Strategic Economic Research, LLC

ECONOMIC IMPACT ANALYSIS FOR THE HERITAGE PRAIRIE WIND PROJECT IN LIVINGSTON COUNTY, ILLINOIS

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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 Loomis 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 he has 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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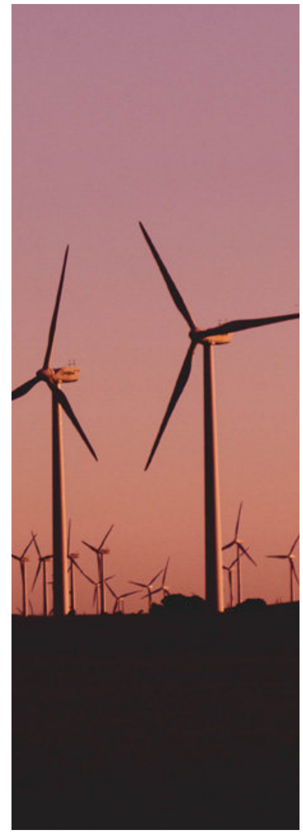

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I. Executive Summary

Pattern Energy and ConnectGen are developing the Heritage Prairie Wind Project in Livingston County, Illinois. The purpose of this report is to evaluate the economic impact of this Project on Livingston 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 Heritage Prairie Wind Project consists of an estimated 319.5 megawatts ("MW") of capacity of wind turbines in Livingston County and 297.0 MW in Kankakee County including the associated access roads, transmission and communication equipment, storage areas, and control facilities (the "Project"). For this report, only the portion of the Project that will be built in Livingston County was evaluated for economic impact purposes. The Project represents an investment of over $620 million in Livingston County. The total investment in Livingston County is anticipated to result in the following:

Jobs

- 69 new direct, indirect, and induced jobs during construction for Livingston County
- 1,353 new direct, indirect, and induced jobs during construction for the State of Illinois
- 26.8 new long-term direct, indirect, and induced jobs for Livingston County
- 41.3 new long-term direct, indirect, and induced jobs for the State of Illinois

Earnings

- Over $17.6 million in new earnings during construction for Livingston County
- Over $136 million in new earnings during construction for the State of Illinois
- Over $5.0 million in new long-term earnings for Livingston County annually
- Over $5.5 million in new long-term earnings for the State of Illinois annually

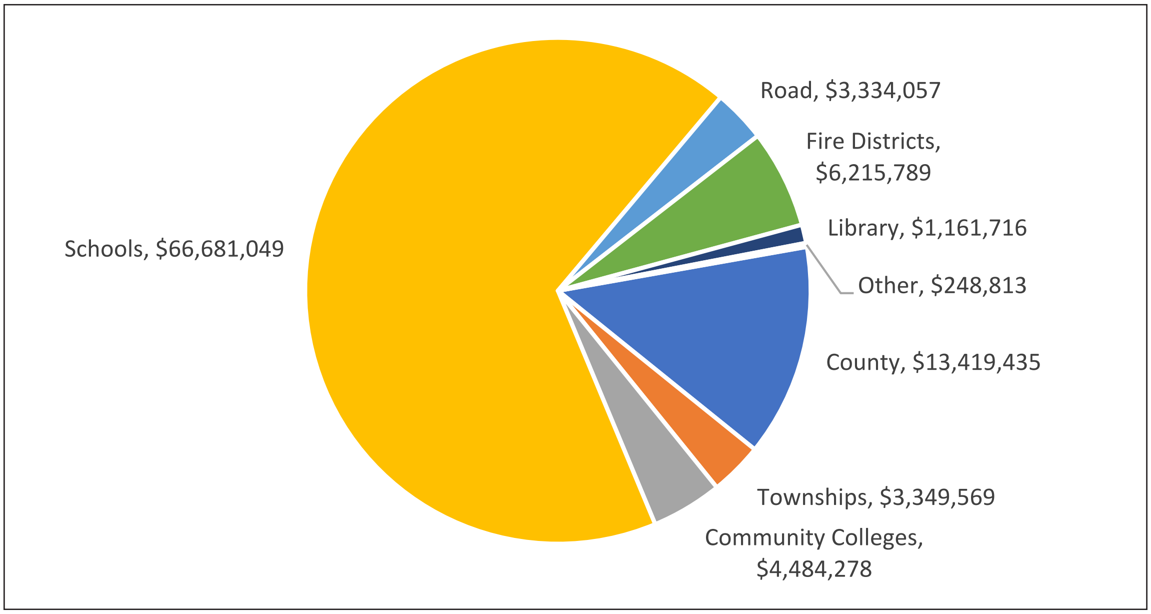
Output - the value of production in the state or local economy. It is an equivalent measure to the Gross Domestic Product.

- Over $17.6 million in new output during construction for Livingston County
- Over $365 million in new output during construction for the State of Illinois
- Over $8.3 million in new long-term output for Livingston County annually
- Over $12.6 million in new long-term output for the State of Illinois annually

Tax Benefits

- Over $98.8 million in property taxes in total for all taxing districts over the life of the Project
- Over $66.6 million in total school district property taxes over the life of the Project
- Over $13.4 million in total county property taxes for Livingston County over the life of the Project
- Over $6.2 million in total fire district property taxes over the life of the Project
- Over $4.4 million in total community college property taxes over the life of the Project

Figure 1 – Total Property Taxes Paid by the Livingston-Heritage Prairie Wind Project



II. Wind Industry Growth and Economic Development

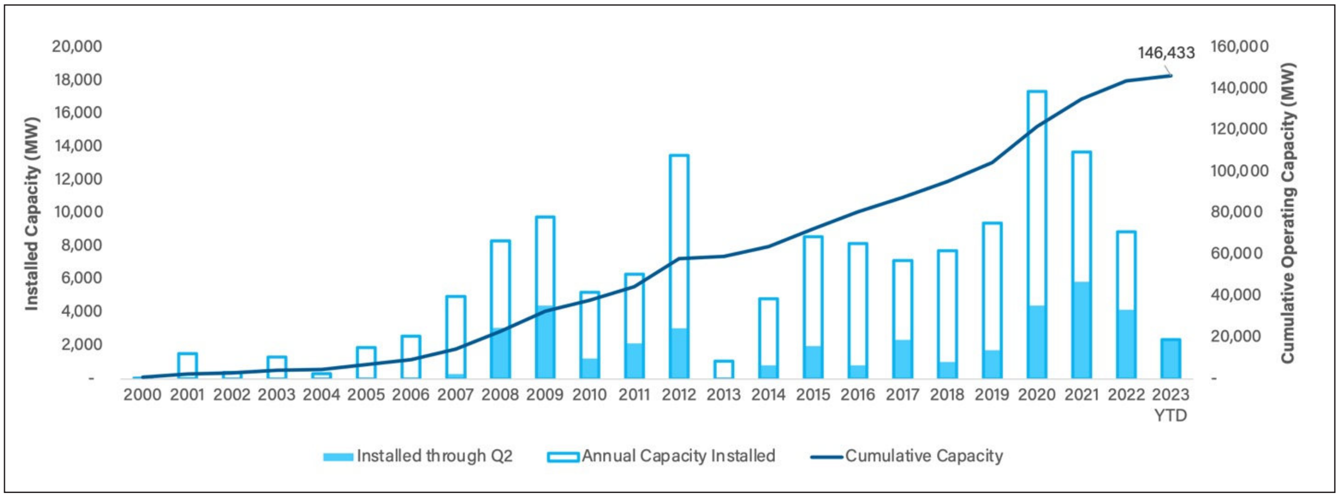
a. United States Wind Industry Growth

The United States wind industry grew at a rapid pace from 2006-2020, pausing only in 2013 due to federal policy uncertainty. In 2020, the U.S. set a record of 16,913 MW far surpassing the previous annual peak of 13,131 MW of wind power installed in 2012 (American Clean Power (ACP), 2021). The total wind capacity installed in 2021 was 13,400 MW (ACP, 2022). In 2022, there was a total capacity of 8,511 MW installed which is about equal to the 2015-2019 annual installation amounts (ACP, 2023).

The total amount of wind capacity in the U.S. by the end of 2022 was 144,184 MW (ACP, 2023). China is the global leader with 333,998 MW of installed capacity, with Germany in third place with 58,958 MW of installed capacity (2022 figures with the United States in second place) (GWEC, 2023). Figure 2 shows the growth in installed annual capacity and cumulative capacity in the U.S., and Figure 3 shows the state-by-state breakdown of installed capacity by the end of 2022.

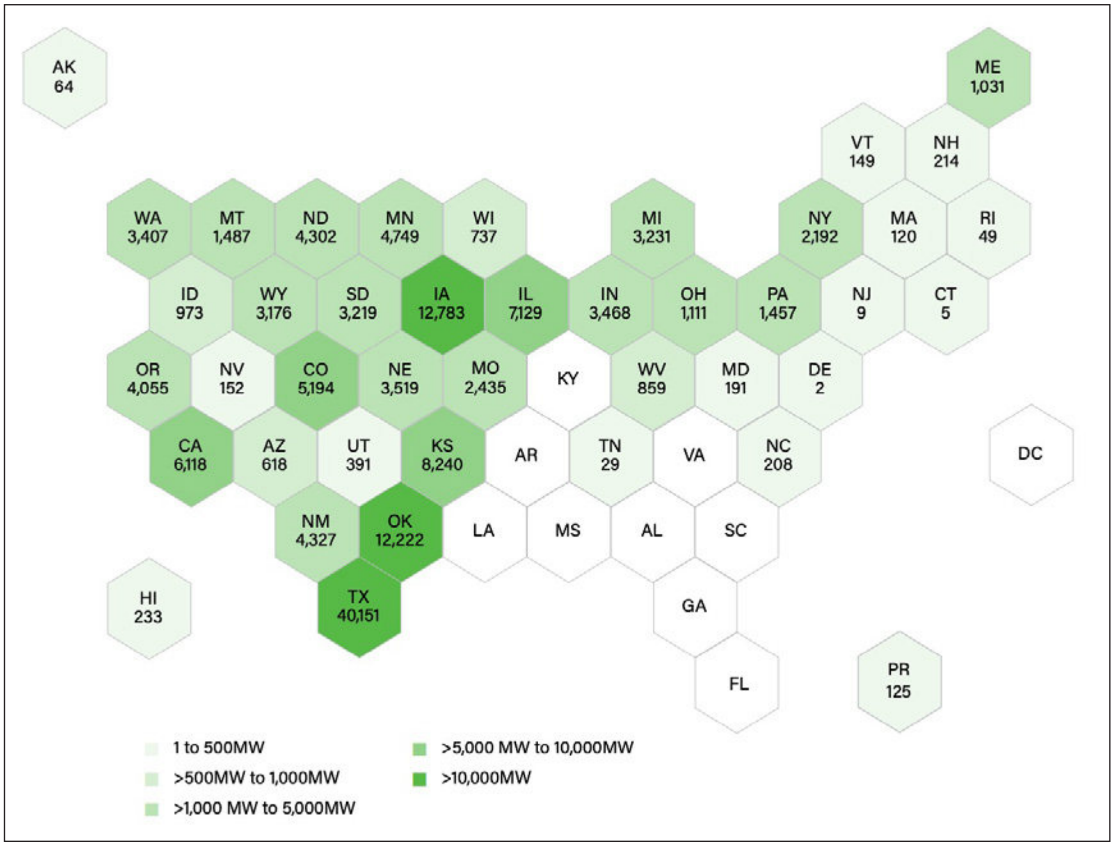
Several factors have spurred the continued growth of wind energy in recent years. First, new technology and rigorous competition among turbine manufacturers lowered the cost of wind turbines. Second, larger capacity wind turbines and higher hub heights produced more output and lowered the cost of wind energy production. Finally, several large corporate buyers increased the demand for wind energy beyond the traditional electric utility market.

Figure 2 – United States Annual and Cumulative Wind Power Capacity Growth



Source: ACP, Clean Power Market Report Q3 2023

Figure 3 – Total Wind Capacity by State



Source: ACP, Clean Power Annual Market Report 2022

b. Illinois Wind Industry Growth

Table 1 - Illinois Wind Projects

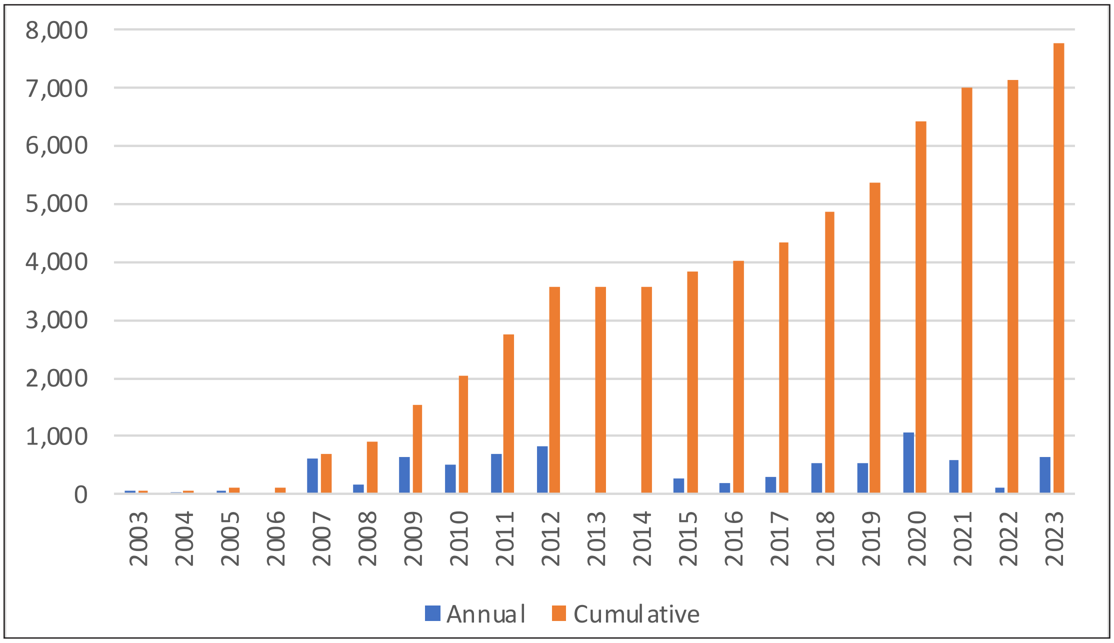
Wind Farm	Capacity (MW)	Year Online
Alta Farms	200.5	2023
Bennington	93.1	2021
Big Sky Wind Facility	250.3	2011
Bishop Hill	424.5	2012
Blooming Grove	260.9	2020
Bright Stalk Wind Farm	205.2	2019
California Ridge	217.1	2012
Camp Grove	150	2007
Cardinal Point	150	2020
Crescent Ridge	61	2005
EcoGrove	100.5	2009
Ford Ridge	120.4	2022
Glacier Sands	184.9	2021
Grand Ridge	210	2008
Green River	194.3	2019
Harvest Ridge Wind Farm	199.8	2020
HillTopper	185	2018
Hoopeston Wind	98	2015
Kelly Creek	184	2016
Lee/DeKalb	217.5	2009
Lincoln Land	301.7	2021
Lone Tree	88.1	2020
Mendota Hills Wind Farm	76.1	2019
Minonk	200	2012
Otter Creek	158.2	2020
Pilot Hill	175.1	2015
Pioneer Trail Wind Farm	150.4	2011
Providence Heights Wind Farm	72	2008
Radford's Run	305.8	2017
Rail Splitter	100.5	2009
Sapphire Sky	253.8	2023
Settlers Trail Wind Farm	150.4	2011
Shady Oaks	109.5	2012
Streator Cayuga Ridge Wind	300	2010
Sugar Creek	202	2020
Top Crop Wind Farm	300	2009
Twin Groves	396	2007
Walnut Ridge	212	2018
White Oak Energy Center	150	2011
Whitney Hill	66.1	2019

Illinois is a national leader in the wind energy industry (American Clean Power, 2024). As of January 2024, Illinois is ranked 5th in the United States in existing wind, solar, and energy storage capacity with over 8,643 MW (ACP, 2024). Table 1 has a list of the operational wind farms in Illinois through 2023 (some small projects below 50 MW were omitted from the table). The year-by-year and cumulative growth in Illinois' wind energy capacity is shown in Figure 4. In 2009, Illinois had sixteen projects completed with an annual total installed capacity of 638.3 MW. Eight projects were completed in 2012 with an annual total installed capacity of 823.3 MW. Growth exploded in 2020 with six projects completed with the largest total annual installed capacity of 1,059 MW.

The Energy Information Administration (EIA) calculated the number of megawatt-hours generated from different energy sources in 2022. As shown in Figure 5, 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 12.2% of the total electricity power generated in Illinois came from wind in 2022.

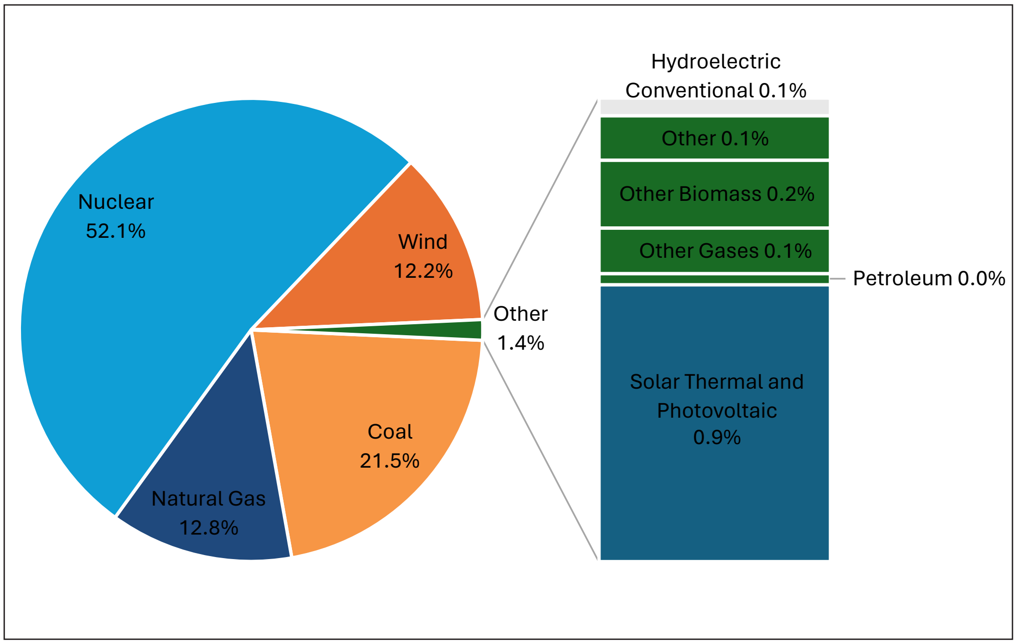
The U.S. Department of Energy sponsors the U.S. Energy and Employment Report each year. Electric Power Generation covers all utility and non-utility employment across electric generating technologies, including fossil fuels, nuclear, and renewable technologies. It also includes employees engaged in facility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

Figure 4 – Installed Capacity of Illinois Wind Projects



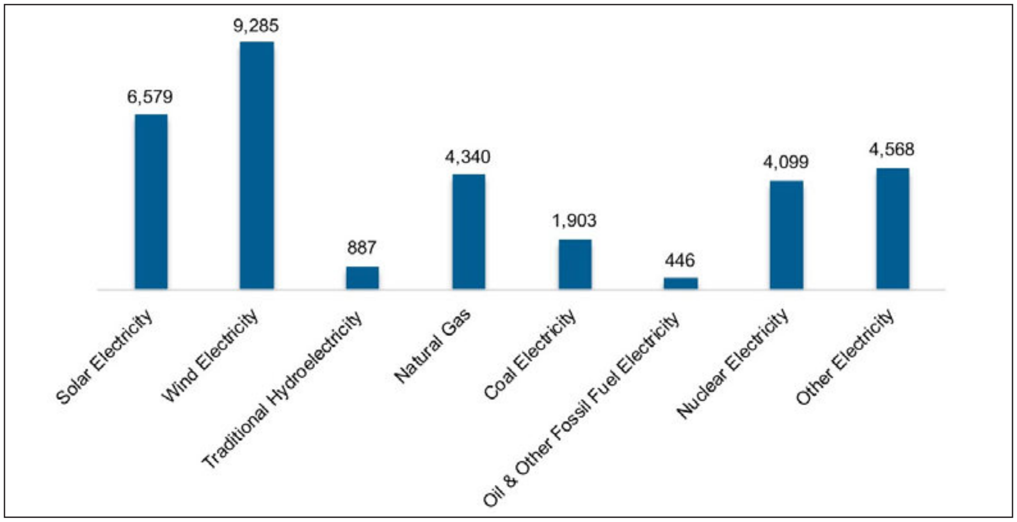
Source: American Clean Power, January 2024, Illinois

Figure 5 - Electric Generation by Fuel Type for Illinois in 2022



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

Figure 6 - Electric Generation Employment by Technology



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

c. Economic Benefits of Wind Farms

Wind farms create numerous and significant economic benefits that continue to last for decades. Wind farms create job opportunities in the local area during both the short-term construction phase and the long-term operational phase. Short-term construction jobs include both workers at the wind farm site and jobs created along the supply chain. Long-term operational jobs include wind turbine technicians, supervisors, and supply chain jobs.

Wind developers typically lease the land for the turbines from local landowners without materially affecting ongoing agricultural uses. Only a small portion of the total project footprint is used for the turbines, access roads, feeder lines and substations. For most wind projects, it is anticipated that approximately 1-2% of the total leased land will contain facilities. Each turbine and the associated access road will use approximately half an acre to one acre of farmland. Lease payments made to landowners provide a reliable source of long-term income to offset the fluctuating prices received from crops or the impact of weather events on production. Landowners then have additional funds to make purchases in the local economy and elsewhere.

Wind projects enhance the equalized assessed value of property within the county. Typically, wind developers pay taxes based on that improved value unless preempted by law or mutual agreement. Wind farms strengthen the local tax base helping to improve county services, schools, police and fire departments and fund infrastructure improvements, such as public roads.

Numerous studies have quantified the economic benefits across the United States. The National Renewable Energy Laboratory has produced economic impact reports for the State of Arizona (NREL, 2008a), State of Idaho (NREL, 2008b), State of Indiana (NREL, 2014), State of Iowa (NREL, 2013), State of Maine (NREL, 2008c), State of Montana (NREL, 2008d), State of New Mexico (NREL, 2008e), State of Nevada (NREL, 2008f), State of North Carolina (NREL, 2009), State of Pennsylvania (NREL, 2008g), State of South Dakota (NREL, 2008h), State of Utah (NREL 2008i), State of West Virginia (NREL, 2008j), and the State of Wisconsin (NREL, 2008k).

The Center for Renewable Energy at Illinois State University released a report examining the economic impact of Illinois' wind farms and the economic impact of the related wind turbine supply chain in Illinois (see https://renewableenergy.illinoisstate.edu/wind/pubs.php). According to the Economic Impact: Wind Energy Development in Illinois (June 2016), "the 25 largest wind farms in Illinois:

- Created approximately 20,173 full-time equivalent jobs during construction periods
- Support approximately 869 permanent jobs in rural Illinois areas
- Support local economies by generating $30.4 million in annual property taxes
- Generate $13.8 million annually in extra income for Illinois landowners who lease their land to the wind farm developer
- Will generate a total economic benefit of $6.4 billion over the life of the projects."

Loomis (2020) estimates the economic impact of wind and solar energy in Illinois resulting from the proposed Path to 100 legislation. The legislation is expected to result in constructing over 15,000 MW of wind and solar over the next 15 years yielding over 53,000 jobs during construction and over 3,200 jobs during operations. The analysis also looks at the 39 largest existing wind farms in Illinois and finds that they supported 29,295 jobs during construction and 1,307 jobs during operations for a total economic benefit of $10.2 billion over the life of the projects. In addition, a review of historical property tax records finds that existing utility-scale wind and solar projects paid over $305 million in property taxes statewide since 2003 and over $41.4 million in 2019 alone.

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.

Finally, Brunner and Schwegman (2022) examined the economic impacts of wind installations across the United States from 1995 to 2018. They found that wind energy projects resulted in "economically meaningful increases in county GDP per-capita, income per-capita, median household income, and median home values" (p. 165).

III. Project Description and Location

a. Heritage Prairie Wind Project in Livingston County

Pattern Energy and ConnectGen are developing the Heritage Prairie Wind Project in Livingston County, Illinois. The Heritage Prairie Wind Project consists of an estimated 319.5 megawatts ("MW") of capacity of wind turbines in Livingston County and 297.0 MW in Kankakee County including the associated access roads, transmission and communication equipment, storage areas, and control facilities (the "Project"). For this report, only the portion of the project that will be built in Livingston County was evaluated for economic impact purposes. The Project represents an investment of over $620 million in Livingston County.

b. Livingston County, Illinois

Livingston County is located in the northern part of Illinois (see Figure 7). It has a total area of 1,046 square miles, and the U.S. Census estimates that the 2022 population was 35,521 with 15,918 housing units. The county has a population density of 34 (persons per square mile) compared to 232 for the State of Illinois (2020). Median household income in the county was $68,175 in 2022 (U.S. Census Bureau, 2024).

Figure 7 – Location of Livingston County, Illinois

i. Economic and Demographic Statistics

As shown in Table 2, the largest industries in the county are "Manufacturing" followed by "Administrative Government," "Agriculture, Forestry, Fishing and Hunting," and "Retail Trade." These data for Table 1 come from IMPLAN covering the year 2022 (the latest year available).

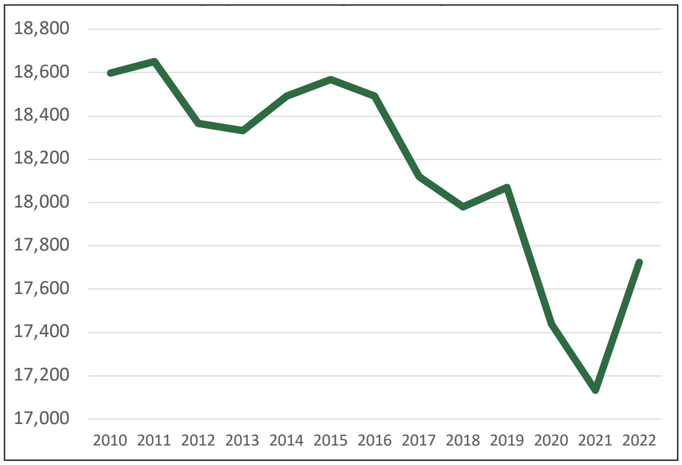
Table 2 provides the most recent snapshot of total employment but does not examine the historical trends within the county. Figure 8 shows employment from 2010 to 2022. Total employment in Livingston County was at its highest at 18,651 in 2011 and its lowest at 17,133 in 2021 (BEA, 2024).

Table 2 - Employment by Industry in Livingston County

Industry	Number	Percent
Manufacturing	2,516	14.3%
Administrative Government	2,354	13.5%
Agriculture, Forestry, Fishing and Hunting	1,822	10.5%
Retail Trade	1,705	9.7%
Health Care and Social Assistance	1,559	8.9%
Transportation and Warehousing	1,250	7.1%
Construction	1,017	5.8%
Finance and Insurance	885	5.0%
Accommodation and Food Services	867	4.9%
Wholesale Trade	849	4.8%
Other Services (except Public Administration)	655	3.7%
Administrative and Support and Waste Management and Remediation Services	522	3.0%
Professional, Scientific, and Technical Services	508	2.9%
Real Estate and Rental and Leasing	428	2.4%
Utilities	159	0.9%
Arts, Entertainment, and Recreation	144	0.8%
Educational Services	97	0.6%
Government Enterprises	90	0.5%
Information	64	0.4%
Mining, Quarrying, and Oil and Gas Extraction	60	0.3%
Management of Companies and Enterprises	1	0.0%

Source: Impact Analysis for Planning (IMPLAN), County Employment by Industry, 2022

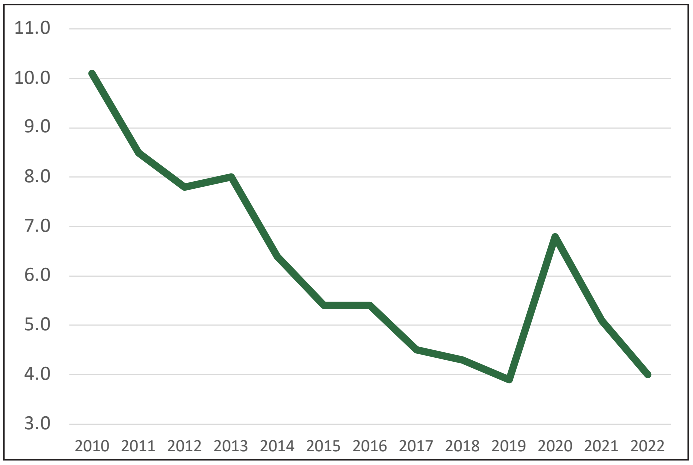
Figure 8 - Total Employment in Livingston County from 2010 to 2022



Source: Bureau of Economic Analysis, Regional Data, GDP and Personal Income, 2010-2022

The unemployment rate signifies the percentage of the labor force without employment in the county. Figure 9 shows the unemployment rates from 2010 to 2022. Unemployment in Livingston County was at its highest at 10.1% in 2010 and at its lowest at 3.9% in 2019 (FRED, 2024). The unemployment rate spiked to 6.8% in 2020 but normalized to 4.0% in 2022.

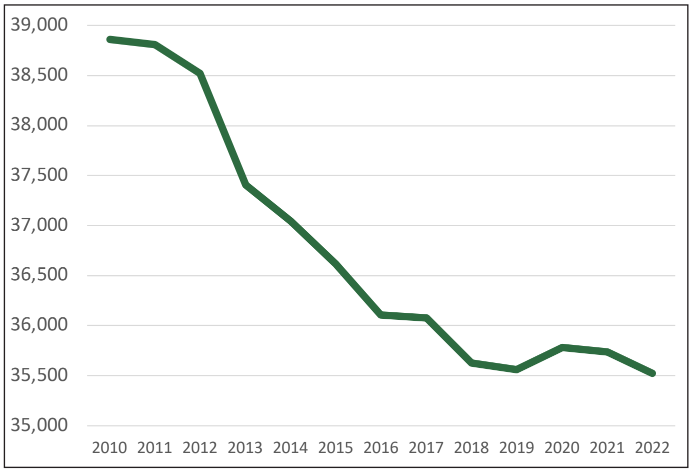
Figure 9 - Unemployment Rate in Livingston County from 2010 to 2022



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Unemployment Rates, 2010-2022

The overall population in the county has decreased steadily, as shown in Figure 10. Livingston County's population was 38,862 in 2010 and 35,521 in 2022, a loss of 3,341 people (FRED, 2024). The average annual population decrease over this time period was 278 people.

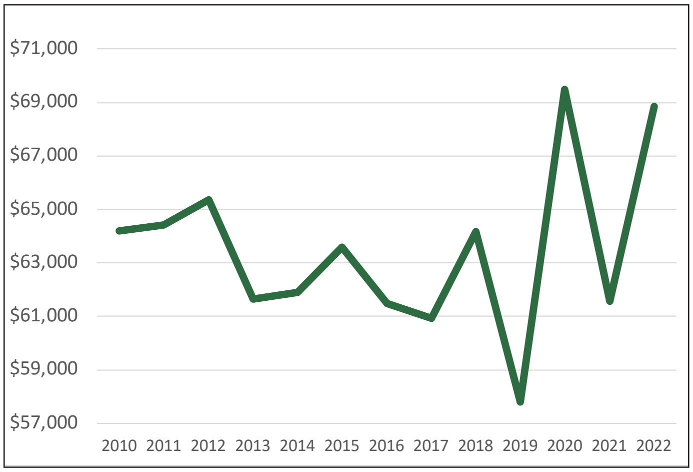
Figure 10 - Population in Livingston County from 2010 to 2022



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Population Estimates, 2010-2022

Unlike the population trend, household income has fluctuated significantly in the county. Figure 11 shows the real median household income in Livingston County from 2010 to 2022. Using the national Consumer Price Index (CPI), the nominal median household income for each year was adjusted to 2022 dollars. Household income was at its lowest at $57,811 in 2019 and its highest at $69,476 in 2020 (FRED, 2024).

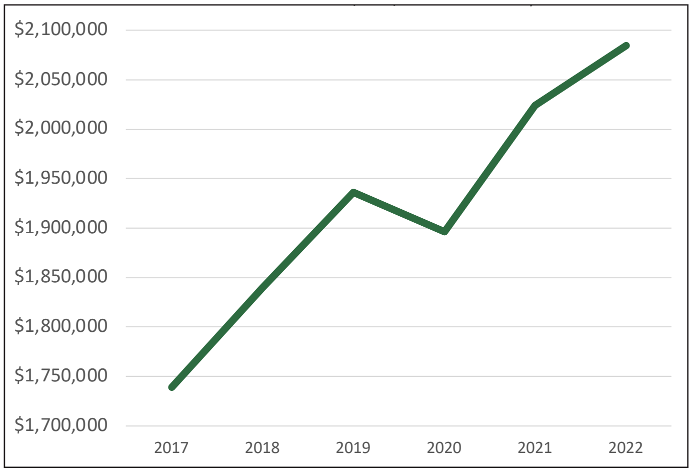
Figure 11 - Real Median Household Income in Livingston County from 2010 to 2022



Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Estimate of Median Household Income, 2010-2022

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 Livingston County has trended upward since hitting a low in 2017, as shown in Figure 12 (FRED, 2024).

Figure 12 - Real Gross Domestic Product (GDP) in Livingston County from 2017 to 2022

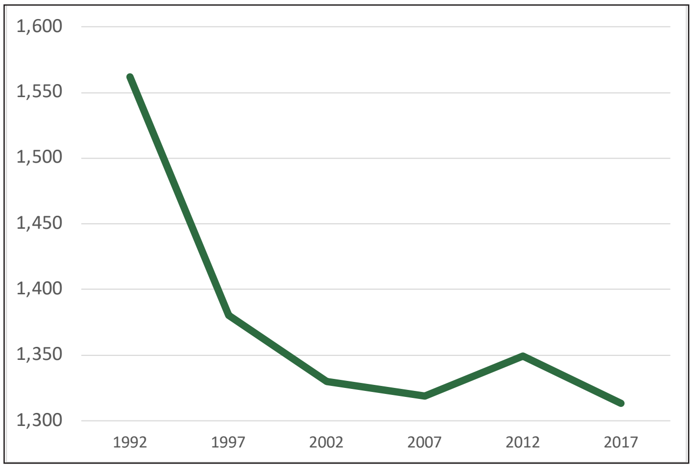


Source: Federal Reserve Bank of St. Louis Economic Data, U.S. Census Bureau, Real Gross Domestic Product, 2017-2022

The farming industry has declined in Livingston County. As shown in Figure 13, the number of farms hit a high of 1,562 in 1992 and a low of 1,313 in 2017.

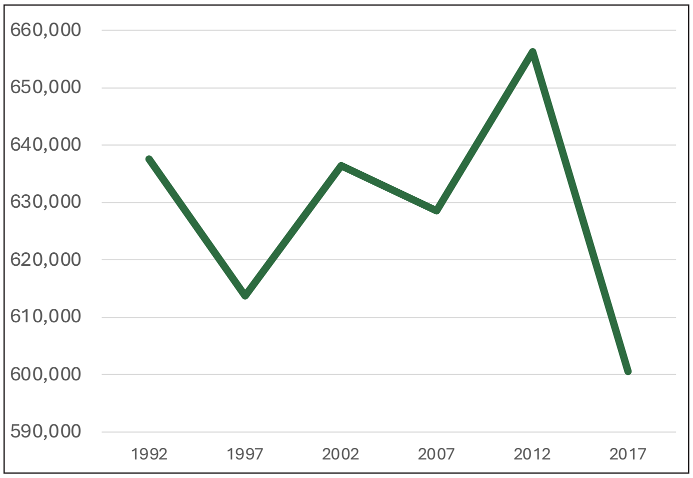
The amount of land in farms has fluctuated significantly. The county farmland hit a high of 656,275 acres in 2012 and a low of 600,533 acres in 2017, according to Figure 14.

Figure 13 - Number of Farms in Livingston County from 1992 to 2017



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

Figure 14 - Land in Farms in Livingston County from 1992 to 2017



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

IV. Methodology

The economic analysis of the wind power development presented here utilizes the National Renewable Energy Laboratory's (NREL's) latest Jobs and Economic Development Impacts (JEDI) Wind Energy Model (W6-28-19). NREL is the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research and development. The JEDI Wind Energy Model 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. Essentially, JEDI is an input-output model which takes into account the fact that the output of one industry can be used as an input for another. For example, when a wind farm developer purchases turbines to build a wind farm, those wind turbines are made of components such as fiberglass, aluminum, steel, copper, etc. Therefore, purchases of wind turbines impact the demand for these components. In addition, when a wind farm developer purchases a wind turbine from a manufacturing facility, the manufacturer uses some of that money to pay employees, and then the employees spend that money on goods and services within their community. In essence, JEDI reveals how purchases of wind project materials not only benefit turbine manufacturers but also the local industries that supply the concrete, rebar, and other materials (Reategui et al., 2009). The JEDI model uses construction cost data, operating cost data, and data relating to the percentage of goods and services acquired in the state to calculate jobs, earnings, and economic activities that are associated with this information. The results are broken down into the construction period and the operation period of the wind project. Within each period, impacts are further divided into direct, turbine, and supply chain (indirect) and induced impacts.

The JEDI Model was developed in 2002 to demonstrate the economic benefits associated with developing wind farms in the United States. The model was developed by Marshall Goldberg of MRG & Associates, under contract with the National Renewable Energy Laboratory. The JEDI model utilizes state specific industry multipliers obtained from 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. The JEDI model considers 14 aggregated industries that are impacted by the construction and operation of a wind farm: agriculture, construction, electrical equipment, fabricated metals, finance/insurance/real estate, government, machinery, mining, other manufacturing, other services, professional service, retail trade, transportation/communication/public utilities, and wholesale trade (Reategui, 2009). This study does not analyze net jobs. It analyzes the gross jobs that the new wind farm development supports.

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. Final demands are goods and services purchased for their ultimate use by the end user. Onsite construction-related services include engineering, design, and other professional services.

Direct impacts during operating years refer to the final demand changes that occur in the onsite spending for wind farm workers. Direct jobs consist primarily of onsite wind turbine technicians.

The initial spending on the construction and operation of the wind farm creates a second layer of impacts, referred to as "turbine and supply chain impacts" or "indirect impacts."

Indirect impacts during the construction period consist of the changes in inter-industry purchases resulting from the direct final demand changes and include construction spending on materials and wind farm equipment and other purchases of goods and offsite services. Essentially, these impacts result from "spending related to project development and on-site labor such as equipment costs (turbines, blades, towers, transportation), manufacturing of components and supply chain inputs, materials (transformer, electrical, HV line extension, HV substation and interconnection materials), and the supply chain of inputs required to produce these materials" (JEDI Support Team, 2023). Concrete that is used in turbine foundations increases the demand for gravel, sand, and cement. As a result of the expenditure for concrete, there is increased economic activity at quarries and cement factories, and these changes are indirect impacts. The accountant for the construction firm and the banker who finances the contractor are both considered indirect impacts. All supply chain component impacts/ manufacturing-related activities are included under indirect impacts; therefore, the late-stage turbine assembly process, which includes gearbox assembly, blade production, and steel rolling, are all included under the construction period indirect impacts category.

Indirect impacts during operating years refer to the changes in inter-industry purchases resulting from the direct final demand changes. Essentially, these impacts result from "expenditures related to on-site labor, materials and services needed to operate the wind farms (e.g., vehicles, site maintenance, fees, permits, licenses, utilities, insurance, fuel, tools and supplies, replacement parts/equipment); the supply chain of inputs required to produce these goods and services; and project revenues that flow to the local economy in the form of land lease revenue, property tax revenue, and revenue to equity investors" (JEDI Support Team, 2023). All land lease payments and property taxes show up in the operating-years portion of the results because these payments do not support the day-to-day operations and maintenance of the wind farm but instead are more of a latent effect that results from the wind farm being present.

Induced impacts during construction refer to the changes that occur in household spending as household income increases or decreases due to the direct and indirect effects of final demand changes. Included in this is local spending by employees working directly or indirectly on the wind farm project who receive their paychecks and then spend money in the community. Additional local jobs and economic activity are supported by these purchases of goods and services. Thus, for example, the increased economic activity at quarries and cement factories results in increased revenues for the affected firms and raises individual incomes. Individuals employed by these companies then spend more money in the local economy, e.g., as workers receive income, they may decide to purchase more expensive clothes or higher quality food along with other goods and services from local businesses. This increased economic activity may result from "construction workers who spend a portion of their income on lodging, groceries, clothing, medicine, a local movie theater, restaurant, or bowling alley;" or a "steel mill worker who provides the inputs for turbine production and spends his money in a similar fashion, thus supporting jobs and economic activities in different sectors of the economy" (JEDI Support Team, 2023).

Induced impacts during operating years refer to the changes that occur in household spending as household income increases or decreases as a result of the direct and indirect effects from final demand changes. Some examples include a "wind farm technician who spends income from working at the wind farm on buying a car, a house, groceries, gasoline, or movie tickets," or a "worker at a hardware store who provides spare parts and materials needed at the wind farm and who spends money in a similar fashion, thus supporting jobs and economic activities in different sectors of the economy" (JEDI Support Team, 2023).

This methodology has been validated by a paper in peer-reviewed economics literature. In the article, "Ex Post Analysis of Economics Impacts from Wind Power Development in U. S. Counties," the authors conduct an ex post econometric analysis of the county-level economic development impacts of wind power installations from 2000 through 2008. They find an aggregate increase in county-level personal income and employment of approximately $11,000 and 0.5 jobs per megawatt of wind power capacity during that time which is consistent with the JEDI results at the county level (Brown, 2012).

V. Results

The results were derived from project cost estimates supplied by Pattern Energy and ConnectGen. In addition, Pattern Energy and ConnectGen helped estimate the percentages of project materials and labor that will be coming from within Livingston County and the State of Illinois.

Two separate JEDI models were run to show the economic impact of the Project. The first JEDI model used the 2022 Livingston County multipliers from IMPLAN. The second JEDI model used the 2022 State of Illinois multipliers from IMPLAN and the same project costs. Because the multipliers and the local content percentage are different for the two models, the results are independent from one another. However, any local content coming from Livingston County obviously comes from the State of Illinois as well. Similarly, the State of Illinois multipliers will generally be larger than Livingston County multipliers, but some individual sectors of the economy could be stronger.

The output from these models is shown in Tables 3 to 5. Table 3 lists the total employment impact from the Project for Livingston County and the State of Illinois. Table 4 shows the impact on total earnings, and Table 5 contains the impact on total output. The results are divided into one-time construction impacts and ongoing annually recurring operations impacts that are expected to last for the full life of the Project which is estimated to be 25-40 years. Project Development and Onsite Labor Impacts correspond to direct impacts as defined in the methodology section. Turbine and Supply Chain Impacts are the indirect impacts during construction and Local Revenue and Supply Chain Impacts are indirect impacts during operations.

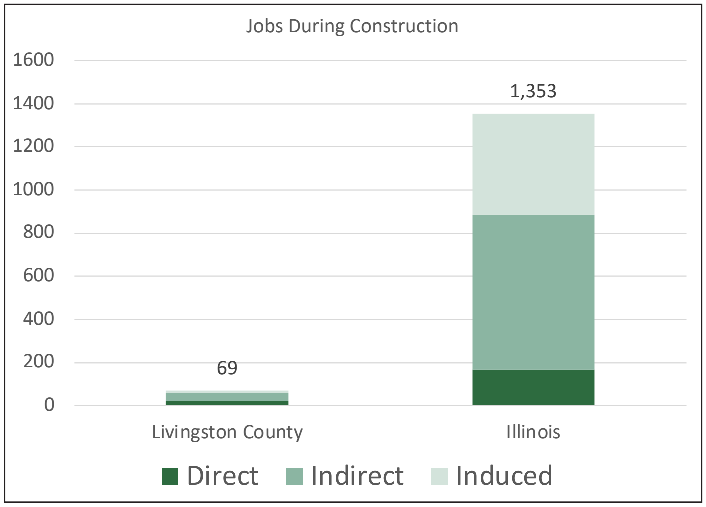
Table 3 – Total Employment Impact from the Livingston-Heritage Prairie Wind Project

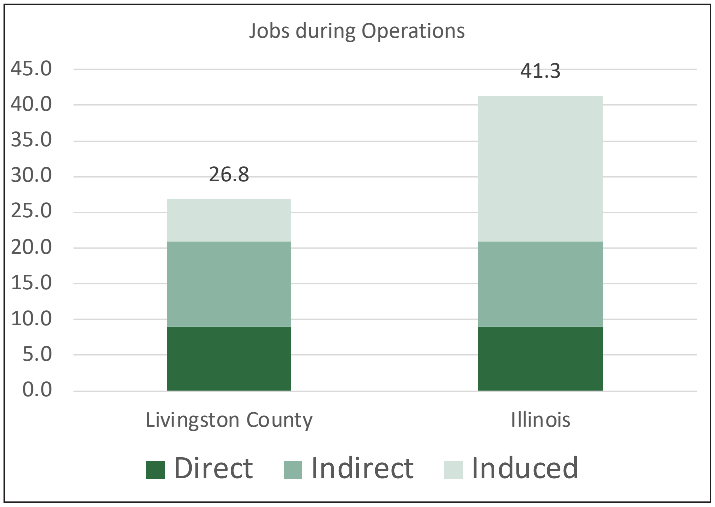
	Livingston County Jobs	State of Illinois Jobs
Construction		
Project Development and Onsite Labor Impacts	22	168
Turbine and Supply Chain Impacts	36	719
Induced Impacts	11	466
New Local Jobs during Construction	69	1,353
Operations		
Onsite Labor Impacts	9.0	9.0
Local Revenue and Supply Chain Impacts	11.9	11.9
Induced Impacts	5.9	20.4
New Local Long-Term Jobs	26.8	41.3

The results from the JEDI model show significant employment impacts from the Livingston-Heritage Prairie Wind Project. Employment impacts can be broken down into several different components. Direct jobs created during the construction phase typically last anywhere from 6 months to over a year depending on the size of the project; however, the direct job numbers present in Table 3 from the JEDI 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 JEDI model. For example, the JEDI model results show 22 new onsite jobs during construction in Livingston County, though the construction of the Project could actually involve hiring closer to 44 workers for 6 months.

As shown in Table 3, new local jobs created or retained during construction total 69 for Livingston County and 1,353 for the State of Illinois. New local long-term jobs created from the Project total 26.8 for Livingston County and 41.3 for the State of Illinois.

Figure 15 – Total Employment Impact for the Livingston-Heritage Prairie Wind Project





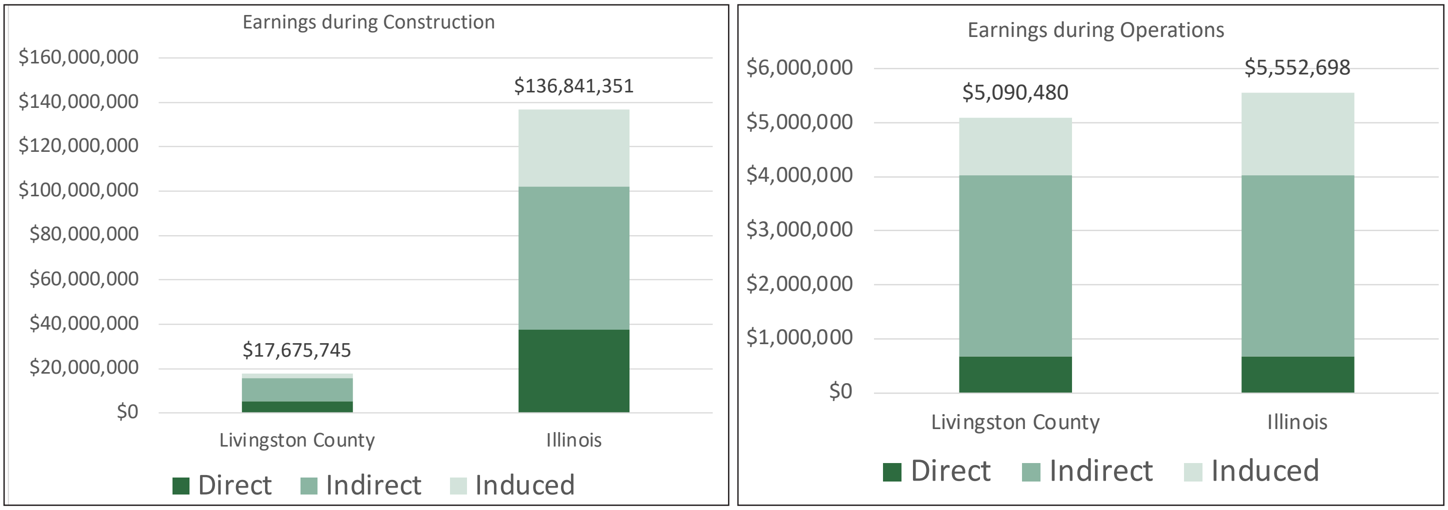
Direct jobs created during the operational phase last the life of the wind farm, typically 25-40 years. Direct construction jobs, and operations and maintenance jobs both require highly skilled workers in the fields of construction, management, and engineering. These well-paid professionals boost economic development in rural communities where new employment opportunities are welcome due to economic downturns.

Accordingly, it is important to not just look at the number of jobs but also the earnings that they produce. The earnings impacts from the Project are shown in Table 4 and are categorized by construction impacts and operations impacts. The new local earnings during construction total over $17.6 million for Livingston County and over $136 million for the State of Illinois. The new local long-term earnings total over $5.0 million for Livingston County and over $5.5 million for the State of Illinois.

Table 4 – Total Earnings Impact from the Livingston-Heritage Prairie Wind Project

	Livingston County	State of Illinois
Construction		
Project Development and Onsite Earnings Impacts	$5,147,096	$37,609,749
Turbine and Supply Chain Impacts	$10,614,351	$64,487,643
Induced Impacts	$1,914,298	$34,743,959
New Local Earnings during Construction	$17,675,745	$136,841,351
Operations (Annual)		
Onsite Labor Impacts	$672,944	$672,944
Local Revenue and Supply Chain Impacts	$3,358,698	3,358,698
Induced Impacts	$1,058,838	$1,521,056
New Local Long-Term Earnings	$5,090,480	$5,552,698

Figure 16 – Total Earnings Impact from the Livingston-Heritage Prairie Wind Project



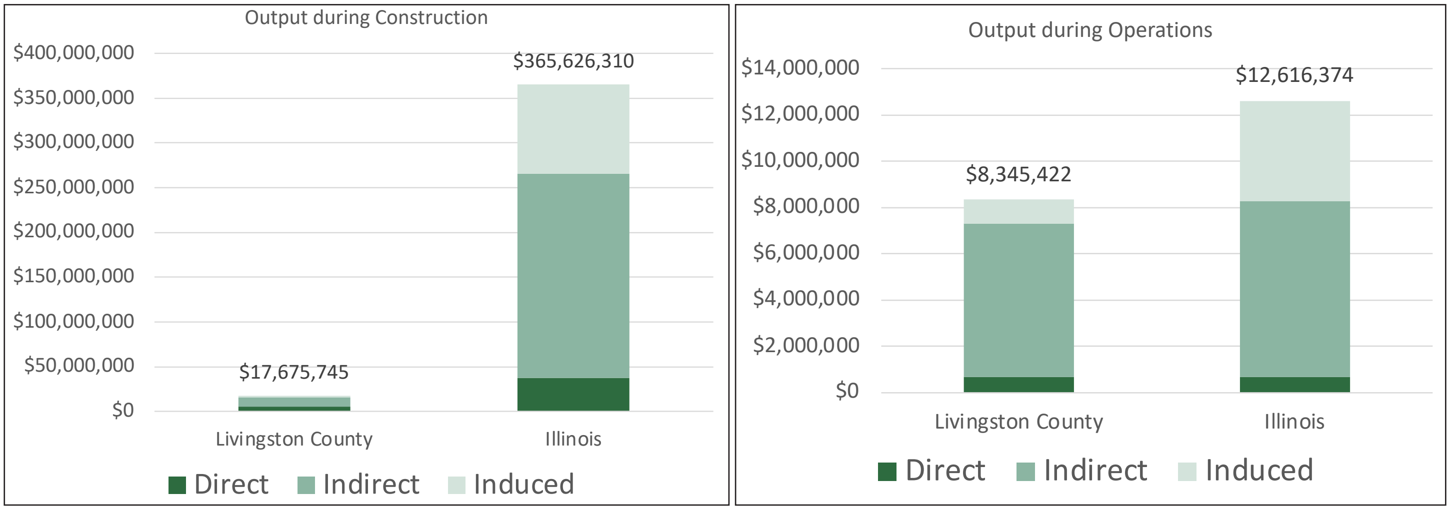
Output refers to economic activity or the value of production in the state or local economy. Economic output includes the earnings reported in Table 4 but also measures other factors such as landowner payments, property taxes, and other economic activity that is not earnings and benefits from employment. Local Revenue and Supply Chain Impacts include ongoing property taxes and are detailed in the next section.

According to Table 5, the new local output during construction totals over $17.6 million for Livingston County and over $365 million for the State of Illinois. The new local long-term output totals over $8.3 million for Livingston County and over $12.6 million for the State of Illinois.

Table 5 – Total Output Impact from the Livingston-Heritage Prairie Wind Project

	Livingston County	State of Illinois
Construction		
Project Development and Onsite Jobs Impacts on Output	$5,147,096	$37,609,749
Turbine and Supply Chain Impacts	$10,614,351	$228,468,187
Induced Impacts	$1,914,298	$99,548,374
New Local Output during Construction	$17,675,745	$365,626,310
Operations (Annual)		
Onsite Labor Impacts	$672,944	$672,944
Local Revenue and Supply Chain Impacts	$6,613,640	$7,585,779
Induced Impacts	$1,058,838	$4,357,651
New Local Long-Term Output	$8,345,422	$12,616,374

Figure 17 – Total Output Impact from the Livingston-Heritage Prairie Wind Project



VI. Tax Benefits

Wind power 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. According to state law (Public Act 095-0644), the fair cash value for a utility-scale wind turbine in Illinois is $360,000 per megawatt of capacity beginning in 2007 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. According to the Illinois Department of Revenue, "[t]he trending factor for assessment year 2023 is 1.47."(https://www2.illinois.gov/rev/localgovernments/property/Documents/WindEnergyTrendingFactors.pdf). 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 turbine and multiplying by the Trending Factor).

The property tax payments in this section may not reflect new spendable tax dollars to that taxing entity. In some cases, the total budget may be capped or have limits to yearly increases. If the budget cannot be increased to include all of the new tax revenue, the property tax rate for that entity will be lowered, resulting in lower taxes to all taxpayers. This lower tax rate benefits the whole community of taxpayers, and the total amount of lowered taxes is a measure of the community benefits that will result from the solar energy project. Thus, the calculated property tax revenue is a good measure of the community benefits even if all of the tax dollars are not spendable due to tax budget constraints.

Tables 6-10 detail the tax implications of the Livingston-Heritage Prairie Wind Project. There are several important assumptions built into the analysis in these tables.

- First, the analysis assumes that the valuation of the wind farm is the same as set forth in Public Act 095-0644.
- Second, the tables assume future inflation is constant at 2.4% annually and the depreciation is 4% annually until it reaches the maximum of 70%.
- Third, all tax rates are assumed to stay constant at their 2023 (2022 tax year) rates. For example, the Livingston County tax rate is assumed to stay constant at 1.04905% through 2054.
- Fourth, the analysis assumes that the Project is placed in service on January 1, 2027, at a fair cash value of $188 million according to Public Act 095-0644.
- Fifth, it assumes that the Project is decommissioned in 30 years and pays no more taxes after that date.
- Sixth, if finalized turbine locations are different than the current map, the actual taxes paid could vary depending on the relative tax rates between districts.
- Seventh, no comprehensive tax payment was calculated, and these calculations are only to be used to illustrate the economic impact of the Project.

Figure 18 - Percentages of Property Taxes Paid to Taxing Jurisdictions

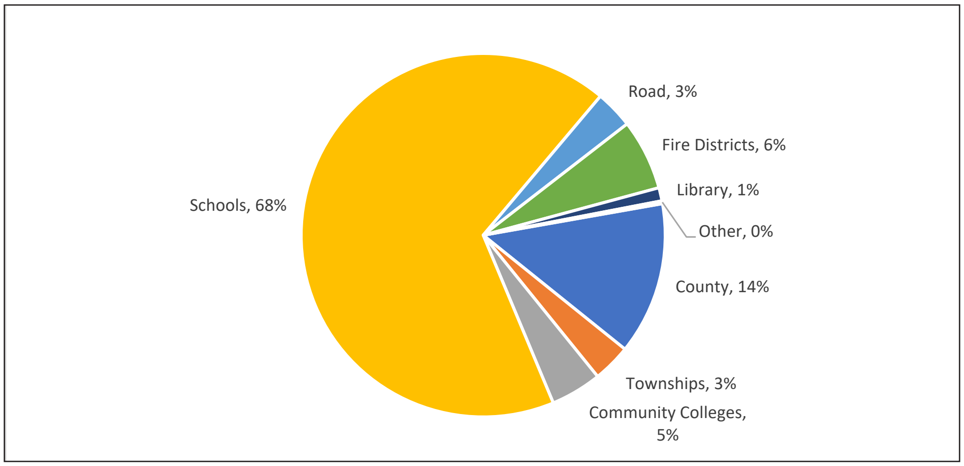


Table 6 – Total Property Taxes Paid by the Livingston-Heritage Prairie Wind Project

Year	Total Taxes Paid
2027	$4,851,215
2028	$4,768,939
2029	$4,679,919
2030	$4,583,878
2031	$4,480,533
2032	$4,369,586
2033	$4,250,734
2034	$4,123,659
2035	$3,988,036
2036	$3,843,529
2037	$3,689,788
2038	$3,526,453
2039	$3,353,153
2040	$3,169,503
2041	$2,975,107
2042	$2,769,554
2043	$2,552,421
2044	$2,323,271
2045	$2,230,340
2046	$2,283,868
2047	$2,338,681
2048	$2,394,809
2049	$2,452,284
2050	$2,511,139
2051	$2,571,407
2052	$2,633,120
2053	$2,696,315
2054	$2,761,027
2055	$2,827,292
2056	$2,895,147
TOTAL	**$98,894,707**
AVG ANNUAL	**$3,296,490**

As shown in Table 6, a conservative estimate of the total property taxes paid by the Project starts out at over $4.8 million and declines due to depreciation (and offset by the trending factor) until it reaches the maximum depreciation in 2045. 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 30-year lifetime of the Project are over $98.8 million, and the average annual property taxes paid will be over $3.2 million.

Table 7 shows an estimate of the likely taxes paid to the following taxing bodies: Livingston County, Broughton Township, Dwight Township, and Round Grove Township.

According to Table 7, the total amounts paid are over $13.4 million for Livingston County, over $80.9 thousand for Broughton Township, over $1.1 million for Dwight Township, and over $2.0 million for Round Grove Township over the life of the Project.

Table 8 shows an estimate of the likely taxes paid to the following taxing bodies: Broughton Road District, Dwight Road District, Round Grove Road District, Reddick Fire R20, Dwight Fire 16, Cabery Fire B06, and Emington-Campus Fire 21.

According to Table 8, the total amounts paid are over $164 thousand for Broughton Road District, over $928 thousand for Dwight Road District, over $2.2 million for Round Grove Road District, over $1.2 million for Reddick Fire R20, over $4.3 million for Dwight Fire 16, over $58.9 thousand for Cabery Fire B06, and over $579 thousand for Emington-Campus Fire 21 over the life of the Project.

Table 9 shows an estimate of the likely taxes paid to the following taxing bodies: Kankakee Community College #520, Joliet Community College #525, Prairie Creek Public Library, and Round Grove-Broughton-Sullivan.

According to Table 9, the total amounts paid are over $2.0 million for Kankakee Community College #520, over $2.4 million for Joliet Community College #525, over $1.1 million for the Prairie Creek Public Library, and over $248 thousand for Round Grove-Broughton-Sullivan over the life of the Project.

Table 7 – Tax Benefits from the Livingston-Heritage Prairie Wind Project for the County and Townships[1]

Year	Livingston County	Broughton Township	Dwight Township	Round Grove Township
2027	$658,282	$3,969	$57,892	$102,450
2028	$647,117	$3,901	$56,910	$100,713
2029	$635,038	$3,828	$55,848	$98,833
2030	$622,006	$3,750	$54,702	$96,804
2031	$607,982	$3,665	$53,469	$94,622
2032	$592,927	$3,575	$52,145	$92,279
2033	$576,800	$3,477	$50,726	$89,769
2034	$559,556	$3,373	$49,210	$87,085
2035	$541,153	$3,262	$47,591	$84,221
2036	$521,544	$3,144	$45,867	$81,169
2037	$500,683	$3,018	$44,032	$77,923
2038	$478,519	$2,885	$42,083	$74,473
2039	$455,003	$2,743	$40,015	$70,813
2040	$430,083	$2,593	$37,823	$66,935
2041	$403,705	$2,434	$35,504	$62,830
2042	$375,812	$2,266	$33,051	$58,489
2043	$346,349	$2,088	$30,459	$53,903
2044	$315,254	$1,901	$27,725	$49,064
2045	$302,644	$1,825	$26,616	$47,101
2046	$309,908	$1,868	$27,255	$48,232
2047	$317,345	$1,913	$27,909	$49,389
2048	$324,962	$1,959	$28,579	$50,575
2049	$332,761	$2,006	$29,264	$51,788
2050	$340,747	$2,054	$29,967	$53,031
2051	$348,925	$2,104	$30,686	$54,304
2052	$357,299	$2,154	$31,422	$55,607
2053	$365,874	$2,206	$32,177	$56,942
2054	$374,655	$2,259	$32,949	$58,309
2055	$383,647	$2,313	$33,740	$59,708
2056	$392,855	$2,368	$34,549	$61,141
TOTAL	**$13,419,435**	**$80,901**	**$1,180,164**	**$2,088,505**
AVG ANNUAL	**$447,315**	**$2,697**	**$39,339**	**$69,617**

[1] The assumed tax rates are 1.04905% for Livingston County, 0.44903% for Broughton Township, 0.31192% for Dwight Township, and 0.23657% for Round Grove Township.

Table 8 – Tax Benefits from the Livingston-Heritage Prairie Wind Project for Other Taxing Bodies[2]

	Road Districts			Fire Districts			
Year	Broughton	Dwight	Round Grove	Reddick R20	Dwight 16	Cabery B06	Emington-Campus 21
2027	$8,047	$45,535	$109,968	$59,754	$213,842	$2,890	$28,425
2028	$7,910	$44,763	$108,103	$58,741	$210,216	$2,841	$27,943
2029	$7,763	$43,927	$106,085	$57,644	$206,292	$2,788	$27,421
2030	$7,603	$43,026	$103,908	$56,461	$202,058	$2,731	$26,859
2031	$7,432	$42,056	$101,566	$55,188	$197,503	$2,669	$26,253
2032	$7,248	$41,014	$99,051	$53,822	$192,612	$2,603	$25,603
2033	$7,051	$39,899	$96,356	$52,358	$187,373	$2,532	$24,907
2034	$6,840	$38,706	$93,476	$50,793	$181,772	$2,457	$24,162
2035	$6,615	$37,433	$90,402	$49,122	$175,793	$2,376	$23,367
2036	$6,375	$36,077	$87,126	$47,342	$169,423	$2,290	$22,521
2037	$6,120	$34,633	$83,641	$45,448	$162,646	$2,198	$21,620
2038	$5,849	$33,100	$79,938	$43,437	$155,447	$2,101	$20,663
2039	$5,562	$31,474	$76,010	$41,302	$147,807	$1,998	$19,647
2040	$5,257	$29,750	$71,847	$39,040	$139,712	$1,888	$18,571
2041	$4,935	$27,925	$67,440	$36,645	$131,143	$1,772	$17,432
2042	$4,594	$25,996	$62,781	$34,114	$122,082	$1,650	$16,228
2043	$4,234	$23,958	$57,859	$31,439	$112,511	$1,521	$14,956
2044	$3,854	$21,807	$52,664	$28,617	$102,410	$1,384	$13,613
2045	$3,700	$20,935	$50,558	$27,472	$98,314	$1,329	$13,068
2046	$3,788	$21,437	$51,771	$28,131	$100,673	$1,361	$13,382
2047	$3,879	$21,952	$53,014	$28,806	$103,089	$1,393	$13,703
2048	$3,972	$22,478	$54,286	$29,498	$105,564	$1,427	$14,032
2049	$4,068	$23,018	$55,589	$30,206	$108,097	$1,461	$14,369
2050	$4,165	$23,570	$56,923	$30,931	$110,691	$1,496	$14,714
2051	$4,265	$24,136	$58,289	$31,673	$113,348	$1,532	$15,067
2052	$4,368	$24,715	$59,688	$32,433	$116,068	$1,569	$15,428
2053	$4,472	$25,308	$61,121	$33,211	$118,854	$1,606	$15,799
2054	$4,580	$25,916	$62,587	$34,009	$121,706	$1,645	$16,178
2055	$4,690	$26,538	$64,090	$34,825	$124,627	$1,684	$16,566
2056	$4,802	$27,175	$65,628	$35,661	$127,618	$1,725	$16,964
TOTAL	**$164,038**	**$928,255**	**$2,241,763**	**$1,218,122**	**$4,359,293**	**$58,915**	**$579,459**
AVG ANNUAL	**$5,468**	**$30,942**	**$74,725**	**$40,604**	**$145,310**	**$1,964**	**$19,315**

[2] The assumed tax rates are 0.91047% for Broughton Road District, 0.24534% for Dwight Road District, 0.25393% for Round Grove Road District, 0.67610% for Reddick Fire R20, 0.51480% for Dwight Fire 16, 0.32700% for Cabery B06, and 0.24740% for Emington-Campus Fire 21.

Table 9 – Tax Benefits from the Livingston-Heritage Prairie Wind Project for Other Taxing Bodies (Cont.)[3]

Year	Kankakee CC #520	Joliet CC #525	Prairie Creek Public Library	Round Grove Broughton-Sullivan
2027	$101,085	$118,889	$56,987	$12,205
2028	$99,370	$116,872	$56,021	$11,998
2029	$97,516	$114,691	$54,975	$11,774
2030	$95,514	$112,337	$53,847	$11,533
2031	$93,361	$109,804	$52,633	$11,273
2032	$91,049	$107,085	$51,330	$10,994
2033	$88,573	$104,173	$49,933	$10,695
2034	$85,925	$101,058	$48,441	$10,375
2035	$83,099	$97,735	$46,847	$10,034
2036	$80,088	$94,193	$45,150	$9,670
2037	$76,884	$90,425	$43,344	$9,283
2038	$73,481	$86,423	$41,425	$8,872
2039	$69,870	$82,176	$39,389	$8,436
2040	$66,043	$77,675	$37,232	$7,974
2041	$61,992	$72,911	$34,949	$7,485
2042	$57,709	$67,873	$32,534	$6,968
2043	$53,185	$62,552	$29,983	$6,422
2044	$48,410	$56,936	$27,291	$5,845
2045	$46,474	$54,659	$26,200	$5,611
2046	$47,589	$55,971	$26,829	$5,746
2047	$48,731	$57,314	$27,472	$5,884
2048	$49,901	$58,689	$28,132	$6,025
2049	$51,098	$60,098	$28,807	$6,170
2050	$52,325	$61,540	$29,498	$6,318
2051	$53,580	$63,017	$30,206	$6,470
2052	$54,866	$64,530	$30,931	$6,625
2053	$56,183	$66,078	$31,674	$6,784
2054	$57,532	$67,664	$32,434	$6,947
2055	$58,912	$69,288	$33,212	$7,113
2056	$60,326	$70,951	$34,009	$7,284
TOTAL	**$2,060,670**	**$2,423,608**	**$1,161,716**	**$248,813**
AVG ANNUAL	**$68,689**	**$80,787**	**$38,724**	**$8,294**

[3] The assumed tax rates are 0.47656% for Kankakee Community College #520, 0.28621% for Joliet Community College #525, 0.13719% for the Prairie Creek Public Library, and 0.02762% for Round Grove-Broughton-Sullivan.

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. The Center for Renewable Energy at Illinois State University did a report titled Wind Farm Implications for School District Revenue which details how a wind farm affects the local school district's revenue. Although the school district collects increased local property tax revenue from the wind farm, it receives less in state aid because of the increases in Equalized Assessed Value (EAV) due to the wind farm. **However, the reduction in state aid is much smaller than the increased tax revenue.**

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 wind turbines 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 10 shows the direct property tax revenue coming from the Project to Dwight Grade School #232, Dwight High School #230, Herscher Unit #2J, and Cullum Unit #6J. This tax revenue uses the assumptions outlined earlier to calculate the other tax revenue and assumes that 69% of the turbines are in Dwight Grade School #232 District, 69% in Dwight High School #230 District, 27% in the Herscher Unit 2J School District, and 4% in the Cullum Unit #6J School District. Over the 30-year life of the Project, the school districts are expected to receive over $66.6 million in tax revenue.

Table 10 – Tax Benefits from the Livingston-Heritage Prairie Wind Project for the School Districts[4]

Year	Dwight Grade School #232	Dwight High School #230	Herscher Unit #2J	Cullum Unit #6J
2027	$1,306,575	$1,021,934	$799,472	$143,014
2028	$1,284,416	$1,004,602	$785,913	$140,588
2029	$1,260,440	$985,850	$771,243	$137,964
2030	$1,234,573	$965,618	$755,416	$135,133
2031	$1,206,739	$943,848	$738,385	$132,086
2032	$1,176,858	$920,477	$720,101	$128,815
2033	$1,144,848	$895,440	$700,514	$125,311
2034	$1,110,623	$868,671	$679,572	$121,565
2035	$1,074,096	$840,101	$657,222	$117,567
2036	$1,035,175	$809,660	$633,407	$113,307
2037	$993,768	$777,273	$608,071	$108,775
2038	$949,778	$742,866	$581,154	$103,960
2039	$903,103	$706,359	$552,594	$98,851
2040	$853,641	$667,673	$522,329	$93,437
2041	$801,284	$626,722	$490,293	$87,706
2042	$745,922	$583,421	$456,418	$81,646
2043	$687,442	$537,681	$420,635	$75,245
2044	$625,725	$489,409	$382,871	$68,490
2045	$600,696	$469,833	$367,556	$65,750
2046	$615,113	$481,109	$376,378	$67,328
2047	$629,876	$492,656	$385,411	$68,944
2048	$644,993	$504,479	$394,661	$70,599
2049	$660,472	$516,587	$404,133	$72,293
2050	$676,324	$528,985	$413,832	$74,028
2051	$692,555	$541,680	$423,764	$75,805
2052	$709,177	$554,681	$433,934	$77,624
2053	$726,197	$567,993	$444,348	$79,487
2054	$743,626	$581,625	$455,013	$81,395
2055	$761,473	$595,584	$465,933	$83,348
2056	$779,748	$609,878	$477,115	$85,349
TOTAL	**$26,635,254**	**$20,832,695**	**$16,297,688**	**$2,915,411**
AVG ANNUAL	**$887,842**	**$694,423**	**$543,256**	**$97,180**

[4] The assumed tax rates are 3.01704% for Dwight Grade School #232, 2.35977% for Dwight High School #230, 4.76094% for Herscher Unit #2J, and 5.39385% for Cullum Unit #6J.

Having considered all these benefits, it is still important to determine the net impact of the wind 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 funding consists of two parts – a Base Funding Minimum and a Tier Funding. The Base Funding Minimum in FY18 is based on what the district received in FY 17 under the old funding formula. Some call this the “Hold Harmless” provision and ensures that there are 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 wind farm was installed. However, the higher EAV caused by the wind 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 next ten years 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 though the FY22 does have new money in the 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.

In order to determine the net impact of the Project on a school district’s eligibility for new state aid money, we can make the following assumptions: (1) that the State of Illinois continues to provide $350 million in NEW state aid to education ANNUALLY. For reference, the new law passed in 2017 provided $350 million and the FY19 state budget has $350 million. The state budget has failed to include this increase in FY20 and FY21; (2) that the school districts will forfeit ALL of the new Tier funding for schools. It seems more likely that the school districts will switch tiers rather than lose all funding; (3) that the school districts would be entitled to the same tiered funding annually for the 10 years covered by the new school funding law without the wind farm; (4) that other school districts in the State of Illinois have a constant EAV and Evidence Based Funding needs.

For FY23, Dwight Grade School #232 had 89% adequacy, was assigned Tier 2 status, and will receive $9,918 in “new money,” Dwight High School #230 had 121% adequacy, was assigned Tier 4 status, and will receive $193 in “new money,” Herscher Unit #2J had 108% adequacy, was assigned Tier 4 status, and will receive $1,366 in “new money,” and Cullom (Tri Point) Unit #6J had 132% adequacy, was assigned Tier 4 status, and will receive $304 in “new money.” As outlined in Table 10, there is no year in which any school district receives less than $62,547. If new money is allocated in the future, it is unlikely that these districts will lose all of the “new money” and their EBF funding cannot go down from the previous year. Thus, the school districts will receive a net positive flow of funds because of the wind project if “new money” remains the same.

VII. 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.

NREL's 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.

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.

VIII. References

American Clean Power (ACP). (2021). Clean Power Quarterly Report Q3 2021. https://cleanpower.org/resources/clean-power-quarterly-report-q3-2021/

American Clean Power (ACP). (2022). Clean Power Annual Market Report 2021. https://cleanpower.org/resources/clean-power-annual-market-report-2021/

American Clean Power (ACP). (2023). Clean Power Quarterly Market Report Q4 2022. https://cleanpower.org/resources/clean-power-quarterly-market-report-q4-2022/

American Clean Power (ACP). (2023). Clean Power Annual Market Report 2022. https://cleanpower.org/resources/clean-power-annual-market-report-2022/

American Clean Power (ACP). (2023). Clean Power Quarterly Market Report Q3 2023. https://cleanpower.org/resources/clean-power-quarterly-market-report-q3-2023/

American Clean Power (ACP). (2023). State Fact Sheets. https://cleanpower.org/facts/state-fact-sheets/

Brunner, E. & Schwegman, D. J. (2022). Commercial wind energy installations and local economic development: Evidence from U.S. counties. Energy Policy 165, June.

Bureau of Economic Analysis (BEA). (2023). Regional Data. GDP and Personal Income [Data set]. https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1

Brown, J., Pender, J., Wiser, R. & Hoen, B. (2012). Ex Post Analysis of Economic Impacts from Wind Power Development in U.S. Counties. Energy Economics, 34, 1743-1754.

Center for Renewable Energy. (2016). Economic Impact: Illinois Wind Energy Development. Illinois State University. June 2016. https://edauniversitycenter.uic.edu/wp-content/uploads/sites/16/2018/09/Wind_Energy_Economic-Impact-Report_2016.pdf

Federal Reserve Bank of St. Louis Economic Data (FRED). (2024). Median Household Income. https://fred.stlouisfed.org/searchresults/?st=Median%20household%20income

Federal Reserve Bank of St. Louis Economic Data (FRED). (2024). Population Estimates. https://fred.stlouisfed.org/searchresults/?st=population

Federal Reserve Bank of St. Louis Economic Data (FRED). (2024). Real Gross Domestic Product. https://fred.stlouisfed.org/searchresults?st=real+gross+domestic+product

Federal Reserve Bank of St. Louis Economic Data (FRED). (2024). Unemployment Rate. https://fred.stlouisfed.org/searchresults/?st=unemployment&t=il&rt=il&ob=sr

Global Wind Energy Council (GWEC). (2023). Global Wind Report 2022. https://gwec.net/global-wind-report-2022/

IMPLAN Group LLC. (2023). Huntersville, NC. implan.com

JEDI Support Team. (2023). JEDI Update 2023. https://www.nrel.gov/analysis/jedi/about.html

Jenniches, S. (2018). Assessing the Regional Economic Impacts of Renewable Energy Sources. Renewable and Sustainable Energy Reviews. Elsevier, 93, 35-51.

Loomis, D., Carlson, J.L., & Payne, J. (2010). An Assessment of the Economic Impact of the Wind Turbine Supply Chain in Illinois. The Electricity Journal. 23(7). 75-93.

Loomis, D.G. (2020). Economic Impact of Wind and Solar Energy in Illinois and the Potential Impacts of Path to 100 Legislation. Strategic Economic Research, LLC. December 2020.

National Renewable Energy Laboratory (NREL). (2008a). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Arizona. Technical Report DOE/GO-102008-2670, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44144.pdf

National Renewable Energy Laboratory (NREL). (2008b). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Idaho. Technical Report DOE/GO-102008-2671, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44145.pdf

National Renewable Energy Laboratory (NREL). (2008c). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Maine. Technical Report DOE/GO-102008-2672, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44146.pdf

National Renewable Energy Laboratory (NREL). (2008d). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Montana. Technical Report DOE/GO-102008-2673, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44147.pdf

National Renewable Energy Laboratory (NREL). (2008e). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in New Mexico. Technical Report DOE/GO-102008-2679, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44273.pdf

National Renewable Energy Laboratory (NREL). (2008f). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Nevada. Technical Report DOE/GO-102008-2678, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44271.pdf

National Renewable Energy Laboratory (NREL). (2008g). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Pennsylvania. Technical Report DOE/GO-102008-2680, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44274.pdf

National Renewable Energy Laboratory (NREL). (2008h). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in South Dakota. Technical Report DOE/GO-102008-2681, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44275.pdf

National Renewable Energy Laboratory (NREL). (2008i). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Utah. Technical Report DOE/GO-102008-2677, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44268.pdf

National Renewable Energy Laboratory (NREL). (2008j). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in West Virginia. Technical Report DOE/GO-102008-2682, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44276.pdf

National Renewable Energy Laboratory (NREL). (2008k). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Wisconsin. Technical Report DOE/GO-102008-2683, October 2008. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44277.pdf

National Renewable Energy Laboratory (NREL). (2009). Economic Benefits, Carbon Dioxide (CO2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in North Carolina. Technical Report DOE/GO-102009-2755, March 2009. NREL, Golden, CO. http://www.nrel.gov/docs/fy09osti/44916.pdf

National Renewable Energy Laboratory (NREL). (2013). Estimated Economic Impacts of Utility Scale Wind Power in Iowa. Technical Report NREL/TP-6A20-53187, November 2013. NREL, Golden, CO. http://www.nrel.gov/docs/fy14osti/53187.pdf

National Renewable Energy Laboratory (NREL). (2014). Economic Impacts from Indiana's First 1,000 Megawatts of Wind Power. Technical Report NREL/TP-5000-60914, August 2014. NREL, Golden, CO. http://www.nrel.gov/docs/fy14osti/60914.pdf

National Renewable Energy Laboratory & Marshall Goldberg of MRG & Associates. (2010). Jobs and Economic Development Impacts Wind Energy Model. Release number W1.09.03e. http://www.nrel.gov/analysis/jedi/download.html

Reategui, S., Stafford, E.R., Hartman, C.L., & Huntsman, J.M. (2009). Generating Economic Development from a Wind Power Project in Spanish Fork Canyon, Utah: A Case Study and Analysis of State-Level Economic Impacts. DOE/GO-102009-2760. January 2009. https://img.ksl.com/slc/917/91737/9173767.pdf

United States Census Bureau. (2023). QuickFacts. https://www.census.gov/

USDA National Agricultural Statistics Service. (1994). 1992 Census of Agriculture. https://agcensus.library.cornell.edu/census_year/1992-census/

USDA National Agricultural Statistics Service. (1999). 1997 Census of Agriculture. https://agcensus.library.cornell.edu/census_year/1997-census/

USDA National Agricultural Statistics Service. (2004). 2002 Census of Agriculture. https://agcensus.library.cornell.edu/census_year/2002-census/

USDA National Agricultural Statistics Service. (2009). 2007 Census of Agriculture. https://agcensus.library.cornell.edu/census_year/2007-census/

USDA National Agricultural Statistics Service. (2014). 2012 Census of Agriculture. https://agcensus.library.cornell.edu/census_year/2012-census/

USDA National Agricultural Statistics Service. (2019). 2017 Census of Agriculture. https://www.nass.usda.gov/Publications/AgCensus/2017/index.php

U.S. Department of Energy. (2023). United States Energy & Employment Report: Energy Employment by State 2023. https://www.energy.gov/sites/default/files/2023-06/2023%20USEER%20States%20Complete.pdf

U.S. Energy Information Administration (EIA). (2022). Monthly Generation Data by State, Producer Sector and Energy Source [Data set]. Form EIA-923. https://www.eia.gov/electricity/data/eia923/

IX. 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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