500 job years. Berkman et. al (2011) estimates the economic and fiscal impacts of the 550 MWac Desert Sunlight Solar Farm. The project creates approximately 440 construction jobs over a 26-month period, $15 million in new sales tax revenues, $12 million in new property revenues for Riverside County, CA, and $336 million in indirect benefits to local businesses in the county.

Finally, Jenniches (2018) performed a review of the literature assessing the regional economic impacts of renewable energy sources. After reviewing all of the different techniques for analyzing the economic impacts, he concludes "for assessment of current renewable energy developments, beyond employment in larger regions, IO [Input-Output] tables are the most suitable approach" (Jenniches, 2018, 48). Input-Output analysis is the basis for the methodology used in the economic impact analysis of this report.

III. Project Description and Location

a. Gibson City Energy Center - Solar 2

Earthrise Energy is developing the Gibson City Energy Center - Solar 2 in Ford County, Illinois. The Project consists of an estimated 135-megawatt alternative current (MWac) utility-scale solar powered-electric generation facility that will utilize photovoltaic (PV) panels installed on a single-axis tracking system. The total Project represents an investment in excess of $306 million.

b. Ford County, Illinois

Ford County is located in the eastern part of Illinois (see Figure 9). It has a total area of 486 square miles, and the U.S. Census estimates that the 2022 population was 13,249 with 6,265 housing units. The county has a population density of 28 (persons per square mile) compared to 232 for the State of Illinois (2020). Median household income in the county was $55,011 (U.S. Census Bureau, 2021).

Figure 9 – Location of Ford County, Illinois

i. Economic and Demographic Statistics

As shown in Table 1, the largest industries in the county are "Manufacturing" followed by "Health Care and Social Assistance," "Agriculture, Forestry, Fishing and Hunting," and "Administrative Government." These data for Table 1 come from IMPLAN covering the year 2021 (the latest year available).

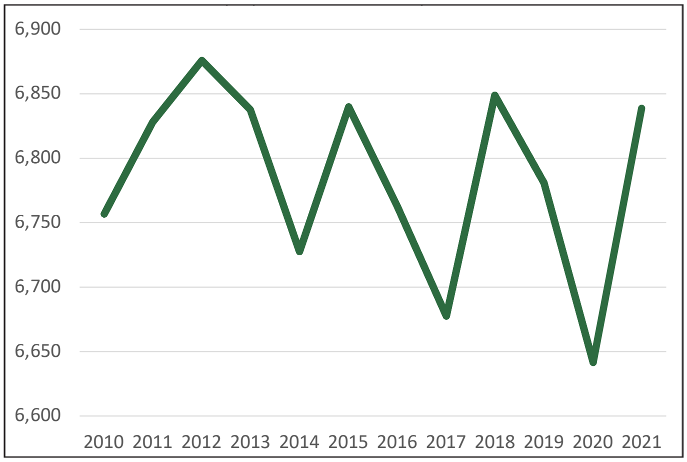
Table 1 provides the most recent snapshot of total employment but does not examine the historical trends within the county. Figure 10 shows employment from 2010 to 2021. Total employment in Ford County was at its highest at 6,876 in 2012 and its lowest at 6,642 in 2020 (BEA, 2023).

Table 1 – Employment by Industry in Ford County

Industry	Number	Percent
Manufacturing	816	13.2%
Health Care and Social Assistance	799	12.9%
Agriculture, Forestry, Fishing and Hunting	653	10.5%
Administrative Government	630	10.2%
Wholesale Trade	565	9.1%
Retail Trade	512	8.3%
Construction	367	5.9%
Other Services (except Public Administration)	342	5.5%
Accommodation and Food Services	306	4.9%
Administrative and Support and Waste Management and Remediation Services	229	3.7%
Professional, Scientific, and Technical Services	189	3.0%
Transportation and Warehousing	171	2.8%
Finance and Insurance	140	2.3%
Real Estate and Rental and Leasing	130	2.1%
Utilities	106	1.7%
Educational Services	58	0.9%
Arts, Entertainment, and Recreation	53	0.9%
Government Enterprises	42	0.7%
Information	37	0.6%
Management of Companies and Enterprises	35	0.6%
Mining, Quarrying, and Oil and Gas Extraction	15	0.2%

Source: Impact Analysis for Planning (IMPLAN), County Employment by Industry, 2021

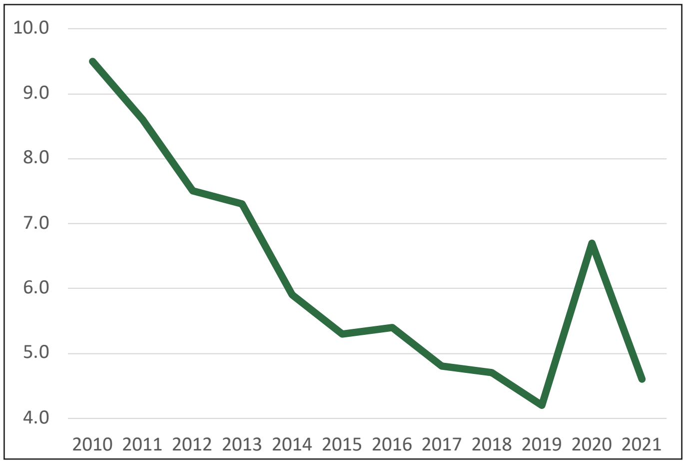
Figure 10 – Total Employment in Ford County from 2010 to 2021



Source: Bureau of Economic Analysis, Regional Data, GDP and Personal Income, 2010-2021

The unemployment rate signifies the percentage of the labor force without employment in the county. Figure 11 shows the unemployment rates from 2010 to 2021. Unemployment in Ford County was at its highest at 9.5% in 2010 and at its lowest at 4.2% in 2019 (FRED, 2023).

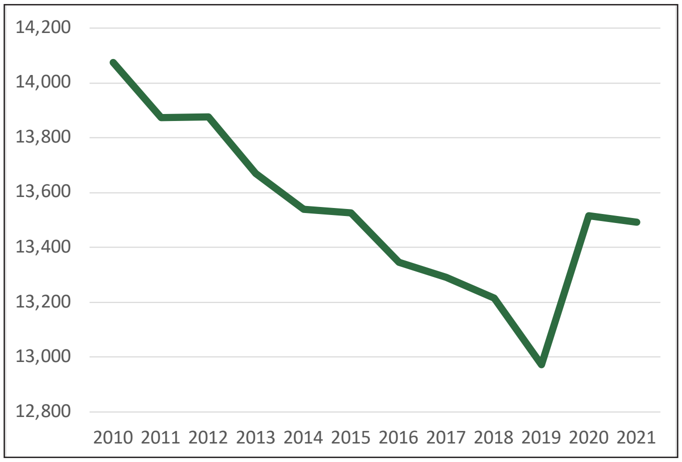
Figure 11 – Unemployment Rate in Ford County from 2010 to 2021



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Unemployment Rates, 2010-2021

The overall population in the county decreased significantly until 2019 when it began increasing, as shown in Figure 12. Ford County's population was at a high 14,076 in 2010 and hit a low of 12,972 in 2019, a decrease of 1,104 people in 9 years (FRED, 2023). The county's population rose to 13,491 by 2021.

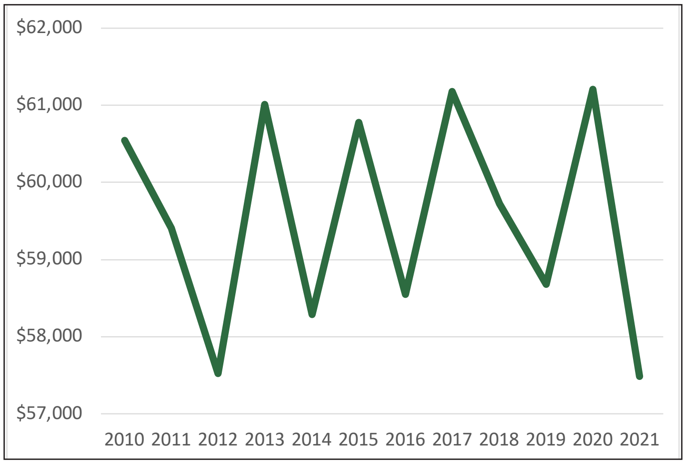
Figure 12 – Population in Ford County from 2010 to 2021



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Population Estimates, 2010-2021

Unlike the population trend, household income has fluctuated significantly in the county. Figure 13 shows the real median household income in Ford County from 2010 to 2021. Using the national Consumer Price Index (CPI), the nominal median household income for each year was adjusted to 2021 dollars. Household income was at its highest at $61,209 in 2020 and its lowest at $57,483 in 2021 (FRED, 2023).

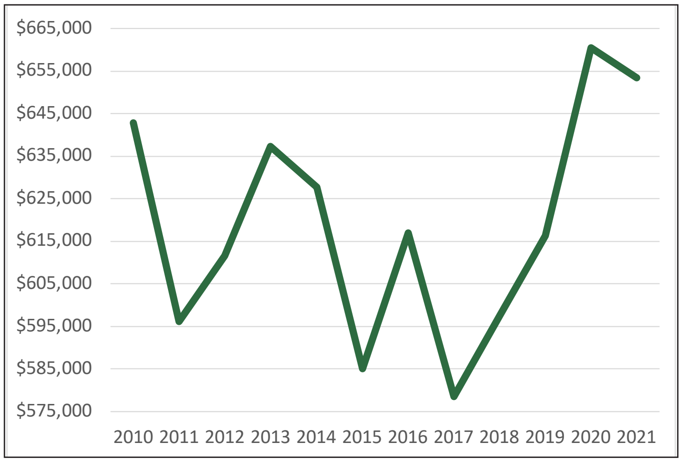
Figure 13 – Real Median Household Income in Ford County from 2010 to 2021



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Estimate of Median Household Income, 2010-2021

Real Gross Domestic Product (GDP) is a measure of the value of goods and services produced in an area and adjusted for inflation over time. The Real GDP for Ford County has fluctuated greatly since 2010, as shown in Figure 14 (BEA, 2023).

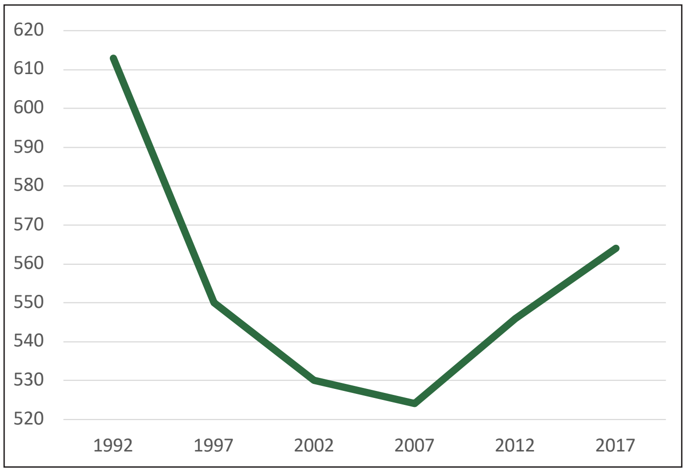
Figure 14 – Real Gross Domestic Product (GDP) in Ford County from 2010 to 2021



Source: Bureau of Economic Analysis, Regional Data, GDP and Personal Income, 2010-2021

The farming industry has fluctuated in Ford County. As shown in Figure 15, the number of farms hit a high of 613 in 1992 and a low of 524 in 2007. Since 2007, the number of farms in the county has increased.

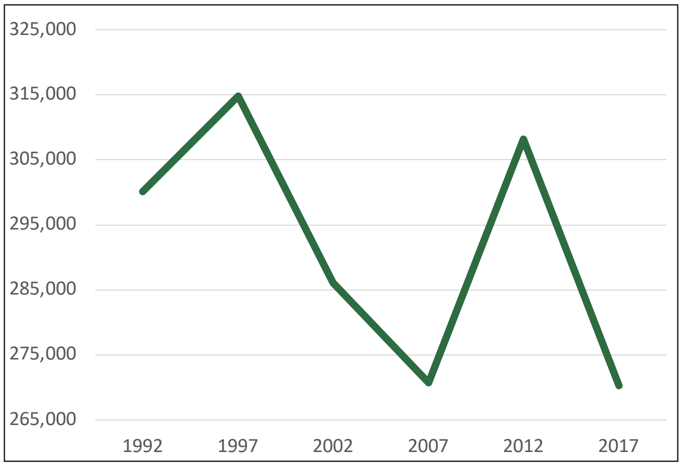
Figure 15 – Number of Farms in Ford County from 1992 to 2017



Source: USDA National Agricultural Statistics Service, Census of Agriculture, 1992-2017

The amount of land in farms has fluctuated greatly as well. The county farmland hit a high of 314,806 acres in 1997 and a low of 270,240 acres in 2017, according to Figure 16.

Figure 16 – Land in Farms in Ford County from 1992 to 2017



Source: USDA National Agricultural Statistics Service, Census of Agriculture, 1992-2017

ii. Agricultural Statistics

Illinois is ranked seventh among U.S. states in total value of agricultural products sold (Census, 2017). It is ranked twenty-fourth in the value of livestock and second in the value of crops (Census, 2017). In 2022, Illinois had 70,700 farms and 27 million acres in operation with the average farm being 382 acres (State Agricultural Overview, 2022). Illinois had 80 thousand cattle and produced 1.71 billion pounds of milk (State Agricultural Overview, 2022). In 2022, Illinois yields averaged 214 bushels per acre for corn with a total market value of $14.7 billion (State Agricultural Overview, 2022). Soybean yields averaged 63 bushels per acre with a total market value of $9.75 billion (State Agricultural Overview, 2022). The average net cash farm income per farm is $69,418 (Census, 2017).

In 2017, Ford County had 564 farms covering 270,240 acres for an average farm size of 479 acres (Census, 2017). The total market value of products sold was $190 million, with 17% coming from livestock sales and 83% coming from crop sales (Census, 2017). The average net cash farm income of operations was $95,812 (Census, 2017).

Solar energy projects are compatible with agricultural land use by benefiting the land while solar farms are in operation. Some of these benefits include increased pollination, improved soil quality, and increased future production from soil fallowing.

Recent research has shown that pollinating insects can help soybean yields and improvement in pollinator habitats has been shown to boost soybean production (Garibaldi et. al. 2021; de O. Milfant, 2013). Walston, et. al. (2018) shows the potential for agricultural benefits from pollinator habitats in the United States. Using native plant species in the land around solar projects can improve pollinator habitats which leads to increased yields, and the partial shading caused by solar panels can be quite beneficial to pollinators (Graham, et. al. 2021). Additionally, BRE (2014) shows that utility-scale solar can increase biodiversity.

Solar energy projects built on agricultural lands will allow the soil to rest for around 30 years. The U.S. Department of Energy (2022) states that “land can be reverted back to agricultural uses at the end of the operational life for solar installations. A life of a solar installation is roughly 20-25 years and can provide a recovery period, increasing the value of that land for agriculture in the future. Giving soil rest can also maintain soil quality and contribute to the biodiversity of agricultural land. Planting crops such as legumes underneath the solar installation can increase nutrient levels in the soil."

Several studies have shown that leaving the soil fallow for an extended period of time increases the productivity of the land when it is returned to crop production. Cusimano et. al. (2014) found that the use of land fallowing can induce significant improvements to soil quality and crop production in California. Kozak and Pudelko (2021) studied abandoned land in Poland and showed that fallowed land could be restored to agricultural production.

IV. Economic Impact Methodology

The economic analysis of the solar PV project presented uses IMPLAN (IMpact analysis for PLANning). IMPLAN software and data are managed and updated by the Minnesota IMPLAN Group, Inc., using data collected at federal, state, and local levels. IMPLAN is a leading provider of economic development software that is widely used by economists and economic development professionals. More information about IMPLAN can be found at http:/implan.com.

IMPLAN is an input-output model that measures the spending patterns and location-specific economic structures that reflect expenditures supporting varying levels of employment, income, and output. That is, IMPLAN takes into account that the output of one industry can be used as an input for another. For example, when a PV system is installed, there are both soft costs consisting of permitting, installation and customer acquisition costs, and hardware costs, of which the PV module is the largest component. The purchase of a module not only increases demand for manufactured components and raw materials, but also supports labor to build and install a module. When a module is purchased from a manufacturing facility, the manufacturer uses some of that money to pay employees. The employees use a portion of their compensation to purchase goods and services within their community. Likewise, when a developer pays workers to install the systems, those workers spend money in the local economy that boosts economic activity and employment in other sectors. The goal of economic impact analysis is to quantify all of those reverberations throughout the local and state economy.

The IMPLAN model utilizes county-specific and state-specific industry multipliers in the analysis. This study analyzes the gross jobs that the new solar energy project development supports and does not analyze the potential loss of jobs due to declines in other forms of electric generation.

The total economic impact can be broken down into three distinct types: direct impacts, indirect impacts, and induced impacts. **Direct impacts** during the construction period refer to the changes that occur in the onsite construction industries in which the direct final demand (i.e., spending on construction labor and services) change is made. Onsite construction-related services include installation labor, engineering, design, and other professional services. Direct impacts during operating years refer to the final demand changes that occur in the onsite spending for the solar operations and maintenance workers.

The initial spending on the construction and operation of the solar PV installation will create a second layer of impacts, referred to as "supply chain impacts" or "indirect impacts." **Indirect impacts** during the construction period consist of changes in inter-industry purchases resulting from the direct final demand changes and include construction spending on materials and PV equipment, as well as other purchases of goods and offsite services. Utility-scale solar PV indirect impacts include PV modules, invertors, tracking systems, cabling, and foundations.

Induced impacts during construction refer to the changes that occur in household spending as household income increases or decreases as a result of the direct and indirect effects of final demand changes. Local spending by employees working directly or indirectly on the Project that receive their paychecks and then spend money in the community is included. The model includes additional local jobs and economic activity that are supported by the purchases of these goods and services.

The majority of the jobs during construction are construction workers but there are other occupations involved as well. In addition, during operations, there are other occupations involved besides solar technicians. A sample of those occupations, the education/training needed, and wages percentiles is contained in Table 9 in the Appendix. A larger description of those occupations, their work environment, and future job growth is found in Table 10 in the Appendix.

V. Economic Impact Results

The economic impact results were derived from detailed project cost estimates supplied by Earthrise Energy. In addition, Earthrise Energy also estimated the percentages of project materials and labor that will be coming from within Ford County and the State of Illinois.

Two sets of models were produced to show the economic impact of the Gibson City Energy Center - Solar 2. The first set of models examines the construction costs and the second set of models examines the operating expenses. The first model uses the capital expenditures and the 2021 IMPLAN Ford County dataset. The second model uses the 2021 IMPLAN dataset for the State of Illinois and the same project costs. The third model uses the operating expenditures and the 2021 IMPLAN Ford County dataset. The fourth model uses the 2021 IMPLAN dataset for the State of Illinois and the same project costs. The latest dataset from IMPLAN and specific project cost data from the Gibson City Energy Center - Solar 2 are used and SER translated the project costs into IMPLAN sectors.

Tables 2 to 4 show the output from these models. Table 2 lists the total employment impact from the Gibson City Energy Center - Solar 2 for Ford County and the State of Illinois. Table 3 shows the impact on total earnings and Table 4 contains the impact on total output.

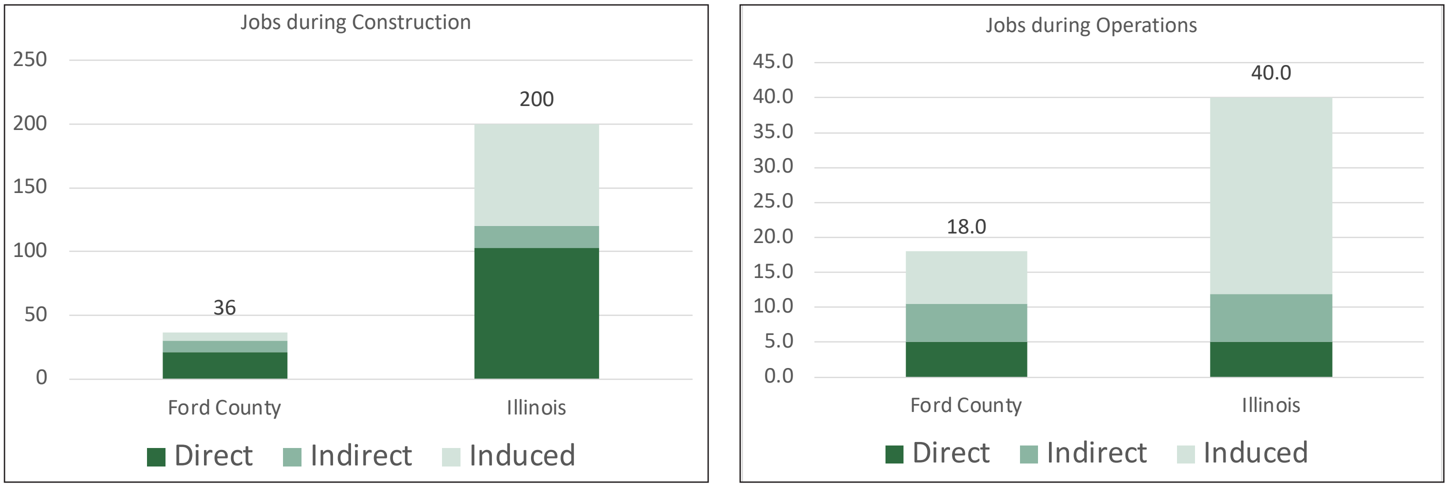
Table 2 – Total Employment Impact from the Gibson City Energy Center - Solar 2

	Ford County Jobs	State of Illinois Jobs
Construction		
Direct Impacts	21	103
Indirect Impacts	9	17
Induced Impacts	6	80
Local Jobs during Construction	36	200
Operations (Annual/Ongoing)		
Onsite Direct Impacts	5.0	5.0
Indirect Impacts	5.5	6.9
Induced Impacts	7.5	28.1
Local Long-Term Jobs	18.0	40.0

The results from the IMPLAN model show significant employment impacts from the Gibson City Energy Center - Solar 2. Employment impacts can be broken down into several different components. Direct jobs created during the construction phase typically last anywhere from 12 to 18 months depending on the size of the project; however, the direct job numbers present in Table 2 from the IMPLAN model are based on a full time equivalent (FTE) basis for a year. In other words, 1 job = 1 FTE = 2,080 hours worked in a year. A part time or temporary job would constitute only a fraction of a job according to the model. For example, the IMPLAN model results show 21 new direct jobs during construction in Ford County, though the construction of the solar center could involve closer to 42 workers working half-time for a year. Thus, due to the short-term nature of construction projects, IMPLAN often significantly understates the actual number of people hired to work on the project. It is important to keep this fact in mind when looking at the numbers or when reporting the numbers.

As shown in Table 2, new local jobs created or retained during construction total 36 for Ford County and 200 for the State of Illinois. New local long-term jobs created from the Gibson City Energy Center - Solar 2 total 18.0 for Ford County and 40.0 for the State of Illinois.

Figure 17 – Total Employment Impact from the Gibson City Energy Center - Solar 2



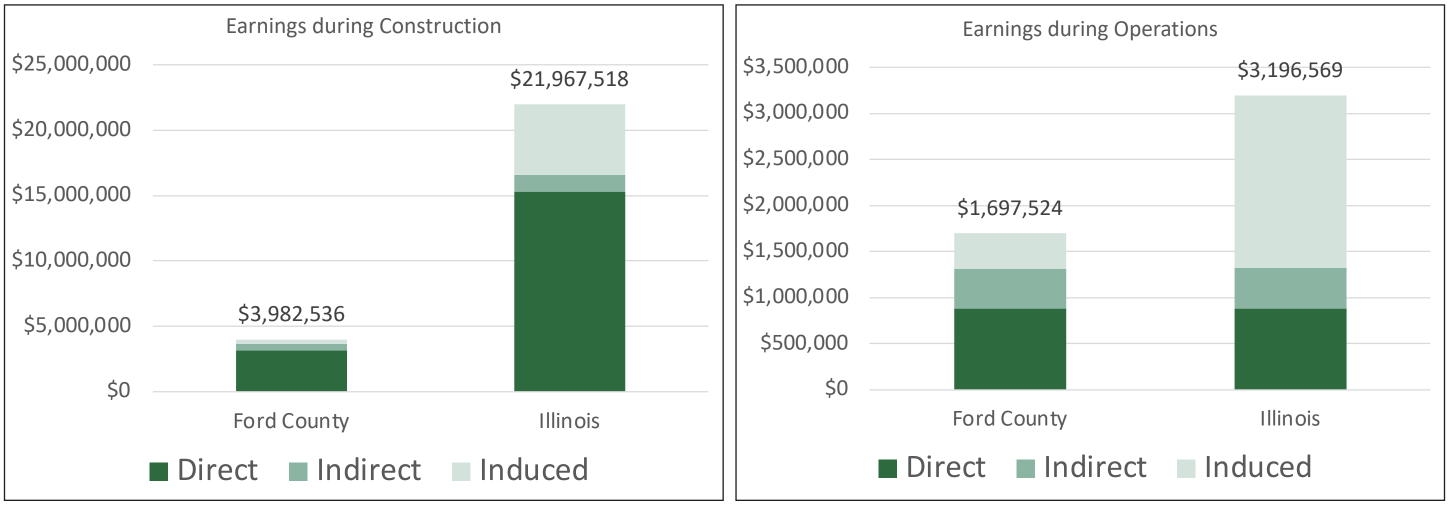
Direct jobs created during the operational phase last the life of the solar PV project, typically 20-30 years. Both direct construction jobs and operations and maintenance jobs require highly-skilled workers in the fields of construction, management, and engineering. For a list of occupations expected to be employed, their wages, benefits, total compensation, and hours worked, please see Tables 11 and 12 in the Appendix.

Accordingly, it is important to not just look at the number of jobs but also the earnings that they produce. Table 3 shows the earnings impacts from the Gibson City Energy Center - Solar 2, which are categorized by construction impacts and operations impacts. The new local earnings during construction totals over $3.9 million for Ford County and over $21.9 million for the State of Illinois. The new local long-term earnings totals over $1.6 million for Ford County and over $3.1 million for the State of Illinois.

Table 3 – Total Earnings Impact from the Gibson City Energy Center - Solar 2

	Ford County	State of Illinois
Construction		
Direct Impacts	$3,102,171	$15,266,045
Indirect Impacts	$555,597	$1,284,554
Induced Impacts	$324,768	$5,416,919
Local Earnings during Construction	$3,982,536	$21,967,518
Operations (Annual/Ongoing)		
Onsite Direct Impacts	$880,032	$880,032
Indirect Impacts	$427,627	$438,291
Induced Impacts	$389,865	$1,878,246
Local Long-Term Earnings	$1,697,524	$3,196,569

Figure 18 – Total Earnings Impact from the Gibson City Energy Center - Solar 2

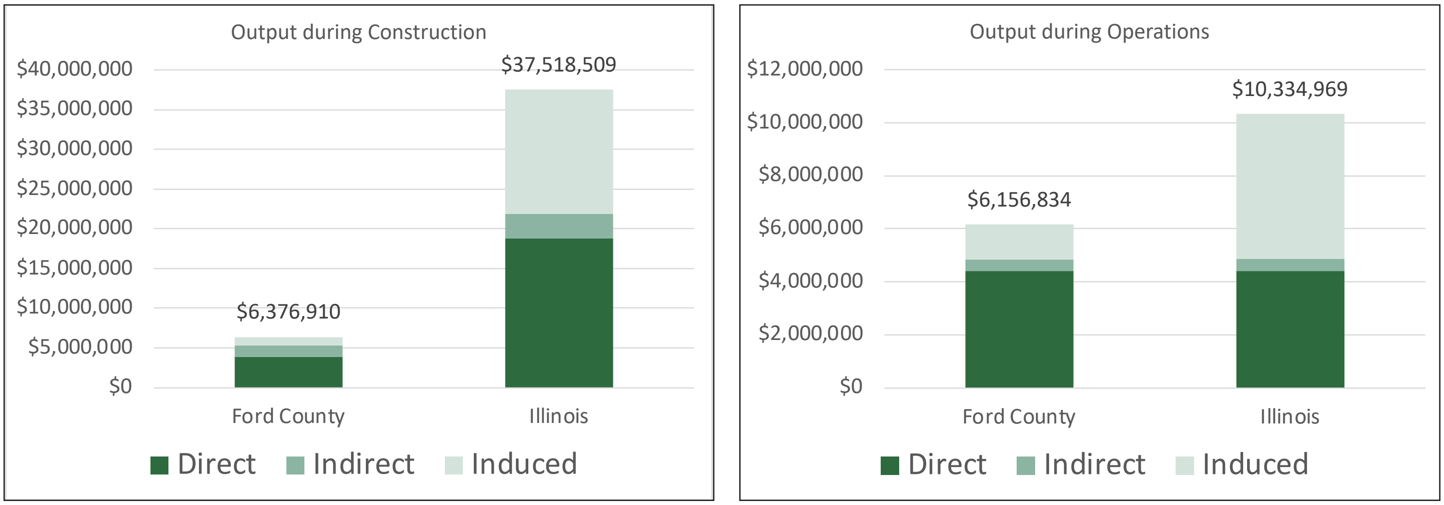


Output refers to economic activity or the value of production in the state or local economy. It is an equivalent measure to the Gross Domestic Product, which measures output on a national basis. According to Table 4, the new local output during construction totals over $6.3 million for Ford County and over $37.5 million for the State of Illinois. The new local long-term output totals over $6.1 million for Ford County and over $10.3 million for the State of Illinois.

Table 4 – Total Output Impact from the Gibson City Energy Center - Solar 2

	Ford County	State of Illinois
Construction		
Direct Impacts	$3,893,864	$18,752,885
Indirect Impacts	$1,373,398	$3,096,407
Induced Impacts	$1,109,648	$15,669,217
Local Output during Construction	$6,376,910	$37,518,509
Operations (Annual/Ongoing)		
Onsite Direct Impacts	$4,419,221	$4,419,221
Indirect Impacts	$420,450	$442,736
Induced Impacts	$1,317,163	$5,473,012
Local Long-Term Output	$6,156,834	$10,334,969

Figure 19 – Total Output Impact from the Gibson City Energy Center - Solar 2



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VI. Tax Revenue

Solar energy projects increase the property tax base of a county, creating a new revenue source for education and other local government services, such as fire protection, park districts, and road maintenance. New legislation, Public Act 100-0781, sets a uniform formula for the fair cash value of a solar farm that would be similar to the uniform formula used for wind farms. This bill was signed into law by Governor Rauner in August, 2018. According to this law, the fair cash value for a utility-scale solar farm in Illinois is $218,000 per megawatt of nameplate capacity beginning in 2018 and is annually adjusted for inflation and depreciation. The inflation adjustment, as known as the Trending Factor, increases each year according to the Bureau of Labor Statistics' Consumer Price Index for all cities for all items. Depreciation is allowed at 4% per year up to a maximum total depreciation of 70% of the trended real property cost basis (calculated by taking the fair cash value of the solar project and multiplying by the Trending Factor).

Tables 5 to 8 detail the tax implications of the Gibson City Energy Center - Solar 2. There are several important assumptions built into the analysis in these tables.

- First, the analysis assumes that the fair cash value of the solar farm is $218,000/MW on January 1, 2018 and adjusted annually for inflation.
- Second, the tables assume future inflation is constant at 2.4% and the depreciation is 4% until it reaches the maximum of 70%.
- Third, all tax rates are assumed to stay constant at their current rates. For example, the Ford County tax rate is assumed to stay constant at 1.22144% through 2060.
- Fourth, the analysis assumes that the Project is placed in service on January 1, 2026 at a fair cash value of $28.6 million and that the taxable value is 1/3 of the fair cash value.
- Fifth, it assumes that the Project is decommissioned in 35 years and pays no more taxes after that date.
- Sixth, no comprehensive tax payment was calculated, and these calculations are only to be used to illustrate the economic impact of the Project.

Figure 20 – Percentages of Property Taxes Paid to Taxing Jurisdictions

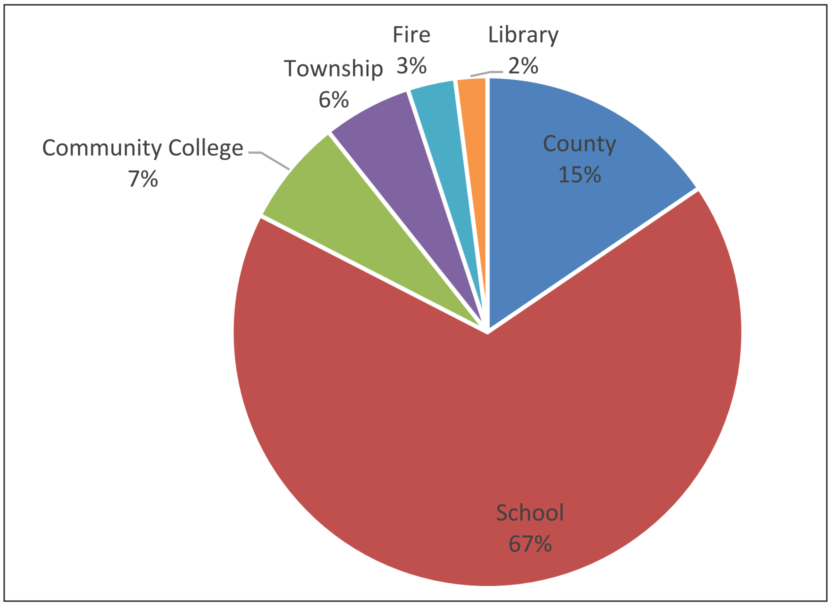

Table 5 – Total Property Taxes Paid by the Gibson City Energy Center - Solar 2

Year	Total Property Taxes
2026	$1,017,158
2027	$999,907
2028	$981,242
2029	$961,105
2030	$939,436
2031	$916,174
2032	$891,254
2033	$864,610
2034	$836,174
2035	$805,875
2036	$773,640
2037	$739,394
2038	$703,058
2039	$664,552
2040	$623,793
2041	$580,694
2042	$535,168
2043	$487,122
2044	$467,637
2045	$478,860
2046	$490,353
2047	$502,121
2048	$514,172
2049	$526,512
2050	$539,149
2051	$552,088
2052	$565,338
2053	$578,906
2054	$592,800
2055	$607,027
2056	$621,596
2057	$636,514
2058	$651,791
2059	$667,434
2060	$683,452
TOTAL	**$23,996,106**
AVG ANNUAL	**$685,603**

As shown in Table 5, a conservative estimate of the total property taxes paid by the Project starts out at over $1.0 million and declines due to depreciation (and offset by the trending factor) until it reaches the maximum depreciation in 2044. After that, the Project is fully depreciated, and the trending factor causes the taxable value and taxes to increase. The expected total property taxes paid over the 35-year lifetime of the Project are over $23.9 million, and the average annual property taxes paid will be over $685 thousand.

Table 6 shows an estimate of the likely taxes paid to Ford County, Drummer Township, Drummer Township Road & Bridge District, and Multi-Township Assessment District 3.

According to Table 6, the total amounts paid over 35 years are over $3.7 million for Ford County, over $804 thousand for Drummer Township, over $461 thousand for the Drummer Township Road & Bridge District, and over $82.9 thousand for the Multi-Township Assessment District 3 over the life of the Project.

Table 7 shows an estimate of the likely taxes paid to Parkland Junior College 505, Gibson City Fire District, and Moyer Library District.

According to Table 7, the total amounts paid over 35 years are over $1.6 million for Parkland Junior College 505, over $725 thousand for the Gibson City Fire District, and over $486 thousand for the Moyer Library District over the life of the Project.

Table 6 – Tax Revenue from the Gibson City Energy Center - Solar 2 for the County and Township[3]

Year	Ford County	Drummer Township	Drummer Township Road & Bridge District	Multi-Township Assessment District 3
2026	$157,518	$34,118	$19,581	$3,515
2027	$154,846	$33,539	$19,249	$3,456
2028	$151,956	$32,913	$18,890	$3,391
2029	$148,837	$32,238	$18,502	$3,322
2030	$145,482	$31,511	$18,085	$3,247
2031	$141,879	$30,731	$17,637	$3,166
2032	$138,020	$29,895	$17,158	$3,080
2033	$133,894	$29,001	$16,645	$2,988
2034	$129,490	$28,047	$16,097	$2,890
2035	$124,798	$27,031	$15,514	$2,785
2036	$119,806	$25,950	$14,893	$2,674
2037	$114,503	$24,801	$14,234	$2,555
2038	$108,876	$23,582	$13,535	$2,430
2039	$102,913	$22,291	$12,793	$2,297
2040	$96,601	$20,923	$12,009	$2,156
2041	$89,927	$19,478	$11,179	$2,007
2042	$82,876	$17,951	$10,303	$1,850
2043	$75,436	$16,339	$9,378	$1,684
2044	$72,419	$15,686	$9,003	$1,616
2045	$74,157	$16,062	$9,219	$1,655
2046	$75,936	$16,448	$9,440	$1,695
2047	$77,759	$16,842	$9,666	$1,735
2048	$79,625	$17,247	$9,898	$1,777
2049	$81,536	$17,660	$10,136	$1,820
2050	$83,493	$18,084	$10,379	$1,863
2051	$85,497	$18,518	$10,628	$1,908
2052	$87,549	$18,963	$10,883	$1,954
2053	$89,650	$19,418	$11,145	$2,001
2054	$91,801	$19,884	$11,412	$2,049
2055	$94,005	$20,361	$11,686	$2,098
2056	$96,261	$20,850	$11,966	$2,148
2057	$98,571	$21,350	$12,254	$2,200
2058	$100,937	$21,863	$12,548	$2,253
2059	$103,359	$22,387	$12,849	$2,307
2060	$105,840	$22,925	$13,157	$2,362
TOTAL	**$3,716,052**	**$804,885**	**$461,951**	**$82,935**
AVG ANNUAL	**$106,173**	**$22,997**	**$13,199**	**$2,370**

[3] The assumed tax rates are 1.22144% for Ford County, 0.26456% for Drummer Township, 0.15184% for the Drummer Township Road & Bridge District, and 0.02726% for the Multi-Township Assessment District 3.

Table 7 – Tax Revenue from the Gibson City Energy Center - Solar 2 for Other Taxing Bodies[4]

Year	Parkland Junior College 505	Gibson City Fire District	Moyer Library District
2026	$68,887	$30,742	$20,625
2027	$67,719	$30,220	$20,275
2028	$66,454	$29,656	$19,896
2029	$65,091	$29,048	$19,488
2030	$63,623	$28,393	$19,049
2031	$62,048	$27,690	$18,577
2032	$60,360	$26,936	$18,072
2033	$58,556	$26,131	$17,532
2034	$56,630	$25,272	$16,955
2035	$54,578	$24,356	$16,341
2036	$52,395	$23,382	$15,687
2037	$50,075	$22,347	$14,993
2038	$47,615	$21,249	$14,256
2039	$45,007	$20,085	$13,475
2040	$42,246	$18,853	$12,649
2041	$39,327	$17,550	$11,775
2042	$36,244	$16,174	$10,851
2043	$32,990	$14,722	$9,877
2044	$31,671	$14,133	$9,482
2045	$32,431	$14,473	$9,710
2046	$33,209	$14,820	$9,943
2047	$34,006	$15,176	$10,181
2048	$34,822	$15,540	$10,426
2049	$35,658	$15,913	$10,676
2050	$36,514	$16,295	$10,932
2051	$37,390	$16,686	$11,195
2052	$38,287	$17,086	$11,463
2053	$39,206	$17,496	$11,738
2054	$40,147	$17,916	$12,020
2055	$41,111	$18,346	$12,309
2056	$42,098	$18,787	$12,604
2057	$43,108	$19,237	$12,906
2058	$44,142	$19,699	$13,216
2059	$45,202	$20,172	$13,533
2060	$46,287	$20,656	$13,858
TOTAL	**$1,625,134**	**$725,236**	**$486,564**
AVG ANNUAL	**$46,432**	**$20,721**	**$13,902**

[4] The assumed tax rates are 0.53417% for Parkland Junior College 505, 0.23838% for Gibson City Fire District, and 0.15993% for Moyer Library District.

Table 8 – Tax Revenue from the Gibson City Energy Center - Solar 2 for the School District[5]

Year	Gibson City-Melvin-Sibley CUSD #5
2026	$682,172
2027	$670,602
2028	$658,084
2029	$644,579
2030	$630,047
2031	$614,446
2032	$597,733
2033	$579,864
2034	$560,793
2035	$540,472
2036	$518,853
2037	$495,886
2038	$471,516
2039	$445,692
2040	$418,356
2041	$389,451
2042	$358,918
2043	$326,696
2044	$313,628
2045	$321,155
2046	$328,862
2047	$336,755
2048	$344,837
2049	$353,113
2050	$361,588
2051	$370,266
2052	$379,153
2053	$388,252
2054	$397,570
2055	$407,112
2056	$416,883
2057	$426,888
2058	$437,133
2059	$447,624
2060	$458,367
TOTAL	**$16,093,350**
AVG ANNUAL	**$459,810**

[5] The assumed tax rate is 5.28977% for Gibson City-Melvin-Sibley CUSD #5.

The largest taxing jurisdictions for property taxes are local school districts. However, the tax implications for school districts are more complicated than for other taxing bodies. School districts receive state aid based on the assessed value of the taxable property within its district. As assessed value increases, the state aid to the school district is decreased.

Although the exact amount of the reduction in state aid to the school districts is uncertain, local project tax revenue is superior to relying on state aid for the following reasons: (1) the solar project can't relocate – it is a permanent structure that will be within the school district's footprint for the life of the Project; (2) the school district can raise the tax rate and increase its revenues as needed; (3) the school district does not have to deal with the year-to-year uncertainty of state aid amounts; (4) the school district does not have to wait for months (or even into the next Fiscal Year!) for payment; (5) the Project does not increase the overall cost of education in the way that a new residential development would.

Table 8 shows the direct property tax revenue coming from the Project to Gibson City-Melvin-Sibley CUSD #5. This tax revenue uses the assumptions outlined earlier to calculate the other tax revenue and assumes that 100% of the project area is in Gibson City-Melvin-Sibley CUSD #5. Over the 35-year life of the Project, the school district is expected to receive over $16.0 million in tax revenue.

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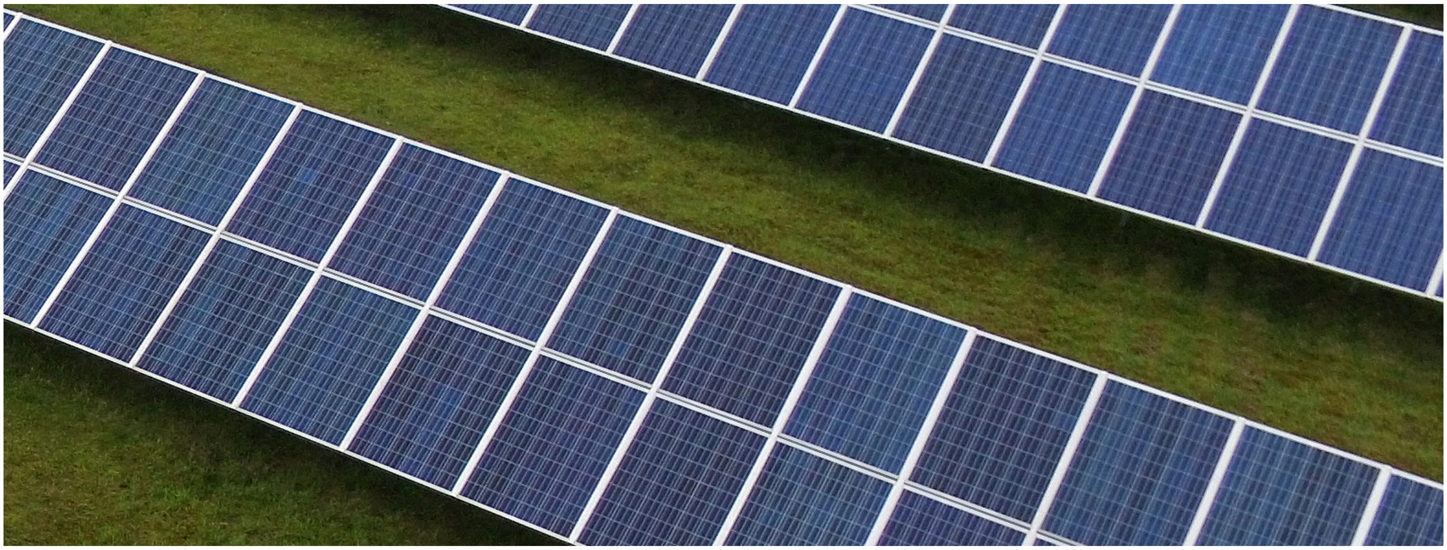
Having considered all these benefits, it is still important to determine the net impact of the solar energy project after taking into account the reduction in school funding from the State of Illinois. Determining the reduction in state aid is complicated by the fact that there is a new law for distributing state funds to education.

On August 31, 2017, Governor Rauner signed into law PA 100-0465 that fundamentally changes the way that the state distributes state aid to school districts. The "Evidence Based Funding" (EBF) consists of two parts – a Base Funding Minimum and a Tier Funding. The Base Funding Minimum is based on what the district received in the previous fiscal year. Some call this the "Hold Harmless" provision and ensures that there were no "losing" districts in the transition to the new funding formula. The Tier Funding is additional money and goes in higher portion to the districts that demonstrate a higher need under the new formula. Because of the "Hold Harmless" provision, no school district will see a reduction in their GSA from what they received in the year before the solar farm was installed. However, the higher EAV caused by the solar farm will reduce its eligibility for new money allocated in the state budget.

There are several sources of uncertainty with the new school funding formula concerning this new money. First, the total amount of new funding to be distributed over the ten years from the passage of the law is unknown at this point. It will be determined year-by-year in the state budget passed by the legislature and signed by the governor. For FY21, no new money was allocated for the school funding formula in the state budget. For FY 22, new money was restored in the state budget. Second, data for the formula funding changes each year based on the school's student population and its "need" and it is difficult to forecast its school's student population over time. Third, each school district is competing with all other school districts for this new funding and so the EAV and student population for all other school districts in the state will impact what a single school district receives. Fourth, the school district's EAV could also change due to other property changes in the district.

For FY23, Gibson City-Melvin-Sibley CUSD #5 had 93% adequacy and was assigned Tier 3 status and will receive $14,044 in "new money." As outlined in Table 8, there is no year in which the school district receives less than $313,628. If new money is allocated in the future, it is unlikely that this district will lose all of the "new money" and their EBF funding cannot go down from the previous year. Thus, the school district will receive a net positive flow of funds because of the solar project if "new money" remains the same.



VII. Appendix

Table 9 – Local and Statewide Compensation by Occupation

BLS Occupation Code	Job Type	Education/Training Required	Illinois 10th Percentile of Wages	Illinois 90th Percentile of Wages	Illinois Mean Wages	Bloomington, IL 10th Percentile of Wages	Bloomington, IL 90th Percentile of Wages	Bloomington, IL Mean Wages	US Fringe Benefits Median	Total Compensation Local mean wages plus US Fringe
	Jobs during Construction									
47-2231	Solar Photovoltaic Installers	High school diploma or equivalent	$36,030	$74,190	$46,860	#N/A	#N/A	#N/A	$27,394	#N/A
47-3013	Helpers – Electricians	High school diploma or equivalent	$24,960	$59,170	$39,820	#N/A	#N/A	#N/A	$27,394	#N/A
47-2111	Electricians	High school diploma or equivalent	$46,950	$116,340	$84,790	$46,400	$96,160	$75,340	$27,394	$102,734
47-2061	Construction Laborers	No formal educational credential	$36,250	$100,000	$65,590	$35,050	$90,240	$61,800	$27,394	$89,194
47-2073	Operating Engineers and Other Construction Equipment Operators	High school diploma or equivalent	$44,860	$112,220	$82,280	$43,160	$101,050	$82,070	$27,394	$109,464
47-1011	First-Line Supervisors of Construction Trades	High school diploma or equivalent	$49,790	$123,870	$89,470	$41,750	$106,380	$73,830	$27,394	$101,224
13-1082	Project Management Specialists and Business Operations Specialists		$52,840	$154,070	$99,210	$46,830	$130,080	$88,690	$27,394	$116,084
49-9071	Maintenance and Repair Workers, General (Operations)	High school diploma or equivalent	$30,210	$77,900	$52,160	$27,310	$76,040	$45,880	$27,394	$73,274
13-1111	Management Analysts	Bachelor's degree	$62,050	$176,900	$116,650	$62,920	$144,820	$97,230	$27,394	$124,624
11-1021	General and Operations Managers	Bachelor's degree	$42,200	$228,630	$124,510	$38,860	$194,490	$102,070	$27,394	$129,464
17-2071	Electrican Engineers		$64,910	$138,360	$101,210	$70,380	$128,920	$98,710	$27,394	$126,104
41-3091	Sales Representatives of Services		$36,600	$126,290	$74,130	$33,750	$97,860	$62,420	$27,394	$89,814
53-7062	Laborers and Freight, Stock and Material Movers	No formal educational credential	$27,970	$49,350	$37,710	$27,430	$44,410	$35,140	$27,394	$62,534
43-3031	Bookkeeping, Accounting and Auditing	Some college, no degree	$31,570	$72,800	$49,810	$29,500	$60,690	$44,600	$27,394	$71,994
	Jobs during Operations									
51-8013	Power Plant Operators	High school diploma or equivalent	$59,080	$123,480	$93,800	#N/A	#N/A	#N/A	$27,394	#N/A
37-3011	Landscaping and Groundskeeping	No formal educational credential	$28,290	$49,810	$38,940	$24,960	$51,370	$37,050	$27,394	$64,444
51-1011	First-Line Supervisors of Production and Operating Workers	High school diploma or equivalent	$40,680	$96,900	$67,080	$37,560	$98,160	$71,010	$27,394	$98,404

Table 10 – Occupational Description and Future Outlook

Occupation Code	Occupation Title	Description	Work Environment	Current Employment	Job Growth, 2021-2031 (percent)
11-1021	General and Operations Managers	Plan, direct, or coordinate the operations of public or private sector organizations, overseeing multiple departments or locations. Duties and responsibilities include formulating policies, managing daily operations, and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing, or administrative services. Usually manage through subordinate supervisors. Excludes First-Line Supervisors.	Top executives work in nearly every industry, for both small and large organizations. They often have irregular schedules, which may include working evenings and weekends. Travel is common, particularly for chief executives.	3,328,200	209,800 (7%)
13-1082	Project Management Specialists and Business Operations Specialists	Analyze and coordinate the schedule, timeline, procurement, staffing, and budget of a product or service on a per project basis. Lead and guide the work of technical staff. May serve as a point of contact for the client or customer. Excludes "Management Occupations" (11-0000), "Logisticians" (13-1081), "Meeting, Convention, and Event Planners" (13-1121), and "Production, Planning, and Expediting Clerks" (43-5061).	Project management specialists usually work in an office setting. Although project management specialists may collaborate on teams, some work independently. Project management specialists also may travel to their clients' places of business.	781,400	56,300 (7%)
13-1111	Management Analysts	Conduct organizational studies and evaluations, design systems and procedures, conduct work simplification and measurement studies, and prepare operations and procedures manuals to assist management in operating more efficiently and effectively. Includes program analysts and management consultants. Excludes "Computer Systems Analysts" (15-1211) and "Operations Research Analysts" (15-2031).	Management analysts may travel frequently to meet with clients. Some work more than 40 hours per week.	950,600	108,400 (11%)
17-2071	Electrican Engineers	Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Excludes "Computer Hardware Engineers" (17-2061).	Electrical and electronics engineers work in industries including research and development, engineering services, manufacturing, telecommunications, and the federal government. Electrical and electronics engineers generally work indoors in offices. However, they may have to visit sites to observe a problem or a piece of complex equipment.	303,800	9,800 (3%)
37-3011	Landscaping and Groundskeeping	Landscape or maintain grounds of property using hand or power tools or equipment. Workers typically perform a variety of tasks, which may include any combination of the following: sod laying, mowing, trimming, planting, watering, fertilizing, digging, raking, sprinkler installation, and installation of mortarless segmental concrete masonry wall units. Excludes "Farmworkers and Laborers, Crop, Nursery, and Greenhouse" (45-2092).	Most grounds maintenance work is done outdoors in all weather conditions. Some work is seasonal, available mainly in the spring, summer, and fall. The work may be repetitive and physically demanding, requiring frequent bending, kneeling, lifting, or shoveling.	1,299,000	61,300 (5%)
41-3091	Sales Representatives of Services	Sell services to individuals or businesses. May describe options or resolve client problems. Excludes "Advertising Sales Agents" (41-3011), "Insurance Sales Agents" (41-3021), "Securities, Commodities, and Financial Services Sales Agents" (41-3031), "Travel Agents" (41-3041), "Sales Representatives, Wholesale and Manufacturing" (41-4010), and "Telemarketers" (41-9041).	Wholesale and manufacturing sales representatives work under pressure because their income and job security depend on the amount of merchandise they sell. Some sales representatives travel frequently.	1,597,600	63,300 (4%)
43-3031	Bookkeeping, Accounting and Auditing	Compute, classify, and record numerical data to keep financial records complete. Perform any combination of routine calculating, posting, and verifying duties to obtain primary financial data for use in maintaining accounting records. May also check the accuracy of figures, calculations, and postings pertaining to business transactions recorded by other workers. Excludes "Payroll and Timekeeping Clerks" (43-3051).	Most accountants and auditors work full time. Overtime hours are typical at certain periods of the year, such as for quarterly audits or during tax season.	1,449,800	81,800 (6%)
47-1011	First-Line Supervisors of Construction Trades	Directly supervise and coordinate activities of construction or extraction workers.	N/A	735,500	29,900 (4%)

Table 10 – Occupational Description and Future Outlook (Cont.)

47-2061	Construction Laborers	Perform tasks involving physical labor at construction sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, and clean up rubble, debris, and other waste materials. May assist other craft workers. Construction laborers who primarily assist a particular craft worker are classified under "Helpers, Construction Trades" (47-3010). Excludes "Hazardous Materials Removal Workers" (47-4041).	Most construction laborers and helpers typically work full time and do physically demanding work. Some work at great heights or outdoors in all weather conditions. Construction laborers have one of the highest rates of injuries and illnesses of all occupations.	1,572,200	69,500 (4%)
47-2073	Operating Engineers and Other Construction Equipment Operators	Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. May repair and maintain equipment in addition to other duties. Excludes "Extraction Workers" (47-5000) and "Crane and Tower Operators" (53-7021).	Construction equipment operators may work even in unpleasant weather. Most operators work full time, and some have irregular work schedules that include nights.	466,900	22,000 (5%)
47-2111	Electricians	Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems. Excludes "Security and Fire Alarm Systems Installers" (49-2098).	Almost all electricians work full time. Work schedules may include evenings and weekends. Overtime is common.	711,200	50,200 (7%)
47-2231	Solar Photovoltaic Installers	Assemble, install, or maintain solar photovoltaic (PV) systems on roofs or other structures in compliance with site assessment and schematics. May include measuring, cutting, assembling, and bolting structural framing and solar modules. May perform minor electrical work such as current checks. Excludes solar PV electricians who are included in "Electricians" (47-2111) and solar thermal installers who are included in "Plumbers, Pipefitters, and Steamfitters" (47-2152).	Most solar panel installations are done outdoors, but PV installers sometimes work in attics and crawl spaces to connect panels to the electrical grid. Installers also must travel to jobsites.	17,100	4,600 (27%)
47-3013	Helpers – Electricians	Help electricians by performing duties requiring less skill. Duties include using, supplying, or holding materials or tools, and cleaning work area and equipment. Construction laborers who do not primarily assist electricians are classified under "Construction Laborers" (47-2061). Apprentice workers are classified with the appropriate skilled construction trade occupation (47-2011 through 47-2231).	Most construction laborers and helpers typically work full time and do physically demanding work. Some work at great heights or outdoors in all weather conditions. Construction laborers have one of the highest rates of injuries and illnesses of all occupations.	1,572,200	69,500 (4%)
49-9071	Maintenance and Repair Workers, General (Operations)	Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of a building in repair. Duties may involve pipe fitting; HVAC maintenance; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs. Excludes "Facilities Managers" (11-3013) and "Maintenance Workers, Machinery" (49-9043).	General maintenance and repair workers often carry out many different tasks in a single day. They could work at any number of indoor or outdoor locations. They may work inside a single building, such as a hotel or hospital, or be responsible for the maintenance of many buildings, such as those in an apartment complex or on a college campus.	1,539,100	76,300 (5%)
51-1011	First-Line Supervisors of Production and Operating Workers	Directly supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators. Excludes team or work leaders.	N/A	646,800	12,200 (2%)
51-8013	Power Plant Operators	Control, operate, or maintain machinery to generate electric power. Includes auxiliary equipment operators. Excludes "Nuclear Power Reactor Operators" (51-8011).	Most power plant operators, distributors, and dispatchers work full time. Many work rotating 8- or 12-hour shifts.	43,700	(6,500) (-15%)
53-7062	Laborers and Freight, Stock and Material Movers	Manually move freight, stock, luggage, or other materials, or perform other general labor. Includes all manual laborers not elsewhere classified. Excludes "Construction Laborers" (47-2061) and "Helpers, Construction Trades" (47-3011 through 47-3019). Excludes "Material Moving Workers" (53-7011 through 53-7199) who use power equipment.	Most hand laborers and material movers work full time. Because materials are shipped around the clock, some workers, especially those in warehousing, work overnight shifts.	6,473,000	358,300 (6%)

Table 11 – Occupational Output from IMPLAN Construction Model, Direct Jobs, Employment Greater than 1.0

Occ Code	Occupation	Wage and Salary Employment	Wage and Salary Income	Supplements to Wages and Salaries	Employee Compensation	Hours Worked
47-2000	Construction Trades Workers	10.20	$1,136,478.04	$209,710.35	$1,346,188.39	19,201.91
47-1000	Supervisors of Construction and Extraction Workers	1.47	$224,962.87	$41,511.62	$266,474.49	3,142.12
49-9000	Other Installation, Maintenance, and Repair Occupations	1.39	$150,640.11	$27,797.10	$178,437.21	2,696.19

Table 12 – Occupational Output from IMPLAN Construction Model, Indirect Jobs, Employment Greater than 1.0

Occ Code	Occupation	Wage and Salary Employment	Wage and Salary Income	Supplements to Wages and Salaries	Employee Compensation	Hours Worked
37-3000	Grounds Maintenance Workers	1.40	$40,898.49	$6,462.62	$47,361.10	2,380.49
47-2000	Construction Trades Workers	1.21	$54,460.66	$10,077.69	$64,538.35	2,269.59

VIII. Glossary

Bb

Battery Energy Storage Systems (BESS)

An array of hundreds or thousands of small batteries that enable energy from renewables, like solar and wind, to be stored and released at a later time.

Cc

Consumer Price Index (CPI)

An index of the changes in the cost of goods and services to a typical consumer, based on the costs of the same goods and services at a base period.

Dd

Direct impacts

During the construction period: the changes that occur in the onsite construction industries in which the direct final demand change is made.

During operating years: the final demand changes that occur in the onsite spending for the solar operations and maintenance workers.

Ee

Equalized Assessed Value (EAV)

The product of the assessed value of property and the state equalization factor. This is typically used as the basis for the value of property in a property tax calculation.

Ff

Farming profit

The difference between total revenue (price multiplied by yield) and total cost regarding farmland.

Full-time equivalent (FTE)

A unit that indicates the workload of an employed person. One FTE is equivalent to one worker working 2,080 hours in a year. One half FTE is equivalent to a half-time worker or someone working 1,040 hours in a year.

Hh

HV line extension

High-voltage electric power transmission links used to connect generators to the electric transmission grid.

Ii

IMPLAN (IMpact analysis for PLANning)

A business who is the leading provider of economic impact data and analytic applications. IMPLAN data is collected at the federal, state, and local levels and used to create state-specific and county-specific industry multipliers.

Indirect impacts

Impacts that occur in industries that make up the supply chain for that industry.

During the construction period: the changes in inter- industry purchases resulting from the direct final demand changes, including construction spending on materials and wind farm equipment and other purchases of good and offsite services.

During operating years: the changes in inter-industry purchases resulting from the direct final demand changes.

Induced impacts

The changes that occur in household spending as household income increases or decreases as a result of the direct and indirect effects of final demand changes.

Inflation

A persistent rise in the general level of prices related to an increase in the volume of money and resulting in the loss of value of currency. Inflation is typically measured by the CPI.

Mm

Median Household Income (MHI)

The income amount that divides a population into two equal groups, half having an income above that amount, and half having an income below that amount.

Millage rate

The tax rate, as for property, assessed in mills per dollar.

Multiplier

A factor of proportionality that measures how much a variable changes in response to a change in another variable.

MW

A unit of power, equal to one million watts or one thousand kilowatts.

MWac (megawatt alternating current)

The power capacity of a utility-scale solar PV system after its direct current output has been fed through an inverter to create an alternating current (AC). A solar system's rated MWac will always be lower than its rated MWdc due to inverter losses. AC is the form in which electric energy is delivered to businesses and residences and that consumers typically use when plugging electric appliances into a wall socket.

MWdc (megawatt direct current)

The power capacity of a utility-scale solar PV system before its direct current output has been fed through an inverter to create an alternating current. A solar system's rated MWdc will always be higher than its rated MWac.

Nn

Net economic impact

Total change in economic activity in a specific region, caused by a specific economic event.

Net Present Value (NPV)

Cash flow determined by calculating the costs and benefits for each period of investment.

National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impacts (JEDI) Model

An input-output model that measures the spending patterns and location-specific economic structures that reflect expenditures supporting varying levels of employment, income, and output.

Oo

Output

Economic output measures the value of goods and services produced in a given area. Gross Domestic Product is the economic output of the United States as a whole.

Pp

PV (photovoltaic) system

Solar modules, each comprising a number of solar cells, which generate electrical power.

Rr

Real Gross Domestic Product (GDP)

A measure of the value of goods and services produced in an area and adjusted for inflation over time.

Real-options analysis

A model used to look at the critical factors affecting the decision to lease agricultural land to a company installing a solar powered electric generating facility.

Ss

Stochastic

To have some randomness.

Tt

Tax rate

The percentage (or millage) of the value of a property to be paid as a tax.

Total economic output

The quantity of goods or services produced in a given time period by a firm, industry, county, or country.

Uu

Utility-scale solar

Solar powered-electric generation facilities intended for wholesale distribution typically over 5MW in capacity.

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X. Curriculum Vitae (Abbreviated)

David G. Loomis
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Education

Doctor of Philosophy, Economics, Temple University, Philadelphia, Pennsylvania, May 1995.

Bachelor of Arts, Mathematics and Honors Economics, Temple University, Magna Cum Laude, May 1985.

Experience

2011-present Strategic Economic Research, LLC
President

- Performed economic impact analyses on policy initiatives and energy projects such as wind energy, solar energy, natural gas plants and transmission lines at the county and state level.
- Provided expert testimony before state legislative bodies, state public utility commissions, and county boards.
- Wrote telecommunications policy impact report comparing Illinois to other Midwestern states.

1996-2023 Illinois State University, Normal, IL
Professor Emeritus – Department of Economics (2023 - present)
Full Professor – Department of Economics (2010-2023)
Associate Professor - Department of Economics (2002-2009)
Assistant Professor - Department of Economics (1996-2002)

- Taught Regulatory Economics, Telecommunications Economics and Public Policy, Industrial Organization and Pricing, Individual and Social Choice, Economics of Energy and Public Policy and a Graduate Seminar Course in Electricity, Natural Gas and Telecommunications Issues.
- Supervised as many as 5 graduate students in research projects each semester.
- Served on numerous departmental committees.

1997-2023 Institute for Regulatory Policy Studies, Normal, IL
Executive Director (2005-2023)
Co-Director (1997-2005)

- Grew contributing membership from 5 companies to 16 organizations.
- Doubled the number of workshop/training events annually.
- Supervised 2 Directors, Administrative Staff and internship program.
- Developed and implemented state-level workshops concerning regulatory issues related to the electric, natural gas, and telecommunications industries.

2006-2018 Illinois Wind Working Group, Normal, IL
Director

- Founded the organization and grew the organizing committee to over 200 key wind stakeholders
- Organized annual wind energy conference with over 400 attendees
- Organized strategic conferences to address critical wind energy issues
- Initiated monthly conference calls to stakeholders
- Devised organizational structure and bylaws

2007-2018 Center for Renewable Energy, Normal, IL
Director

- Created founding document approved by the Illinois State University Board of Trustees and Illinois Board of Higher Education.
- Secured over $150,000 in funding from private companies.
- Hired and supervised 4 professional staff members and supervised 3 faculty members as Associate Directors.
- Reviewed renewable energy manufacturing grant applications for Illinois Department of Commerce and Economic Opportunity for a $30 million program.
- Created technical "Due Diligence" documents for the Illinois Finance Authority loan program for wind farm projects in Illinois.
- Published 40 articles in leading journals such as AIMS Energy, Renewable Energy, National Renewable Energy Laboratory Technical Report, Electricity Journal, Energy Economics, Energy Policy, and many others
- Testified over 80 times in formal proceedings regarding wind, solar and transmission projects
- Raised over $7.7 million in grants
- Raised over $2.7 million in external funding

Bryan A. Loomis
Strategic Economic Research, LLC
Vice President

Education

Master of Business Administration (M.B.A.), Marketing and Healthcare, Belmont University, Nashville, Tennessee, 2017.

Experience

2019-present Strategic Economic Research, LLC, Bloomington, IL
Vice President
(2021-present)
Property Tax Analysis and Land Use Director
(2019-2021)

- Directed the property tax analysis by training other associates on the methodology and overseeing the process for over twenty states
- Improved the property tax analysis methodology by researching various state taxing laws and implementing depreciation, taxing jurisdiction millage rates, and other factors into the tax analysis tool
- Executed land use analyses by running Monte Carlo simulations of expected future profits from farming and comparing that to the solar lease
- Performed economic impact modeling using JEDI and IMPLAN tools
- Improved workflow processes by capturing all tasks associated with economic modeling and report-writing, and created automated templates in Asana workplace management software

2019-2021 Viral Healthcare Founders LLC, Nashville, TN
CEO and Founder

- Founded and directed marketing agency for healthcare startups
- Managed three employees
- Mentored and worked with over 30 startups to help them grow their businesses
- Grew an email list to more than 2,000 and LinkedIn following to 3,500
- Created a Slack community and grew to 450 members
- Created weekly video content for distribution on Slack, LinkedIn and Email

Christopher Thankan
Strategic Economic Research, LLC
Economic Analyst

Education

Bachelor of Science in Sustainable & Renewable Energy (B.S.), Minor in Economics, Illinois State University, Normal, IL, 2021

Experience

2021-present Strategic Economic Research, LLC, Bloomington, IL
Economic Analyst

- Create economic impact results on numerous renewable energy projects Feb 2021-Present
- Utilize IMPLAN multipliers along with NREL's JEDI model for analyses
- Review project cost Excel sheets
- Conduct property tax analysis for different US states
- Research taxation in states outside research portfolio
- Complete ad hoc research requests given by the president
- Hosted a webinar on how to run successful permitting hearings
- Research school funding and the impact of renewable energy on state aid to school districts
- Quality check coworkers JEDI models
- Started more accurate methodology for determining property taxes that became the main process used

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