Economic Impact of Wind and Solar Energy in Illinois and the Potential Impacts of Path to 100 Legislation

POWER UP ILLINOIS

SER Strategic Economic Research, LLC

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Dr. David G. Loomis is Professor of Economics at Illinois State University and Co-Founder of the Center for Renewable Energy. He has over 10 years of experience in the renewable energy field and has performed economic analyses at the county, region, state and national levels for utility-scale wind and solar generation. He has served as a consultant for Apex Clean Energy, Clean Line Energy Partners, EDF Renewables, E.ON Climate and Renewables, Geronimo Energy, Invenergy, J-Power, the National Renewable Energy Laboratories, Ranger Power, State of Illinois, Tradewind, and others. He has testified on the economic impacts of energy projects before the Illinois Commerce Commission, Missouri Public Service Commission, Illinois Senate Energy and Environment Committee, the Wisconsin Public Service Commission, 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 over 25 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. Dr. Loomis received his Ph.D. in economics from Temple University in 1995.

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I. Executive Summary

Path to 100

Building upon the efforts of the Future Energy Jobs Act (FEJA), the Path to 100 Act (HB 2966 / SB 1781) will provide adequate funding to meet existing policy requirements and establish stable policy for continued job growth. The key items of the bill include expanding Illinois' Renewable Portfolio Standard (RPS) from the current requirement of 25% renewable energy by 2025 to 40% by 2030, as well as ensuring that sufficient funding exists to fully implement the Illinois RPS. According to this analysis, by 2033, Path to 100 will result in:

- 53,298 jobs created or supported during construction periods[1]
- 3,215 jobs created or supported annually during operations
- $8.27 billion in increased economic output[2] during construction
- $571 million per year in increased economic output during operations

Wind and Solar Project Property Taxes[3]

As a result of legislation defining their valuation, Illinois wind and solar energy projects are significant contributors to the tax rolls of many counties, townships and school districts. Based on our analysis of historical property tax records in every county that has an existing utility-scale wind or solar project, we found that they paid:

- Over $306 million in total statewide since 2003
- Over $41.4 million in property taxes in 2019 alone; and $49 million in all combined state and local taxes
- Over $193.7 million to school districts; $38.9 million to county governments; $19.1 million to community colleges; and $15.9 million to fire districts
- Over $53.0 million in McLean County; $30.9 million in Lee County; $30.4 million in LaSalle County; $22.9 million in Henry County; and $21.5 million in Bureau County
- Over $17.9 million to CUSD #19 Ridgeview School District; $8.4 million to CUSD #3 Tri Valley School District; $7.6 million to CUSD #5 in Normal, IL; $7.2 million to Unit #124 School District in Iroquois County; $7.1 million to P-B-L School #10 in Ford County

[1]All jobs in this report are full time equivalent (FTE) jobs for a year. In other words, 1 FTE = 2,080 hours worked in a year.

[2]Economic output is a measure of the value of goods and services produced in the economy. Gross Domestic Product (GDP) measures economic output.

[3]The property taxes in this section are the minimum paid by these projects as verified through the property tax records. We did not include property taxes paid by operations and maintenance buildings, substations, or high-voltage transmission lines which were assessed separately from the wind turbines or solar panels.

Economic Impact of Existing Wind Energy Projects

Utility-scale wind energy projects have already created a significant economic impact for the State of Illinois. Using detailed project costs from developers, the National Renewable Energy Laboratory's (NREL) JEDI model and the latest economic multipliers for the state, the 39 largest wind farms in Illinois:

- Created or supported 29,295 jobs during construction periods
- Created or supported approximately 1,307 jobs annually[4]
- Generates $22.4 million annually in extra income for Illinois landowners who lease their land to the wind farm developer[5]
- Will generate a total economic benefit of $10.2 billion over the life of the projects[6]

County Comparisons and Community Benefits

This study provides the first comprehensive examination of the flow of property tax revenues to all the taxing entities across the state including school districts. Detailed lists of revenue by county and the top 50 benefitting tax districts are provided in the study.

- Five counties are now receiving more than $20 million annually in property tax revenue (Bureau, Henry, LaSalle, Lee, and McLean – see Figure 7.3)
- For the past nine years, school districts have been receiving more than $10 million annually in property taxes (see Figure 7.4)
- McLean County has received over $53 million in property tax revenue from projects which is over 70% more than the next closest county
- Only twenty-one of Illinois' one hundred and two counties have received the property tax benefits from utility-scale wind and/or solar

[4]AWEA estimates a total of 8,000 jobs based on total industry employment. This present study looks at jobs created from wind project located in the state. AWEA's estimate includes all jobs in the wind industry regardless of where the projects are located. For example, Invenergy is headquartered in Chicago, but their employees work on project located across the country and overseas. In this study, only Invenergy employees working on Illinois project would be counted but in AWEA's estimate, all Invenergy wind industry employees would be included.

[5]This study uses input from wind developers based on the first year of landowner payments when a project is first built. AWEA's most recent estimate of $37 million is based on updated information from developers and includes escalation of lease payments over time as per the terms of their lease.

[6]The project life of the wind farm is assumed to be approximately 25 years in this calculation, although many landowner contracts may extend as long as 30 years.

II. Introduction

Since 2010, the author, along with various co-authors, has studied the economic impacts of wind energy on the State of Illinois' economy (Loomis and Hinman 2010; Loomis, et. al. 2010; Loomis et.al. 2012; Loomis and Stroup 2016). This present study updates and expands upon those previous studies in several important ways:

- It brings together the impacts of utility-scale wind and solar in a single study
- It adds to the analysis all the wind energy projects that have been built since 2016
- It provides the first comprehensive examination of the flow of property tax revenues to all the taxing entities across the state including school districts
- It examines the potential effects that the proposed "Path to 100" legislation will have on jobs, earnings, output and property tax revenue

The Path to 100 Act is a piece of legislation that expands Illinois' renewable energy standards to bring the state to 100% clean energy. Building upon the efforts of the Future Energy Jobs Act (FEJA), the Path to 100 Act (HB 2966 / SB 1781) will provide adequate funding to meet existing policy requirements and establish stable policy for continued job growth.

The key items of the bill include expanding Illinois' Renewable Portfolio Standard (RPS) from the current requirement of 25% renewable energy by 2025 to 40% by 2030, as well as ensuring that sufficient funding exists to fully implement the Illinois RPS. Currently, Illinois is generating less than 7% of its power from renewables despite requirements for 16% in 2020.

There are currently more than 800 shovel-ready community solar projects that are stuck on a waitlist due to lack of funding. By increasing renewable energy from today's levels to 40% by 2030, the Act would drive procurement of an estimated 5,582 MW of utility-scale wind, 4,226 MW of utility-scale solar, and 5,825 MW of new residential, commercial and community scale solar. For example, the combined 10,051 MW of solar is equal to 25 million 400-watt solar panels and 5,825 MW od wind is equal to almost 2,000 new 2.8 MW wind turbines.

Recently, the wind and solar industries in Illinois has suffered job losses due to the pandemic and the funding shortfall mentioned above. These more recent developments are not part of the present analysis.

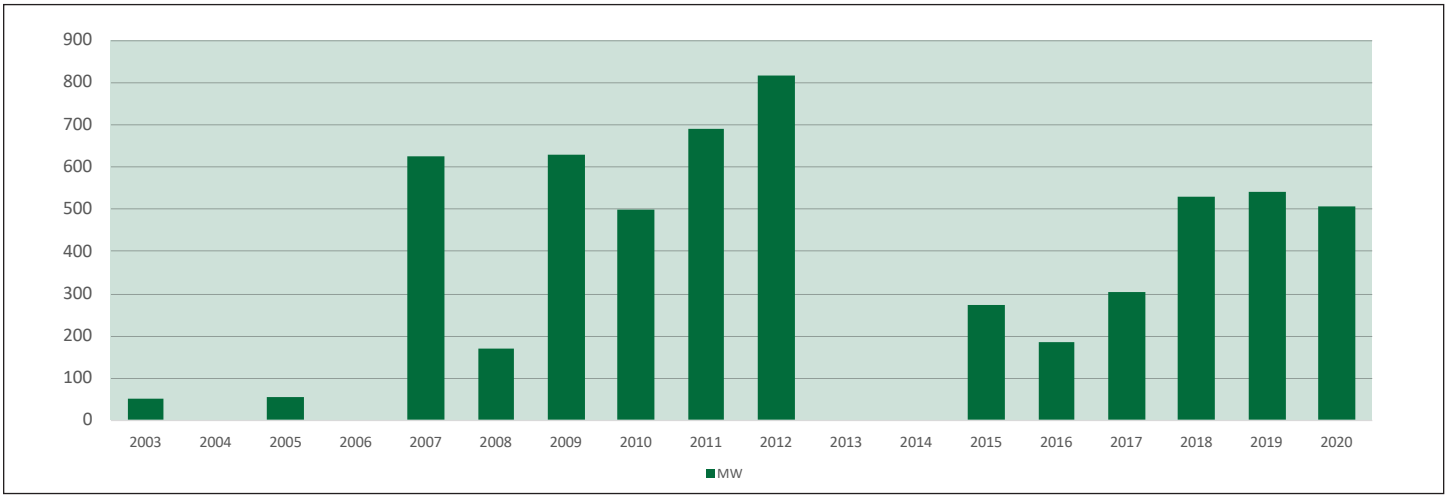
III. Illinois Wind Industry Growth

According to the American Wind Energy Association (AWEA), Illinois is the sixth largest state for installed wind capacity behind Texas, Iowa, Oklahoma, Kansas, and California. Illinois has a good wind resource but other states have higher wind speeds. Illinois benefits from having available transmission capacity, high in-state demand from the Chicago area, and participation in two regional transmission organizations – PJM and MISO. In addition, Illinois has a strong presence of companies within the technology sector and the Food and Beverage sector which are the #1 and #3 purchasers of renewable power respectively.

There are more than 3,083 wind turbines operating in Illinois. There are more than 35 wind manufacturing facilities, 34 wind manufacturing companies, and 42 wind developers in the state.

Illinois' wind farms grew rapidly from 2007 to 2012. However, in 2013 and 2014, no new wind farms were built in the state. There were two main causes for this slowdown. First, there was federal policy uncertainty surrounding the expiration of the production tax credit (PTC). Second, there was state policy uncertainty surrounding the implementation of the RPS and shifting load from default service into municipal aggregation. Growth continued from 2015 to 2020, and there are 6 new wind farms under construction or in advanced development and a number of proposed projects awaiting further action by county governments (such as revised ordinances or similar regulatory certainty). On a calendar year basis (Figure 3.1), Illinois has installed as much as 800 MW in a year (2012).

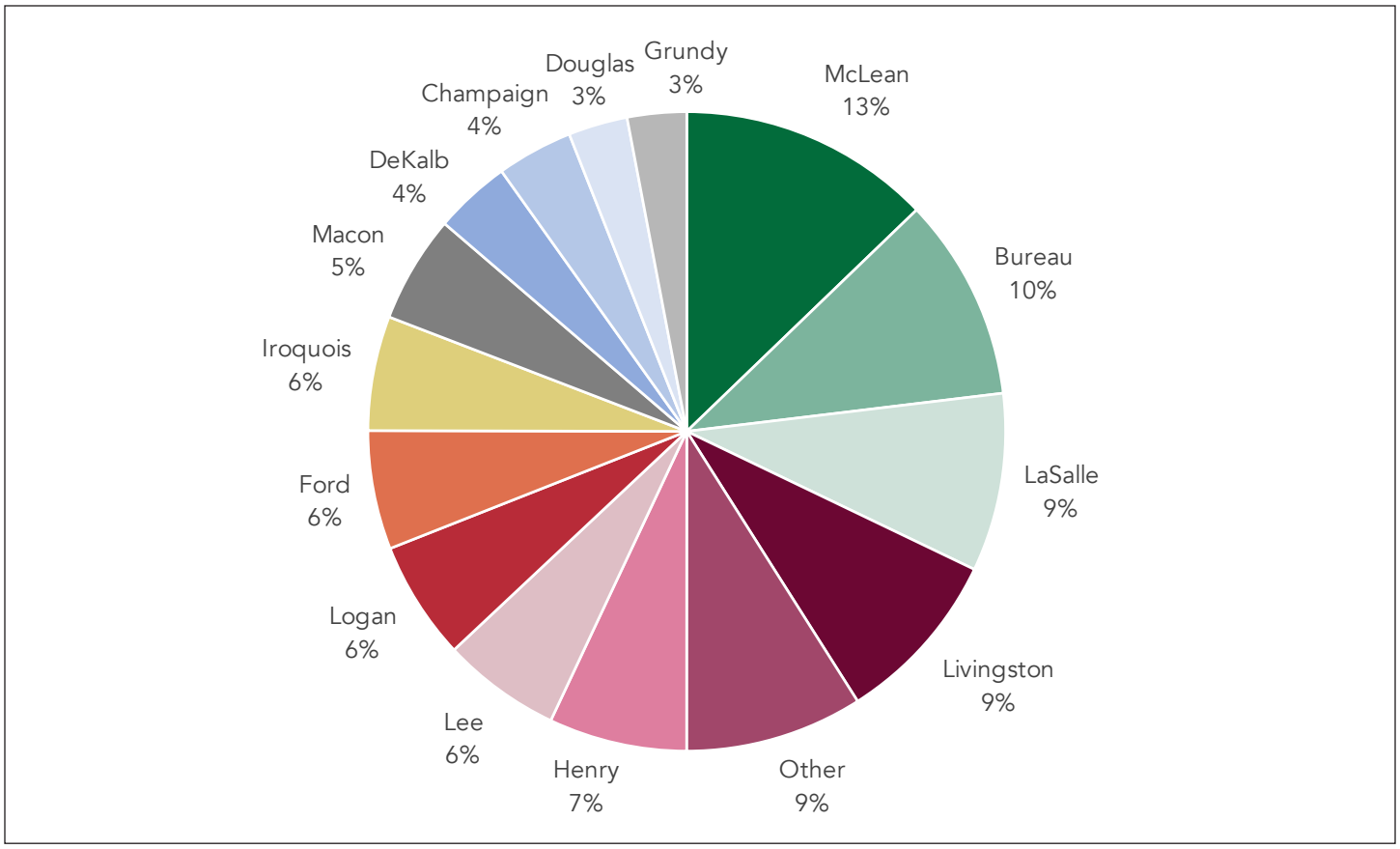
Figure 3.1 – Annual Illinois Wind Capacity by Calendar Year



Source: America Wind Energy Association, WindIQ Database

Wind farm development has been concentrated in counties with the highest wind resources but is still fairly widespread. Twenty-three different counties in Illinois have seen utility-scale wind farm development (Figure 3.2). At least 3 additional counties will join this list, having already approved or appearing close to approving of their first wind farms (Knox, DeWitt, Morgan counties). McLean County has the most wind farm capacity with 751.2 MW or 13% of the total Illinois capacity. Bureau County has 10% and LaSalle and Livingston Counties each have 9% of the installed wind farm capacity in Illinois.

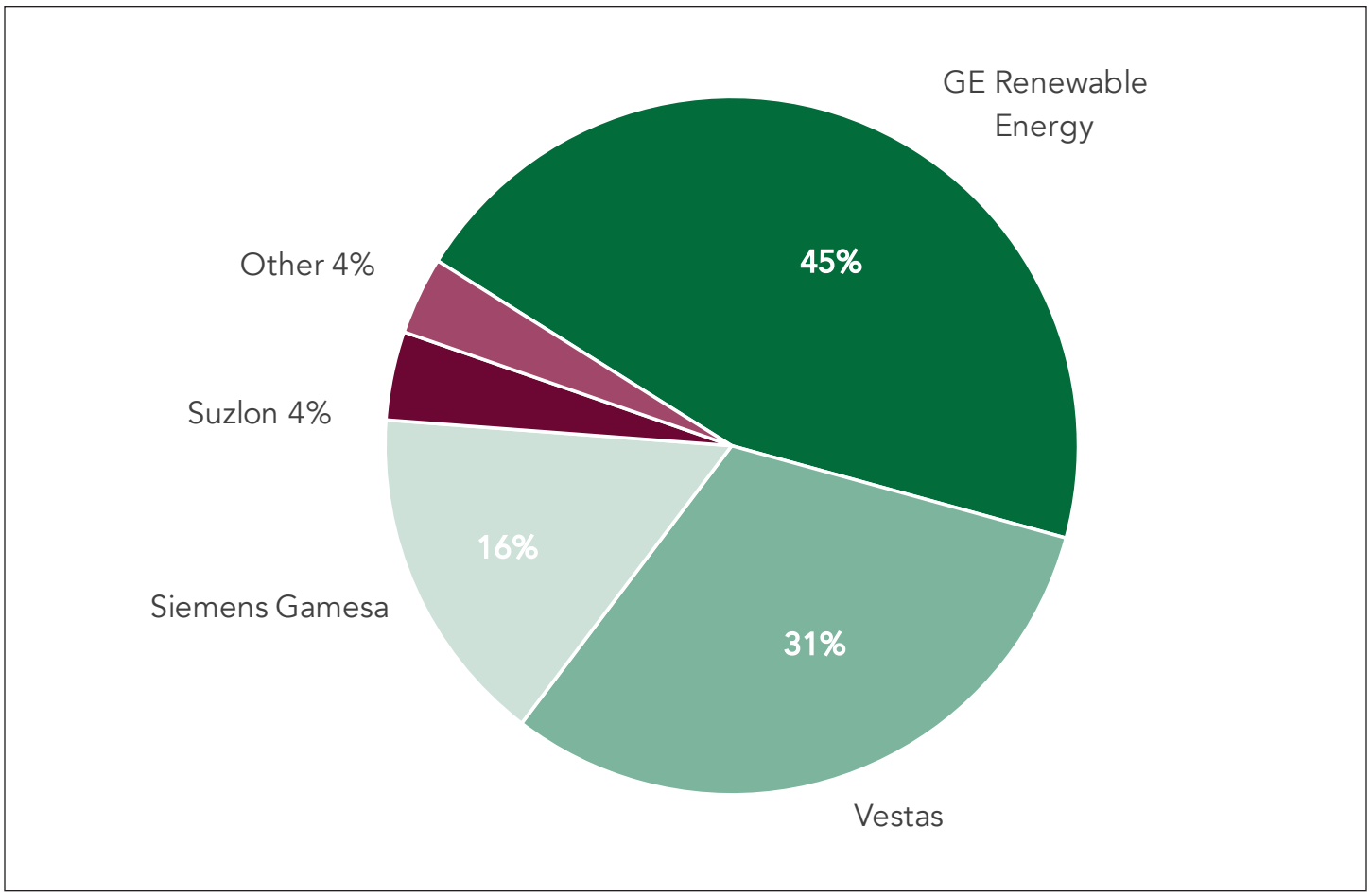
Figure 3.2 – Percentage Wind Capacity Installed by County in Illinois



Source: America Wind Energy Association, WindIQ Database

The wind turbines installed in Illinois come from a variety of different manufacturers. GE Renewable Energy has the most turbines installed (weighted by capacity) with 45% (Figure 3.3). Vestas and Siemens Gamesa are the second and third most popular turbine manufacturers with Suzlon being the fourth.

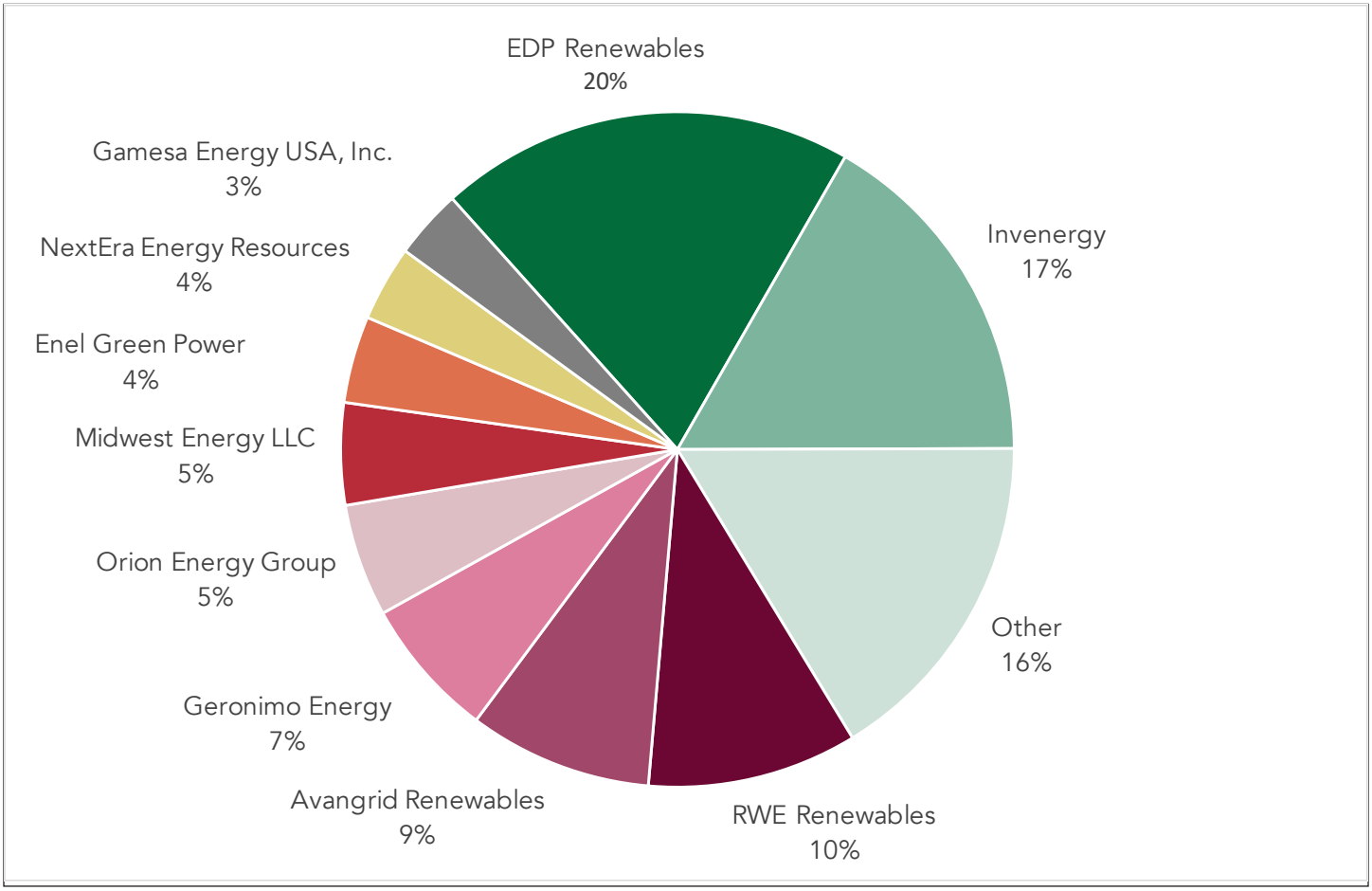
Figure 3.3 – Illinois Wind Turbines by Manufacturer Installed in Illinois



Source: America Wind Energy Association, WindIQ Database

Many different wind farm developers/owners have been active in Illinois. EDP Renewables owns 20% of the wind farms in Illinois and Invenergy owns 17% (see Figure 3.4). RWE Renewables and Avangrid Renewables have 10% and 9% respectively, of the Illinois market. Geronimo Energy, Orion Energy Group, Midwest Energy LLC, Enel Green Power, NextEra Energy Resources, and Gamesa Energy USA, Inc. have a combined 28% market share.

Figure 3.4 – Percentage Ownership of Wind Farms in Illinois

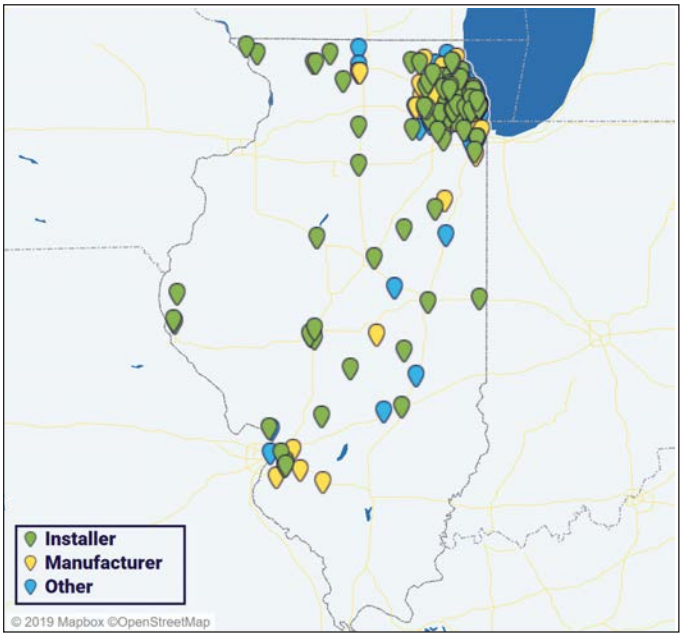


Source: America Wind Energy Association, WindIQ Database

IV. Illinois Solar Industry Growth

According to the Solar Energy Industries Association (SEIA), Illinois is ranked 30th in the U.S. in cumulative installations of solar PV. California, North Carolina, and Arizona are the top 3 states for solar PV which may not be surprising because of the high solar irradiation that they receive. However, other states with similar solar irradiation to Illinois rank highly including New Jersey (7th), Massachusetts (8th), New York (10th), and Maryland (15th). In 2019, Illinois installed 101.95 MW of solar electric capacity, bringing its cumulative capacity to 275.77 MW.

Figure 4.1 – Solar Company Locations in Illinois



Source: Solar Energy Industries Association, Solar Spotlight: Illinois

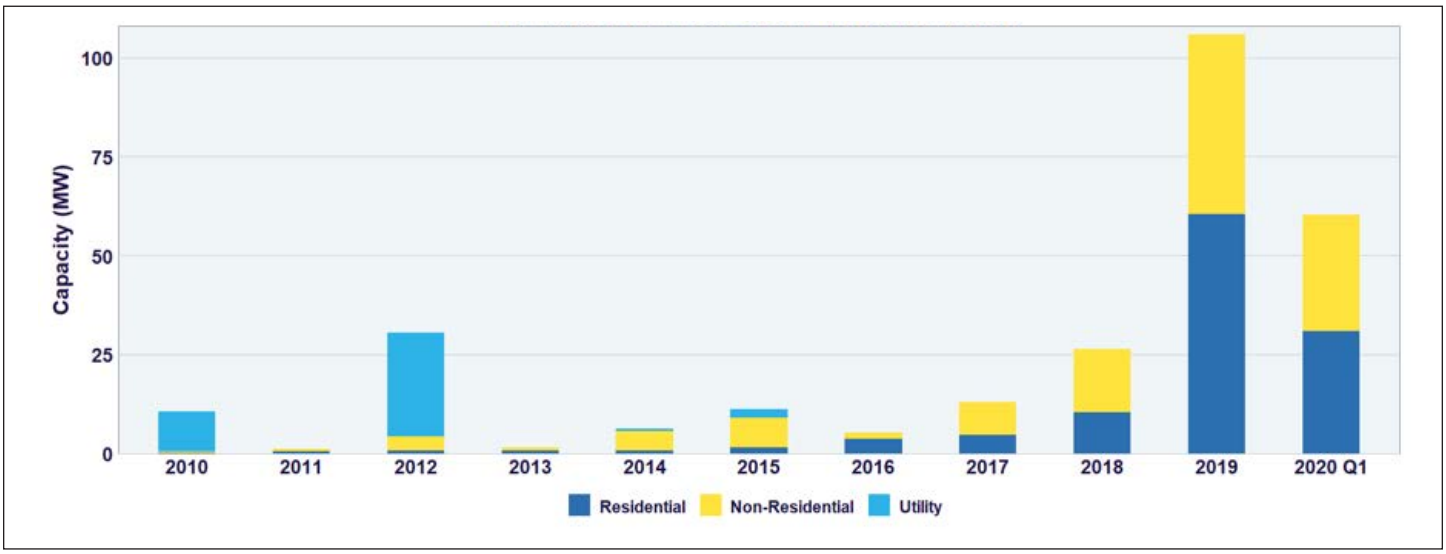
Illinois has great potential to expand its solar installations. According to Jo, Aldeman and Loomis (2013a), solar PV could produce 7.5% of Illinois' electric load. Yet in 2016, Illinois produced only 0.14% of its electricity from Solar PV and Solar Thermal according to the U.S. Energy Information Association (EIA) (2019). Illinois has three utility-scale solar farms in operation: Exelon City Solar is a 10 MW installation on the south side of Chicago; Grand Ridge Solar Farm is a 20 MW installation near Streator, IL; and the Rockford Solar Farm is a 3 MW installation near the Chicago Rockford International Airport.

There are more than 317 solar companies in Illinois including 69 manufacturers, 105 installers/developers, and 143 others.[7] Figure 4.1 shows the locations of solar companies in Illinois as of the time of this report. Currently, there are 5,513 solar jobs in the State of Illinois according to SEIA.

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

Figure 4.2 shows the historical installed capacity for Illinois by year according to SEIA. Huge growth in solar is forecasted in 2021 and beyond largely due to new energy legislation that was passed in 2016. The legislation, titled the Future Energy Jobs Act, was expected to spur 1,300 MW of new wind development and 3,000 MW of new solar development but the Illinois Power Agency (IPA) has been unable to procure all of this new renewable energy. The Path to 100 legislation aims to fix the procurement problems and increase the amount of wind and solar built in Illinois.

Figure 4.2 – Illinois Annual Solar Installations



Source: Solar Energy Industries Association, Solar Spotlight: Illinois

V. Economic Impact Methodology

The economic analysis of wind power development presented here uses the National Renewable Energy Laboratory's (NREL) latest Jobs and Economic Development Impacts (JEDI) Wind Energy Model and Solar PV Energy Model.[8] The JEDI 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. The JEDI Model takes into account that the output of one industry can be used as an input for another. For example, when a developer purchases wind turbines, the turbines are comprised of components made from fiberglass, aluminum, steel, copper, and other materials. In this way, the entire supply chain for wind energy components is impacted from a turbine purchase. The purchase not only increases demand for manufactured components and raw materials, but also supports labor. When a developer purchases a wind turbine from a manufacturing facility, the manufacturer uses some of those funds to pay employees. The employees use a portion of their compensation to purchase goods and services within their community. The JEDI Model reveals how purchases of project materials not only benefit local manufacturers, but also the local industries that supply the concrete, rebar, and other materials (Reategui et al., 2009). The model utilizes construction cost data, operating cost data, and data relating to the percentage of goods and services acquired in the state to calculate the associated jobs, earnings, and economic activity. The results from the model are broken down into the construction period and the operation period of the project. Within each period, impacts are further divided into direct, turbine and supply chain (indirect), and induced impacts.

[8] The economic development impacts from the first 1,105.61 MW of wind energy in Illinois were estimated using JEDI release number W1.09.03b. The economic development impacts from the following 729 MW were estimated using JEDI release number W1.09.03e. The annual additions of 587.4 and 913 MW were estimated using JEDI release number W1.10.03. The addition of 274.9 MW was estimated using JEDI release W06.28.16 for the 2016 report. This present analysis uses the W6.28.19 release but replaces the IMPLAN multipliers with the latest 2018 multipliers from IMPLAN. The solar analysis uses PV12.23.16 but also replaces the IMPLAN multipliers with the latest 2018 multipliers from IMPLAN. The JEDI models can be downloaded at http://www.nrel.gov/analysis/jedi/. The JEDI model has been used throughout the renewable energy economic development literature (see Tegen, Keyser, Flores-Espino, Zammit, and Loomis, 2016; Tegen, Keyser, Flores-Espino, and Hauser, 2014; Zammit and Miles, 2013).

The JEDI model was developed by Marshall Goldberg of MRG & Associates, under contract with NREL in 2002, to demonstrate the economic benefits associated with developing wind farms in the U.S. The 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 wind 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 et al., 2009).

The solar JEDI model considers 22 aggregated industries: agriculture, mining, construction, construction/installations – non-residential, construction/installation-residential, manufacturing, fabricated metals, machinery, electrical equipment, battery manufacturing, energy wire manufacturing, wholesale trade, retail trade, TCPU, insurance and real estate, finance, other professional services, office services, architectural and engineering services, other services, government and semiconductor. This study does not analyze net jobs, instead it focuses on the gross jobs that the new wind and solar farm developments support.

A. Direct Impacts

Direct impacts during the construction period refer to the changes that occur in onsite construction industries in which the final demand (i.e., spending on construction labor and services) is made. Final demands are goods and services purchased for their ultimate use by the consumer. 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 construction and project development labor such as the following:

- Utility and Power Engineers
- Geophysical/Structural Engineers
- Site/Civil Engineers
- Concrete Pouring Companies
- Wind/Solar Energy Project Developers
- Developer's Construction Management
- Clerical and Bookkeeping Support
- Developer's Legal Team
- Road Builders/Contractors
- Site Safety Coordinator
- Environmental and Permitting Specialists
- Microelectronic/Computer Programmers
- Operations and Maintenance Personnel
- Truck Drivers
- Tower Erection Crews
- Crane Operators
- Backhoe Operators
- Interconnection Labor
- Earthmovers
- Excavation Service Labor
- Electricians
- Wind/Solar Farm Operators
- Site Administrators
- Maintenance Mechanics
- Field Technicians
- Construction Crews

B. Indirect Impacts

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. They result from the direct final demand changes and include construction spending on materials and wind and solar farm equipment as well as other purchases of goods and offsite services. Indirect impacts during operating years refer to the changes in inter-industry purchases resulting from the direct final demand changes.

Examples of jobs, services, and turbine-related components in this category includes:

- Steel Producers
- Gear Producers
- Gearbox Assemblers
- Manufacturing Engineers
- Material Engineers
- Manufacturing Managers
- Welders
- Turbine Manufacturers
- Blade Manufacturers
- Tower Manufacturers
- Turbine Suppliers
- Blade Suppliers
- Tower Suppliers
- Solar Module Suppliers
- Solar Racking Manufacturers
- Invertor Manufacturers
- Tracking System Manufacturers
- Gravel Workers
- Rebar Manufacturers
- Wood Products Suppliers
- Epoxy and Resin Manufacturers
- Generator Manufacturers
- Cement Producers
- Lumber and Building Materials
- Hardware and Supplies
- Bearing Manufacturers
- Speed Changers
- Cable Manufacturers
- Local Utilities
- Banks
- Attorneys

C. Induced Impacts

Induced impacts during construction refer to the changes that occur in household spending as that income increases or decreases resulting from the direct and indirect effects of final demand changes. Local spending by employees working directly or indirectly on the wind or solar project who receive paychecks and subsequently spend money in the community is included. Additional jobs and economic activity are supported by these purchases of goods and services. Induced impacts during operating years refer to the changes that occur in household spending as that income increases or decreases as a result of the direct and indirect effects from final demand changes.

Some examples of induced jobs, services, activities, materials, and spending can be associated with the following types of businesses:

- Grocery Stores
- Child Care
- Clothing Stores
- Retail Stores
- New Cars
- Industrial Control Manufacturers
- Transmission Line Manufacturers
- Glass Fiber Manufacturers
- Rolled Steel Shape Manufacturers
- Electrical Equipment Wholesalers
- Metal Fabricators
- Heavy Equipment Rental Companies
- Transportation Service Providers
- Bookkeepers
- Accountants
- Motor Vehicle Retailers
- Hardware and Tool Retailers
- Tool Manufacturers
- Maintenance Providers
- Material Suppliers
- Insurance Agents
- Gas Station Attendants
- Local Government Employees
- Turbine, Blade, and Tower Component Suppliers
- Computer-Controlled Machine Tool Operators
- Engine and Other Machine Assemblers
- Electronic Controls and Equipment Manufacturers
- Restaurants
- Medical Services
- Hotels
- Gas Stations
- Movie Theaters

Much of this section is adapted from http://www.nrel.gov/analysis/jedi/results.html and http://www.nrel.gov/analysis/jedi/pdfs/jedi_update_2009.pdf (JEDI Support Team, 2009).

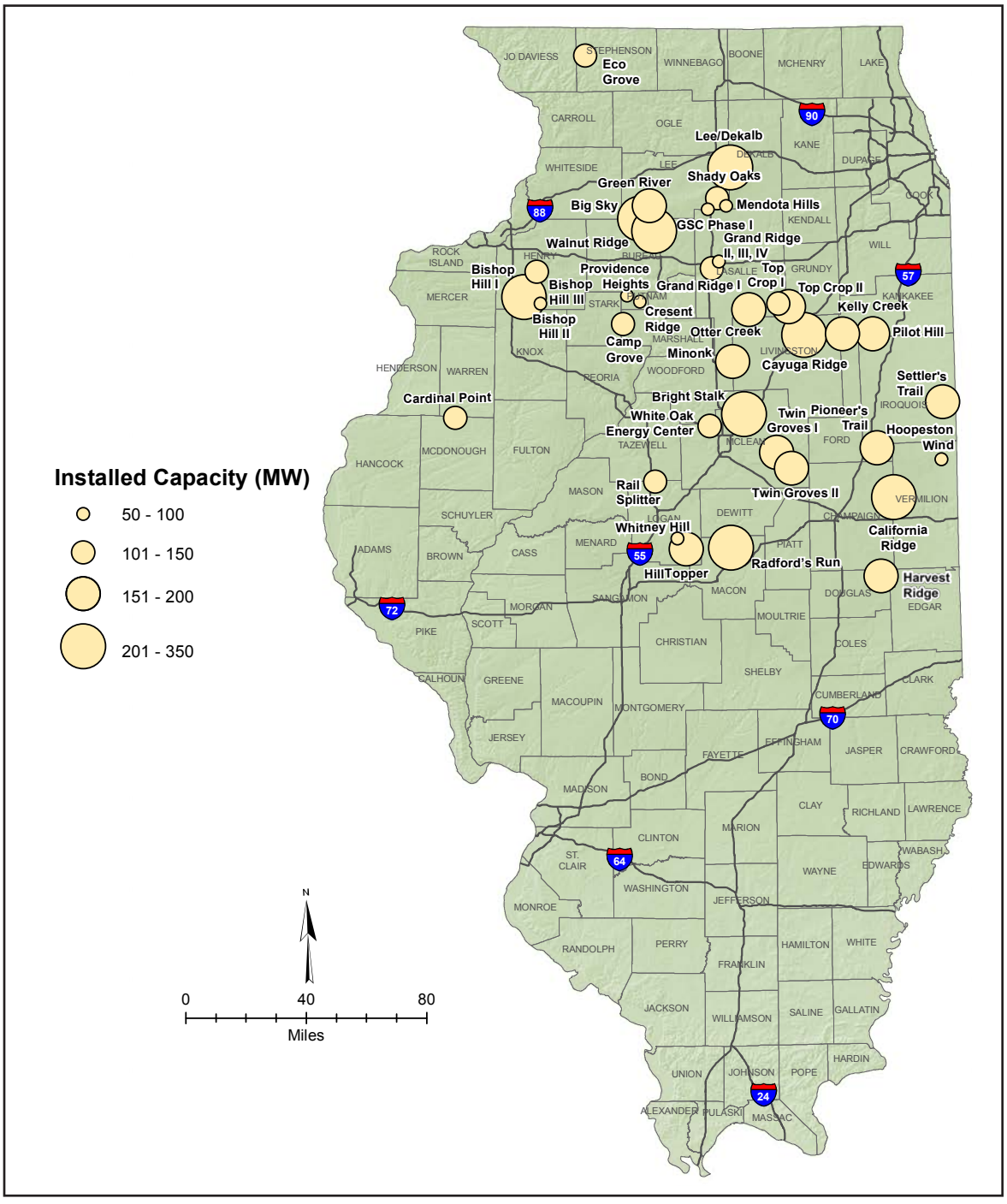
D. Research Data

Lists of Illinois' wind power projects were obtained from AWEA and the Illinois Wind Working Group databases (AWEA, 2016; IWWG, 2016). The project lists contained information regarding wind project name, developer, owner/operator, power purchaser, location, capacity (MW), project status, year online, turbine manufacturer, number of turbines, and turbine size. Data collected for the 39 largest wind projects in Illinois (see Table 5.1 and Figure 5.1), which amounts to 5,865 MW of wind generating capacity, were used in this analysis. Project-specific information on each wind project was entered into the JEDI model to estimate the income, economic activity, and number of job opportunities accruing to the state from the project. The data used in the JEDI model was collected from the following sources: wind energy developers; media information; wind conference presentations by developers, attorneys, county board members, and members of the communities; corporate press releases; school district, project developer, county board, and electric cooperative websites; news releases from the Illinois state government; and information from the Illinois Department of Revenue website. Much of the information required by the JEDI model is considered proprietary by many developers. Consequently, information about individual wind farms will not be released. JEDI model defaults for Illinois were used for information that was not available from developers.

Table 5.1 – Illinois Wind Farm Projects Larger than 50 MW with Project Details

Wind Farm	Location (County)	Capacity (MW)	Turbines	Units	Year Online
Harvest Ridge Wind Farm (Broadlands)	Douglas	199.8	Vestas	48	2020
Otter Creek	LaSalle	158.2	Vestas	42	2020
Cardinal Point	McDonough and Warren	150	GE Renewable Energy	60	2020
Mendota Hills Wind Farm	Lee	76.125	Siemens Gamesa	29	2019
Green River	Lee and Whiteside	194.25	Siemens Gamesa	74	2019
Whitney Hill	Logan	65.28	GE Renewable Energy	24	2019
Bright Stalk Wind Farm	McLean	205.2	Vestas	57	2019
Walnut Ridge	Bureau	212	Vestas	106	2018
Bishop Hill III	Henry	132.1	GE Renewable Energy	53	2018
HillTopper	Logan	185	GE Renewable Energy	74	2018
Radford's Run	Macon	305.8	Vestas	139	2017
Kelly Creek	Ford and Kankakee	184	Vestas	92	2016
Pilot Hill	Iroquois and Kankakee	175.1	GE Renewable Energy	103	2015
Hoopeston Wind	Vermilion	98	Vestas	49	2015
California Ridge	Champaign and Vermilion	217.08	GE Renewable Energy	134	2012
Bishop Hill I	Henry	211.38	GE Renewable Energy	133	2012
Bishop Hill II	Henry	81	GE Renewable Energy	50	2012
Shady Oaks	Lee	109.5	Goldwind Americas	71	2012
Minonk	Livingston and Woodford	200	Siemens Gamesa	100	2012
Big Sky Wind Facility	Bureau and Lee	239.4	Suzlon	114	2011
Pioneer Trail Wind Farm	Ford and Iroquois	150.4	GE Renewable Energy	94	2011
Settlers Trail Wind Farm	Iroquois	150.4	GE Renewable Energy	94	2011
White Oak Energy Center	McLean	150	GE Renewable Energy	100	2011
Top Crop Wind Farm Phase II	Grundy	198	GE Renewable Energy	132	2010
Streator Cayuga Ridge South	Livingston	300	Siemens Gamesa	150	2010
Lee/Dekalb Wind	DeKalb and Lee	217.5	GE Renewable Energy	145	2009
Grand Ridge Wind Farm II, III, & IV	LaSalle	111	GE Renewable Energy	74	2009
Top Crop Wind Farm Phase I	LaSalle	102	GE Renewable Energy	68	2009
Rail Splitter	Logan and Tazewell	100.5	GE Renewable Energy	67	2009
EcoGrove	Stephenson	100.5	Nordex USA Inc.	67	2009
Twin Groves II	McLean	198	Vestas	120	2008
Providence Heights Wind Farm	Bureau	72	Siemens Gamesa	36	2008
Grand Ridge Wind Farm	LaSalle	99	GE Renewable Energy	66	2008
GSG Wind Farm	LaSalle and Lee	80	Siemens Gamesa	40	2007
Camp Grove	Marshall and Stark	150	GE Renewable Energy	100	2007
Twin Groves I	McLean	198	Vestas	120	2007
Crescent Ridge	Bureau	54.45	Vestas	33	2005

Figure 5.1 – Map of Illinois Wind Farm Projects Larger than 50 MW



Wind Project Data: American Wind Energy Association

VI. Economic Impact of Existing Wind Energy Projects

Employment impacts can be broken down into two main categories – short-term jobs during the construction period and long-term jobs during operation caused by the operations and maintenance of the wind energy project. Short-term jobs during construction include the construction workers actually building the wind project, as well as the supply chain jobs created to support that construction, along with the induced jobs resulting from this activity. All of the jobs numbers in this report are reported 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 only constitute a fraction of a job. Direct jobs created during the operational phase last the life of the wind farm, typically 30 years.[9] Direct construction jobs, as well as operations and maintenance jobs, all require highly skilled workers in the fields of construction, management, and engineering. Based on the model's results, the 39 largest wind power projects in Illinois support approximately 29,295 full-time equivalent jobs during construction periods, and are supporting approximately 1,307 permanent jobs in Illinois (see Figure 6.1 and Table 6.1).

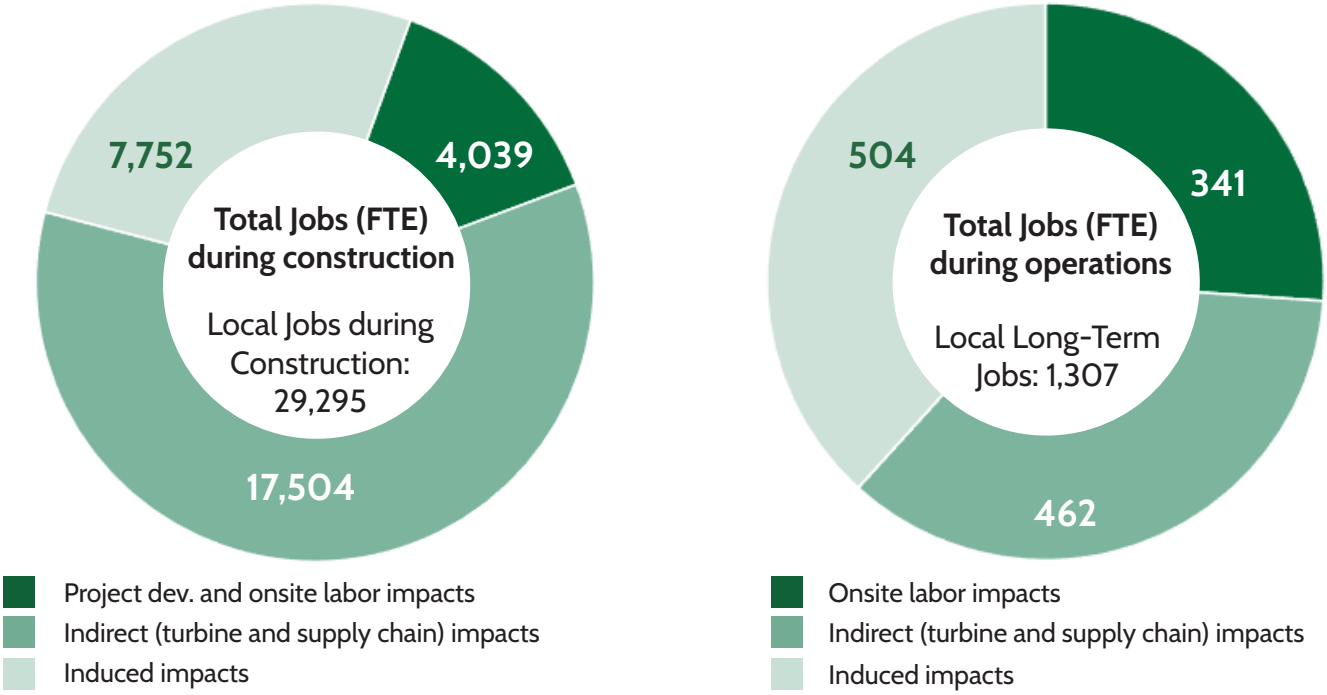
Furthermore, these are good-paying jobs. The average earnings during construction are $65,599/year and the average earnings during operations are $60,203/year.

Landowners benefit when they lease their land to wind developers because of the stabilized income stream. According to the model's results, the 39 largest wind farms in Illinois are generating over $22 million annually in extra income for Illinois landowners who lease their land to wind farm developers.

Output refers to economic activity or the value of production in the state or local economy. According to the model's results, the 39 largest wind projects in Illinois will generate a total economic benefit of $10.2 billion over the life of the projects (construction and 25 years of operations were assumed in this calculation).

[9] Often, wind projects are repowering with newer, more modern turbines even before they reach the end of the expected project life. In Illinois, the Mendota Hills wind project in Lee County was recently repowered with newer, larger turbines than the ones that were originally erected in 2003.

Figure 6.1 – Economic Impacts from Illinois' 39 Largest Wind Projects (5,865 MW)



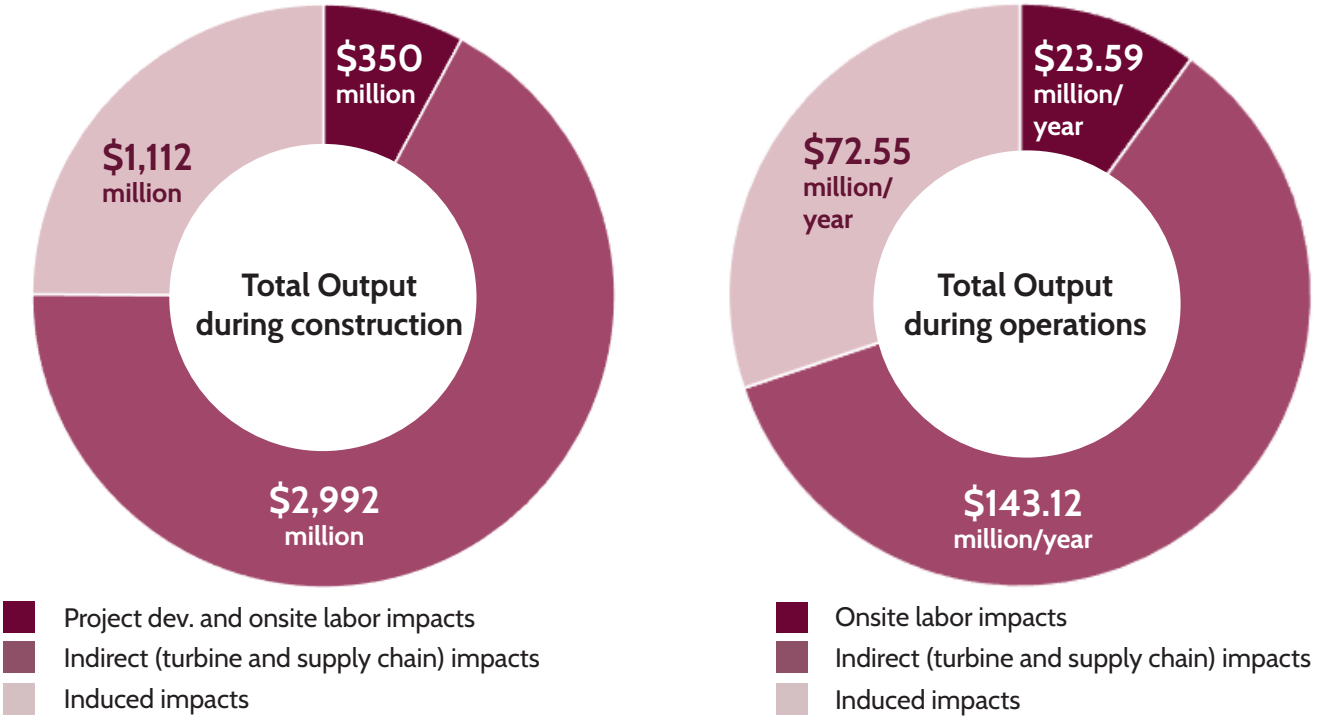


Table 6.1 – Economic Impacts from Illinois' 39 largest Wind Projects (5,865 MW)

Construction	**Total Jobs (FTE)**	**Total Output**
Project Development and Onsite Labor Impacts	4,039	$350 million
Turbine and Supply Chain Impacts	17,504	$2,992 million
Induced Impacts	7,752	$1,112 million
Local Jobs during Construction	29,295	
Operations		
Onsite Labor Impacts	341	$23.59 million/year
Local Revenue and Supply Chain Impacts	462	$143.12 million/year
Induced Impacts	504	$72.55 million/year
Local Long-Term Jobs	1,307	
Total Economic Benefit	$10.2 billion	
Payments to Landowners	$22.4 million/year	
Local Property Tax Revenue	$54.7 million/year	

VII. Historical Property Tax Revenues

A. Background

Wind and 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. 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 2019 is 1.27." (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). Similarly, Public Act 100-0781 sets a uniform formula for the fair cash value of a solar farm that is similar to the uniform formula used for wind farms. Signed into law by Governor Rauner in August 2018, it states that 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. Known as the Trending Factor, this adjustment increases each year according to the Bureau of Labor Statistics' Consumer Price Index for all cities for all items. Depreciation is again 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).

The taxable revenue from utility-scale wind and solar projects is very, steady predictable income. Although the revenue does decline due to depreciation, the rate of decrease is only 4% per year and is offset by general inflation. These projects cannot move away like a manufacturer or retailer can.

B. Data Collection

To collect the historical property taxes that existing utility-scale wind and solar energy projects have paid, we contacted each County Assessor's Office to retrieve a list of parcel identification numbers associated with wind or solar farms within their county. Once we got that information, we were able to look up the tax information through each county's property tax database. The information that was collected included the names of the taxing bodies paid to by that particular PIN, the tax rates for all of those taxing bodies, as well as the exact amount of taxes paid to each taxing entity. This data was collected for every year that the wind/solar farm was online and for every PIN associated with a wind or solar farm and totaled 223,852 tax records.[10]

As the information for each PIN was collected, we did a quality control check by adding up the list of payments made to the separate taxing bodies and checked it with the total amount of property tax listed for that PIN. This process was done for a total of 23 counties within Illinois, with some counties having as many as 300 PINs associated with wind/solar farms. Once all of the data was collected for a county, the numbers were double checked by another researcher. This was done by going through the same process listed above, retracing the researcher's steps to make sure the tax data was correctly recorded. The data collected only reflects utility-scale wind and solar projects, and not residential or commercial solar projects.

[10] Cook County's Assessors Office did not return repeated emails and phone calls, so the tax payments for the Exelon City Solar's 9 MW plant were estimated using the standardized assessment passed in 2018 and the taxing jurisdictions for its West Pullman location. If the Cook County assessor had a different assessed value from 2010 to 2018, our estimated taxes paid would be different. All other tax data was based on actual tax records collected from each county.

C. Results

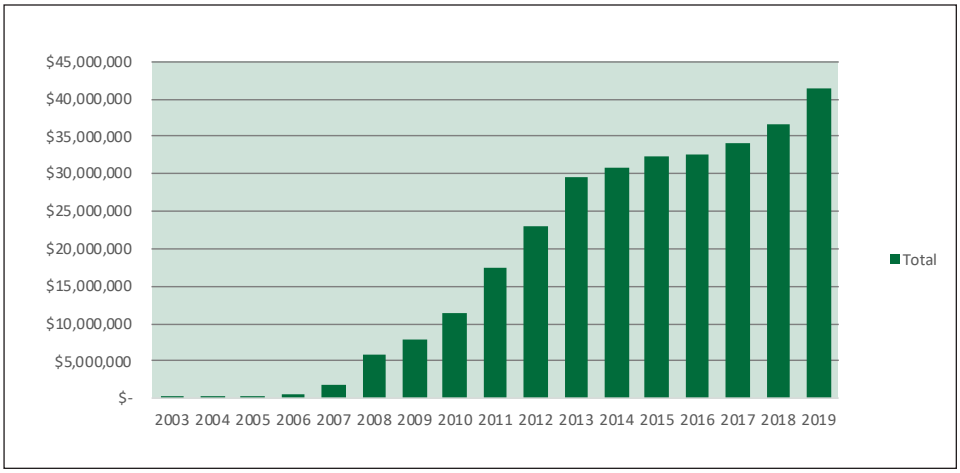
Table 7.1 and Figure 7.1 show that Illinois tax revenue generated by the development of utility-scale wind and solar farms has increased from $235.04 in 2003 to $41,427,393.77 in 2019. The most significant increase was during the years of 2010 to 2013; tax revenue increased by $18,113,357.60 during those three years.

Table 7.1 –
Illinois Tax Revenue per Year

Year	Tax Revenue
2003	$235
2004	$320,285
2005	$403,465
2006	$623,977
2007	$1,879,434
2008	$5,868,340
2009	$7,923,219
2010	$11,457,887
2011	$17,345,615
2012	$22,914,287
2013	$29,571,245
2014	$30,948,650
2015	$32,431,955
2016	$32,707,283
2017	$34,180,501
2018	$36,596,652
2019	$41,427,394
Grand Total	**$306,600,423**

Source: County Tax Records
and Author's Calculations

Figure 7.1 – Illinois Tax Revenue per Year

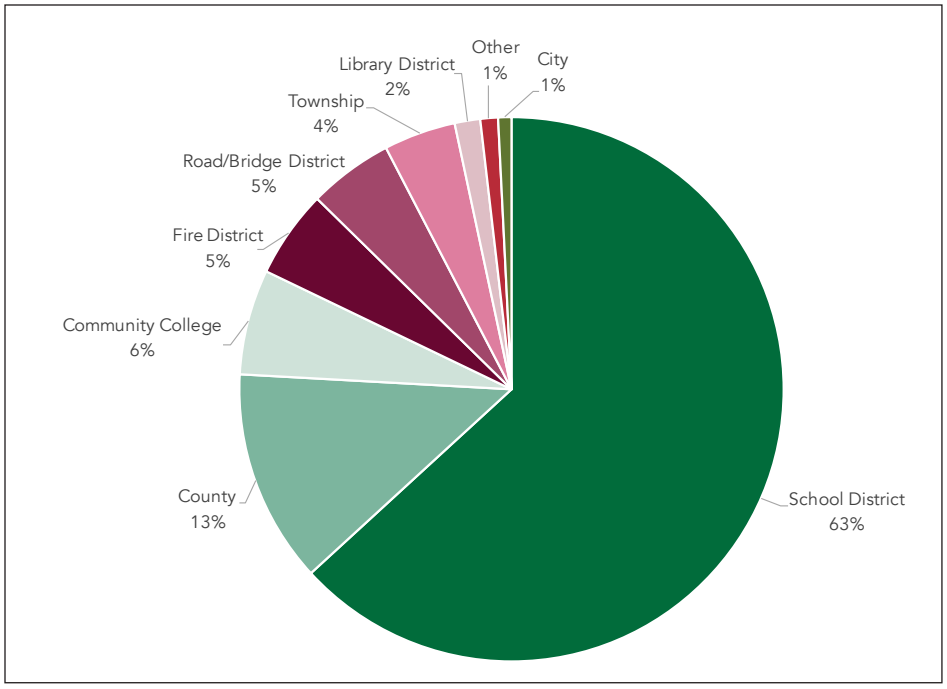


Source: County Tax Records and Author's Calculations

Figure 7.2 shows the property tax revenue by taxing area. School districts received 63% of the property tax revenue paid by the projects. The counties where the wind farms are located received 13% of the property tax revenue, and community colleges received 6%. Fire districts, road/bridge districts, townships, and library districts received 5%, 5%, 4%, and 2% respectively. Cities received 1%. The "other" category received 1% and includes multi-township districts, park districts, county governments, conservation districts, county health and mental health, forest preserves, cemetery districts, airports, sanitation districts, city/villages, community halls, cooperative extensions, water districts, and more.

The actual tax revenue flowing to each taxing area is shown in Table 7.2. School districts have received over $193.7 million, followed by County Governments with $38.9 million; Community Colleges with $19.1 million; Fire Districts with $15.9 million and Road and Bridge Districts with $15.4 million.

Figure 7.2 – Property Tax Revenue by Taxing Area



Source: County Tax Records and Author's Calculations

Table 7.2 – Property Tax Revenue by Taxing Area

Jurisdiction	Revenue
School District	$193,741,519
County	$38,904,507
Community College	$19,174,594
Fire District	$15,968,682
Road/Bridge District	$15,416,593
Township	$13,109,257
Library District	$4,652,331
Other	$3,219,016
City	$2,413,924

Source: County Tax Records and Author's Calculations

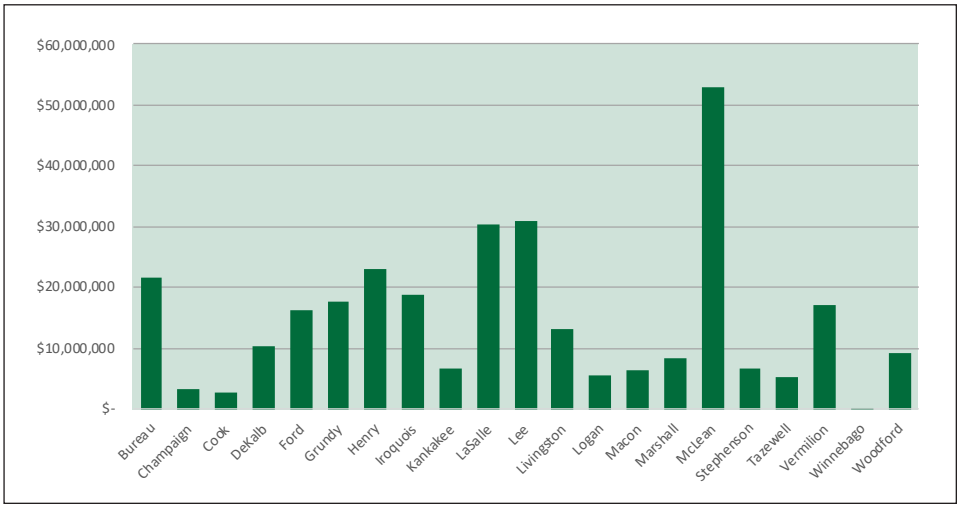
Figure 7.3 and Table 7.3 show the tax revenue by county generated by the development of utility-scale wind and solar from 2003-2019. McLean County has received the most tax revenue (over $53 million); LaSalle and Lee Counties have each received over $30 million, and Bureau and Henry Counties have each received over $20 million.

Table 7.3 –
Tax Revenue by County
from 2003-2019

County	Revenue
Bureau	$21,591,437
Champaign	$3,399,359
Cook	$2,710,940
DeKalb	$10,198,424
Ford	$16,170,154
Grundy	$17,717,062
Henry	$22,978,306
Iroquois	$18,781,113
Kankakee	$6,700,227
LaSalle	$30,449,065
Lee	$30,978,113
Livingston	$13,051,041
Logan	$5,590,735
Macon	$6,490,102
Marshall	$8,294,416
McLean	$53,013,593
Stephenson	$6,611,123
Tazewell	$5,145,442
Vermilion	$17,156,435
Winnebago	$312,676
Woodford	$9,260,660
Grand Total	**$306,600,423**

Source: County Tax Records and Author's Calculations

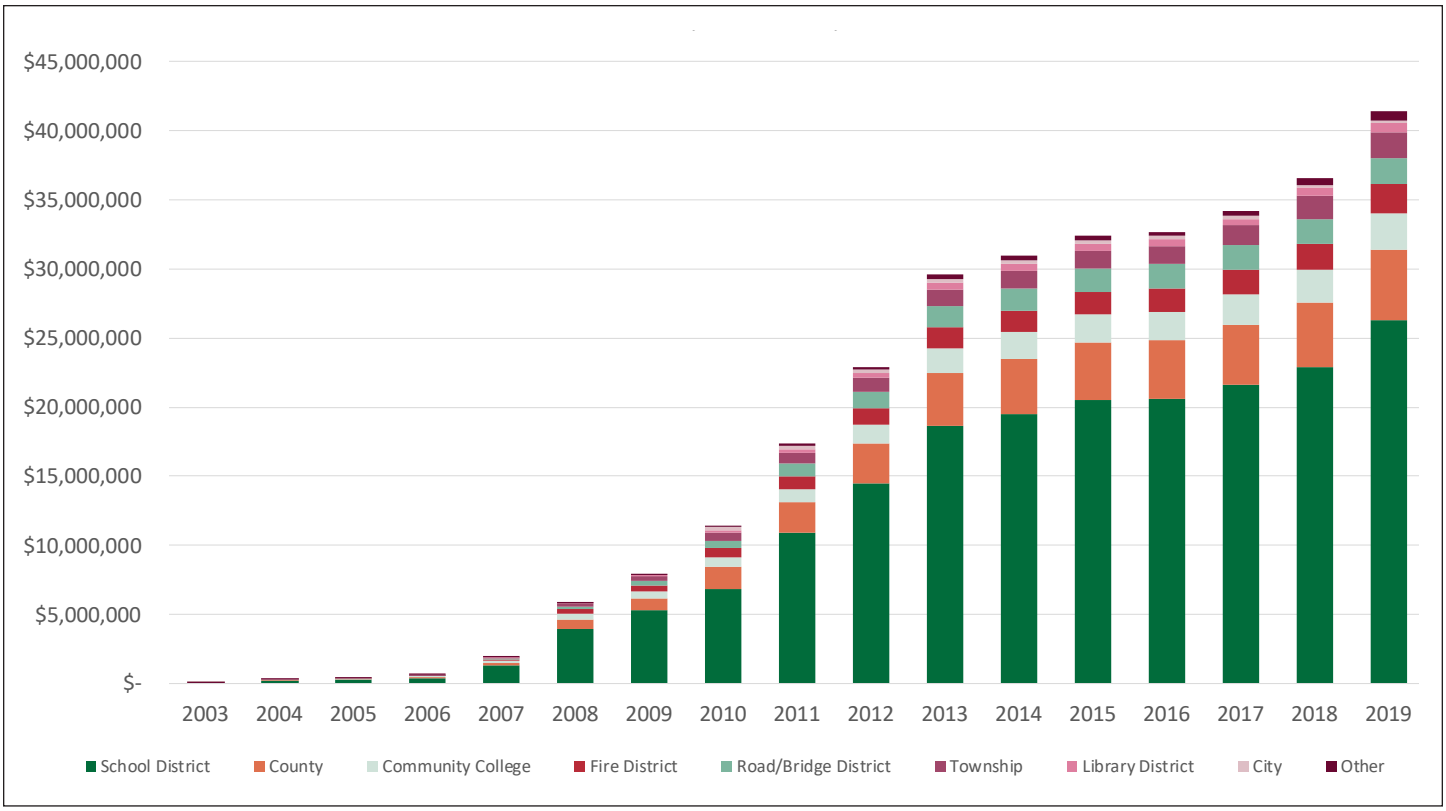
Figure 7.3 – Tax Revenue by County from 2003-2019



Source: County Tax Records and Author's Calculations

Figure 7.4 and Table 7.4 show the tax revenue by jurisdiction for each year. This combines the data displayed in Figures 7.1 and 7.2.

Figure 7.4 – Tax Revenue by Jurisdiction by Year



Source: County Tax Records and Author's Calculations

Table 7.4 – Tax Revenue by Jurisdiction by Year

Year	School District	County	Community College	Fire District	Road/ Bridge District	Township	Library District	City	Other
2003	$120	$17	$10		$3	$2	$7	$47	$29
2004	$220,808	$32,062	$22,548	$13,033	$18,773	$11,767	$6	$45	$1,243
2005	$259,538	$38,480	$45,151	$16,597	$18,844	$23,348	$6	$41	$1,462
2006	$379,526	$54,233	$99,455	$23,203	$20,304	$42,078	$3,193	$113	$1,870
2007	$1,278,474	$210,895	$135,482	$95,492	$59,545	$72,134	$24,250	$99	$3,063
2008	$3,935,026	$681,342	$390,758	$345,024	$234,495	$194,426	$64,953	$109	$22,205
2009	$5,292,904	$890,391	$482,494	$398,410	$338,327	$376,917	$110,259	$121	$33,396
2010	$6,852,019	$1,579,893	$691,175	$655,558	$576,886	$551,512	$192,867	$266,540	$91,437
2011	$10,949,707	$2,159,131	$983,597	$929,418	$916,534	$796,386	$240,330	$260,176	$110,336
2012	$14,467,601	$2,947,337	$1,340,982	$1,196,700	$1,188,807	$1,012,670	$361,328	$253,632	$145,230
2013	$18,637,200	$3,798,701	$1,832,111	$1,516,009	$1,507,281	$1,253,348	$461,432	$258,796	$306,368
2014	$19,499,183	$3,985,832	$1,938,498	$1,593,356	$1,613,109	$1,253,403	$482,783	$251,712	$330,772
2015	$20,515,590	$4,150,555	$2,027,410	$1,651,817	$1,682,158	$1,306,912	$491,771	$243,264	$362,480
2016	$20,636,617	$4,193,168	$2,058,735	$1,732,656	$1,722,078	$1,312,726	$485,292	$234,467	$331,542
2017	$21,652,110	$4,328,357	$2,153,443	$1,796,776	$1,839,491	$1,374,902	$477,967	$227,249	$330,206
2018	$22,895,341	$4,705,029	$2,334,662	$1,887,348	$1,799,156	$1,681,780	$594,297	$213,421	$485,619
2019	$26,269,755	$5,149,083	$2,638,082	$2,117,285	$1,880,801	$1,844,946	$661,590	$204,094	$661,759
Total	$193,741,519	$38,904,507	$19,174,594	$15,968,682	$15,416,593	$13,109,257	$4,652,331	$2,413,924	$3,219,016

Source: County Tax Records and Author's Calculations

Table 7.5 shows the total tax revenue collected within each county by year. The counties that collected the most property tax revenue were the ones with the longest history of wind farms and the largest sized projects. McLean County started collecting property tax revenue in 2007 from the Twin Groves Wind Farm (198 MW) which was the largest wind farm east of the Mississippi River at the time that it was built. Since then, Twin Groves II (198 MW) and White Oak (150 MW) Wind Farms were built and started paying property taxes. Lee County had the very first wind farm built in the state in 2003 – Mendota Hills Wind Farm but it has since been "re-powered" with the old wind turbines taken down and new, more modern turbines replacing them.

Table 7.5 – County Tax Revenue by Year

Year	McLean	Lee	LaSalle	Henry	Bureau	Iroquois	Grundy	Vermilion	Ford	Livingston
2003										
2004		$320,068								
2005		$322,241			$81,030					
2006		$371,064			$252,390					
2007	$1,269,811	$392,370	$116,577		$100,214					
2008	$3,688,730	$787,298	$499,292		$138,424					
2009	$3,897,409	$762,787	$1,499,872		$745,383					
2010	$3,780,795	$750,132	$2,991,368		$930,038	$4,830				$994,147
2011	$4,804,231	$2,227,294	$3,014,065		$1,925,702	$4,790	$2,459,942			$973,295
2012	$5,130,571	$2,937,655	$3,000,278	$1,129,397	$1,990,494	$1,934,364	$2,045,968		$1,449,081	$918,089
2013	$4,782,421	$3,403,946	$2,989,479	$2,952,007	$1,961,362	$1,982,151	$2,041,052	$1,786,971	$1,422,513	$1,542,393
2014	$4,644,919	$3,345,802	$2,909,612	$2,896,590	$1,891,709	$1,946,170	$2,001,274	$1,722,397	$1,400,541	$1,556,083
2015	$4,543,211	$3,251,127	$2,919,008	$2,911,952	$1,864,478	$2,342,920	$1,948,152	$2,799,565	$1,397,175	$1,501,197
2016	$4,342,885	$2,985,441	$2,802,395	$2,794,892	$1,817,981	$2,863,058	$1,937,863	$2,832,635	$1,490,546	$1,462,525
2017	$4,176,772	$3,115,967	$2,663,500	$2,700,730	$1,807,661	$2,733,502	$1,857,597	$2,763,616	$3,151,435	$1,434,797
2018	$4,055,560	$2,705,137	$2,585,529	$3,512,410	$1,771,383	$2,551,383	$1,763,876	$2,643,599	$2,975,114	$1,376,714
2019	$3,896,280	$3,299,784	$2,458,089	$4,080,329	$4,313,188	$2,417,945	$1,661,338	$2,607,651	$2,883,746	$1,291,802
Grand Total	$53,013,593	$30,978,113	$30,449,065	$22,978,306	$21,591,437	$18,781,113	$17,717,062	$17,156,435	$16,170,154	$13,051,041

Table 7.5 (continued) – County Tax Revenue by Year

Year	DeKalb	Woodford	Marshall	Kankakee	Stephenson	Macon	Logan	Tazewell	Champaign	Cook	Winnebago
2003											$235
2004											$217
2005											$194
2006											$523
2007											$462
2008			$754,079								$517
2009			$776,855		$894		$71,022	$168,421			$575
2010			$756,297		$6		$401,802	$539,872		$307,928	$673
2011			$730,692		$1		$390,059	$514,688		$300,695	$161
2012		$109,379	$743,753		$315,933		$389,172	$526,845		$293,121	$188
2013		$1,400,328	$716,608		$863,604		$355,237	$506,582	$524,583	$285,200	$54,805
2014	$1,905,917	$1,373,688	$685,893		$993,809		$327,286	$491,117	$523,690	$276,919	$55,233
2015	$1,868,272	$1,349,011	$674,744	$378,860	$984,222		$317,855	$514,444	$546,613	$268,265	$50,884
2016	$1,724,393	$1,323,900	$662,237	$1,164,676	$929,120		$300,678	$492,761	$473,699	$259,238	$46,361
2017	$1,660,164	$1,249,593	$641,326	$1,804,705	$885,687		$286,994	$480,489	$465,399	$249,816	$50,750
2018	$1,564,789	$1,238,835	$594,503	$1,691,456	$842,435	$3,225,582	$325,486	$466,166	$440,205	$239,995	$26,494
2019	$1,474,889	$1,215,926	$557,429	$1,660,529	$795,412	$3,264,520	$2,425,143	$444,057	$425,170	$229,763	$24,405
Grand Total	$10,198,424	$9,260,660	$8,294,416	$6,700,227	$6,611,123	$6,490,102	$5,590,735	$5,145,442	$3,399,359	$2,710,940	$312,676

Source: County Tax Records and Author's Calculations

Table 7.6 shows the property tax revenue at the taxing entity level. Nine of the top 10 taxing entities are school districts and the top three school districts are in McLean County. CUSD #19 Ridgeview School District received almost $18 million; CUSD #3 Tri Valley received $8.4 million and CUSD #5 in Normal, IL received $7.6 million. Other school districts in Iroquois, Ford, Grundy, Woodford, Henry, and DeKalb counties received between $6.3 million and $7.2 million. McLean County Government received over $5.9 million in property taxes so far.

Table 7.6 – Top 50 Taxing Entities

	CUSD 19 RIDGEVIEW	CUSD 3 Tri Valley	CUSD 5 Normal	UNIT #124	P-B-L School #10	MVK GRADE SCHOOL 2	Unit 6	GALVA SCHOOL UNIT #224	School District 425	McLean County
County	McLean	McLean	McLean	Iroquois	Ford	Grundy	Woodford	Henry	DeKalb	McLean
2004										
2005										
2006										
2007	$346,271	$527,896	$0							$148,819
2008	$1,683,831	$751,619	$0							$421,777
2009	$1,811,871	$721,597	$0							$417,330
2010	$1,726,838	$722,519	$0	$0						$415,071
2011	$1,805,696	$705,926	$593,218	$0		$946,461				$518,677
2012	$1,683,561	$699,628	$945,525	$0	$933,435	$784,706	$80,905	$404,868		$569,616
2013	$1,394,396	$678,224	$945,343	$1,007,079	$916,133	$779,262	$1,041,166	$919,850		$549,711
2014	$1,353,598	$654,978	$921,476	$976,565	$902,019	$761,503	$1,014,586	$891,855	$1,161,997	$529,341
2015	$1,339,480	$651,019	$892,014	$1,111,861	$899,897	$742,111	$988,571	$920,391	$1,152,611	$515,501
2016	$1,276,161	$613,678	$846,639	$1,107,900	$913,207	$741,490	$944,038	$876,574	$1,075,707	$490,584
2017	$1,231,646	$587,786	$825,743	$1,080,102	$901,077	$719,763	$889,426	$829,150	$1,038,064	$470,972
2018	$1,173,546	$558,366	$855,834	$998,133	$843,718	$675,479	$885,720	$816,062	$978,966	$457,108
2019	$1,169,477	$527,032	$817,995	$921,467	$822,272	$648,011	$870,082	$799,965	$925,220	$432,845
Grand Total	$17,996,371	$8,400,266	$7,643,786	$7,203,107	$7,131,757	$6,798,787	$6,714,493	$6,458,716	$6,332,566	$5,937,353

Table 7.6 (continued) – Top 50 Taxing Entities

	AMBOY CUSD 272	PAW PAW CUSD 271	Allen TWP G#65	LIVINGSTON COUNTY	LaSalle County	Streator H#40	OHIO G.S.#17	OHIO H.S.#505	Grand Ridge G#95	CUSD#7 MIDLAND
County	Lee	Lee	LaSalle	Livingston	LaSalle	LaSalle	Bureau	Bureau	LaSalle	Marshall
2004	$0	$213,828								
2005	$0	$216,375					$0	$0		
2006	$0	$257,270					$0	$0		
2007	$10,941	$248,620	$0		$16,116	$0	$0	$0	$0	
2008	$163,142	$292,826	$4,336		$67,611	$11,371	$0	$0	$32,969	$296,039
2009	$153,481	$291,253	$104,148		$209,513	$131,012	$0	$0	$228,451	$313,967
2010	$152,332	$284,141	$438,780	$413,131	$407,434	$418,826	$53,024	$58,561	$352,308	$297,832
2011	$568,884	$311,267	$454,832	$415,643	$407,960	$417,130	$420,682	$408,111	$351,865	$292,282
2012	$621,385	$383,792	$448,958	$411,482	$406,602	$410,710	$438,782	$427,168	$347,269	$299,064
2013	$622,621	$428,011	$459,775	$496,124	$403,561	$402,638	$427,783	$416,441	$338,238	$287,773
2014	$622,621	$406,998	$419,344	$488,322	$404,923	$399,019	$426,288	$389,490	$325,791	$274,508
2015	$595,004	$398,096	$449,856	$470,732	$398,544	$410,036	$409,709	$373,506	$318,564	$270,576
2016	$571,477	$374,864	$448,439	$455,064	$385,457	$400,984	$402,302	$372,118	$297,097	$280,563
2017	$559,589	$356,935	$435,004	$444,710	$379,966	$388,976	$410,715	$379,599	$281,826	$267,731
2018	$626,670	$185,591	$420,484	$418,254	$369,404	$374,808	$406,056	$370,051	$273,963	$245,568
2019	$589,784	$616,840	$409,085	$392,163	$353,474	$351,418	$511,492	$500,166	$260,320	$228,916
Grand Total	$5,857,932	$5,266,706	$4,493,041	$4,405,626	$4,210,564	$4,116,927	$3,906,833	$3,695,210	$3,408,661	$3,354,819

Table 7.6 (continued) – Top 50 Taxing Entities

	Lee County	CAMBRIDGE SCHOOL UNIT #227	ALWOOD SCHOOL UNIT #225	SENECA HIGH 160	Armstrong 61	Dwight H#230	Tri-point School #6J	Vermilion County	MENDOTA THSD 280	MENDOTA CCGSD 289
County	Lee	Henry	Henry	Grundy	Vermilion	LaSalle	Ford	Vermilion	Lee	Lee
2004	$32,046								$3,630	$3,241
2005	$32,641								$3,634	$3,219
2006	$34,991								$3,866	$3,416
2007	$38,179					$0			$8,682	$7,943
2008	$83,170					$0			$44,211	$40,896
2009	$77,996					$67,391			$43,190	$39,610
2010	$77,485					$326,669			$42,936	$39,422
2011	$233,130			$442,332		$327,703			$41,974	$38,290
2012	$309,786	$70,833	$124,069	$366,735		$337,962	$0		$246,541	$223,323
2013	$367,891	$498,830	$241,489	$364,191	$485,228	$342,691	$0	$332,304	$391,596	$360,254
2014	$361,469	$482,586	$232,953	$355,891	$461,052	$327,309	$0	$315,921	$380,115	$378,284
2015	$348,294	$483,172	$227,708	$346,828	$494,426	$323,819	$0	$476,392	$394,592	$365,384
2016	$334,421	$463,722	$218,222	$346,538	$443,092	$299,338	$44,069	$485,203	$318,195	$293,712
2017	$327,331	$451,275	$211,345	$336,384	$422,555	$246,125	$1,058,923	$464,296	$408,685	$389,295
2018	$294,263	$436,911	$804,439	$315,687	$402,632	$255,673	$1,006,059	$453,874	$295,097	$323,970
2019	$357,089	$420,581	$1,243,736	$303,405	$401,599	$242,810	$970,853	$455,032	$296,789	$352,775
Grand Total	$3,310,183	$3,307,910	$3,303,961	$3,177,992	$3,110,583	$3,097,490	$3,079,904	$2,983,021	$2,923,733	$2,863,032

Table 7.6 (continued) – Top 50 Taxing Entities

	High School 225	BRADFORD UNIT#1	HENRY COUNTY	UNIT SCHOOL 16	Iroquois County	SAYBROOK-ARROWSMITH FIRE DIST	Chicago	BUREAU COUNTY	HERSCHER UD #2	UNIT #2K
County	Vermilion	Bureau	Henry	Tazewell	Iroquois	McLean	Cook	Bureau	Kankakee	Iroquois
2004										
2005		$20,927						$8,970		
2006		$67,901						$29,594		
2007		$26,119				$53,035		$10,871		
2008		$27,181				$219,351		$14,543		
2009		$258,238		$79,488		$218,661		$80,909		
2010		$266,737		$261,296	$649	$215,193	$266,400	$98,405		$0
2011		$253,053		$252,625	$540	$212,682	$260,143	$200,979		$0
2012		$246,243	$130,001	$257,709	$293,590	$208,943	$253,591	$206,752		$0
2013	$443,803	$241,608	$346,121	$245,010	$294,665	$202,478	$246,737	$207,794		$0
2014	$431,950	$226,463	$341,988	$236,236	$280,093	$195,288	$239,572	$204,584		$0
2015	$436,655	$228,084	$343,385	$256,311	$309,936	$186,293	$232,088	$204,808	$158,256	$170,711
2016	$382,549	$218,214	$325,819	$242,986	$365,420	$178,516	$224,276	$200,493	$514,148	$550,148
2017	$379,241	$212,250	$318,533	$238,096	$299,895	$171,462	$216,126	$199,369	$559,503	$539,687
2018	$362,131	$205,185	$385,947	$230,615	$286,376	$158,906	$207,629	$191,927	$539,911	$521,608
2019	$376,617	$200,404	$440,000	$219,169	$272,510	$150,721	$198,777	$470,592	$524,715	$507,232
Grand Total	$2,812,946	$2,698,608	$2,631,794	$2,519,541	$2,403,673	$2,371,530	$2,345,339	$2,330,591	$2,296,533	$2,289,386

Table 7.6 (continued) – Top 50 Taxing Entities

	LE-WIN SCHOOL 202	Ford	FLANAGAN/ CORNELL #74	UNIT SCHOOL DIST 21	PARKLAND JR COLLEGE 505	BURVAL UNIT#340	Maroa-Fors School #2	OHIO CCGSD 17	HIGHLAND TWP ROAD	UNIT #10F
County	Stephenson	Ford	Livingston	Logan	McLean	Bureau	Macon	Lee	Grundy	Iroquois
2004								$0		
2005						$0		$0		
2006						$0		$0		
2007					$29,768	$0		$0		
2008					$168,006	$0		$0		
2009	$0			$38,890	$161,828	$0		$0		
2010	$2		$0	$219,375	$160,181	$0		$0		$0
2011	$0		$0	$212,328	$158,114	$29,295		$202,852	$213,988	$0
2012	$6	$182,713	$0	$208,672	$157,590	$29,404		$180,221	$178,146	$190,193
2013	$214,226	$179,327	$291,100	$189,314	$154,071	$28,561		$175,775	$177,658	$189,364
2014	$359,727	$176,564	$285,098	$172,307	$148,764	$30,790		$176,572	$174,158	$188,790
2015	$375,327	$176,148	$271,840	$162,821	$147,083	$29,112		$169,682	$169,526	$188,733
2016	$353,545	$188,543	$269,849	$152,664	$141,727	$26,653		$166,596	$168,627	$200,472
2017	$343,937	$411,691	$267,113	$145,949	$134,875	$22,592		$166,596	$161,677	$196,213
2018	$326,540	$388,736	$251,855	$165,305	$128,300	$26,681	$785,405	$161,962	$153,142	$184,496
2019	$306,846	$376,755	$232,715	$154,917	$121,136	$1,540,619	$777,530	$153,189	$135,430	$176,960
Grand Total	$2,280,157	$2,080,477	$1,869,569	$1,822,543	$1,811,443	$1,763,707	$1,562,935	$1,553,446	$1,532,352	$1,515,221

VIII. Future Economic Impacts Resulting from Path to 100

A. Assumptions

As mentioned earlier, the Path to 100 legislation will bring substantial new renewable energy development to Illinois. Starting with Procurement Year 2021 (6/1/21-5/31/22), the Illinois Power Agency would procure sufficient renewable energy credits to result in the renewable energy capacity additions outlined in Table 8.1.

Table 8.1 – Estimated Procurement of Renewable Energy Capacity Resulting from the Path to 100 Legislation in Megawatts[11]

	Utility-Scale Wind	Utility-Scale Solar	Community Solar	Residential Solar	Distributed Generation Solar	Brownfield Solar
2021	372	281	132	112	134	0
2022	586	444	208	176	211	12
2023	580	439	206	174	209	18
2024	583	441	207	175	210	18
2025	583	441	207	175	210	18
2026	581	440	206	174	209	18
2027	578	437	205	173	208	18
2028	575	435	204	173	207	18
2029	572	433	203	172	206	18
2030	572	433	203	172	206	18
Total	**5,582**	**4,226**	**1,981**	**1,675**	**2,011**	**158**

Source: Path to 100 team

[11] Solar capacity is in MW_{AC}

However, each type of renewable energy takes different lead times to actually construct the projects. We assume that residential solar is built in the same year as it is procured. We assume that Community Solar, Distributed Generation Solar, and Brownfield Solar projects would be built in the year after it is procured. For Utility-Scale Wind and Solar, we assume that construction is three years after the year it is procured because of the additional permitting and financing that is required. Table 8.2 provides the actual construction year given these lags.

Table 8.2 – Estimated Renewable Energy Construction Resulting from the Path to 100 Legislation in Megawatts[12]

	Utility-Scale Wind	Utility-Scale Solar	Community Solar	Residential Solar	Distributed Generation Solar	Brownfield Solar
2021				112		
2022			132	176	134	12
2023			208	174	211	18
2024	372	281	206	175	209	18
2025	586	444	207	175	210	18
2026	580	439	207	174	210	18
2027	583	441	206	173	209	18
2028	583	441	205	173	208	18
2029	581	440	204	172	207	18
2030	578	437	203	172	206	18
2031	575	435	203		206	
2032	572	433				
2033	572	433				
Total	**5,582**	**4,226**	**1,981**	**1,675**	**2,011**	**158**

Source: Path to 100 team

[12] Solar capacity is in MW_{AC}

The construction costs and operations and maintenance costs for renewable energy projects have been declining for many years. Although the rate of decline may level off at some time in the future, we want to incorporate these cost-decline trends into our assumptions regarding the economic impacts that will result from these projects. To get an objective forecast of future cost declines, construction costs and operations and maintenance cost assumptions were taken from the 2020 National Renewable Energy Laboratory (NREL) Annual Technology Baseline (ATB) Data forecast of future costs for "class 3 moderate" for wind and "Chicago moderate" scenarios for solar (atb.nrel.gov). Tables 8.3 and 8.4 show these cost assumptions.

In 2020, the capital expenditure (CAPEX) for utility-scale wind is $1,519/kW and annual operation and maintenance (O&M) cost is $42.50/kW. In 2033, these costs decline to $1,190/kW and $38.07/kW. For utility-scale solar, the CAPEX is $1,354/kW and the annual O&M cost is $15.85/kW in 2020. In 2033, these costs decline to $814/kW and $9.53/kW. Residential solar's CAPEX goes from $2,644/kW in 2020 to $1,085/kW in 2033. NREL's ATB does not have costs for distributed solar, community solar or Brownfield solar. We used the commercial solar costs for distributed generation; the average of utility-scale solar and commercial solar as the cost for community solar; and commercial plus $500/kW for brownfield solar.

Table 8.3 – CAPEX Cost Assumptions 2020-2033 ($/kW)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Utility-Scale Wind	1,519	1,493	1,466	1,438	1,410	1,381	1,351	1,321	1,290	1,259	1,227	1,214	1,202	1,190
Utility-Scale Solar	1,354	1,302	1,250	1,198	1,147	1,095	1,043	992	940	888	836	829	822	814
Commercial Solar	1,742	1,672	1,601	1,531	1,460	1,390	1,319	1,249	1,178	1,108	1,037	1,025	1,013	1,001
Residential	2,644	2,492	2,340	2,188	2,036	1,884	1,732	1,581	1,429	1,277	1,125	1,111	1,098	1,085
Community Solar	1,548	1,487	1,426	1,365	1,303	1,242	1,181	1,120	1,059	998	937	927	917	908
Brown Field Solar	2,242	2,172	2,101	2,031	1,960	1,890	1,819	1,749	1,678	1,608	1,537	1,525	1,513	1,501

Source: NREL ATB

Table 8.4 – O&M Cost Assumptions 2020-2033 ($/kW)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Utility-Scale Wind	42.50	42.14	41.79	41.43	41.08	40.72	40.37	40.01	39.66	39.30	38.95	38.66	38.37	38.07
Utility-Scale Solar	15.85	15.25	14.64	14.03	13.43	12.82	12.22	11.61	11.01	10.40	9.80	9.71	9.62	9.53
Commercial Solar	12.49	11.99	11.48	10.97	10.47	9.96	9.46	8.95	8.45	7.94	7.44	7.35	7.26	7.18
Residential	19.83	18.69	17.55	16.41	15.27	14.13	12.99	11.85	10.71	9.57	8.43	8.33	8.23	8.13
Community Solar	14.17	13.62	13.06	12.50	11.95	11.39	10.84	10.28	9.73	9.17	8.62	8.53	8.44	8.36
Brown Field Solar	12.49	11.99	11.48	10.97	10.47	9.96	9.46	8.95	8.45	7.94	7.44	7.35	7.26	7.18

Source: NREL ATB

B. Results

Using the JEDI model and substituting the CAPEX and O&M costs appropriate for that year, we estimated the economic impacts of the renewable energy projects that are expected from the Path to 100 legislation. As shown in Table 8.5 and Figure 8.1, the Path to 100 legislation is expected to support 53,298 jobs during construction and 3,215 long-term jobs annually during the expected 30-year life of the projects.[13] The total earnings for these jobs equal over $4.05 billion during construction and over $219 million annually during operations. The total output from these projects is $8.27 billion during construction and $571 million annually during operations. Figure 8.2 shows the number of jobs supported over time during construction and Figure 8.3 shows the growth in jobs supported during operations. These jobs grow over time as more and more projects come online.

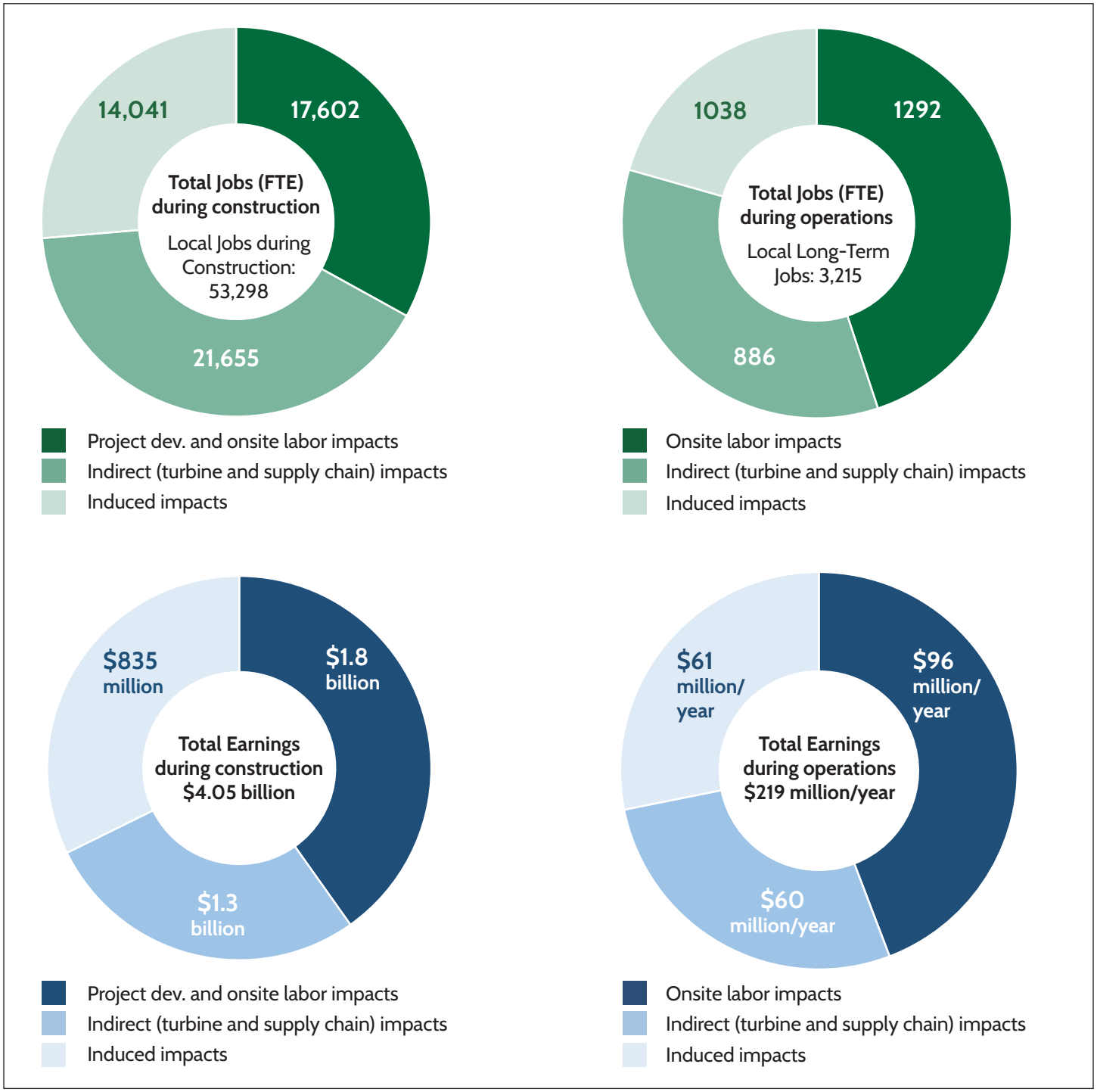
Table 8.5 – Economic Impacts from Illinois' Projected Solar and Wind Projects 2021-2033

Construction	**Total Jobs (FTE)**	**Total Earnings**	**Total Output**
Project Development and Onsite Labor Impacts	17,602	$1.8 billion	$2.3 billion
Turbine and Supply Chain Impacts	21,655	$1.3 billion	$3.5 billion
Induced Impacts	14,041	$835 million	$2.4 billion
Local Jobs during Construction	**53,298**	**$4.05 billion**	**$8.27 billion**
Operations			
Onsite Labor Impacts	1,292	$96 million/year	$96 million/year
Local Revenue and Supply Chain Impacts	886	$60 million/year	$297 million/year
Induced Impacts	1,038	$61 million/year	$177 million/year
Local Long-Term Jobs	**3,215**	**$219 million/ year**	**$571 million/ year**

Source: Author's calculations

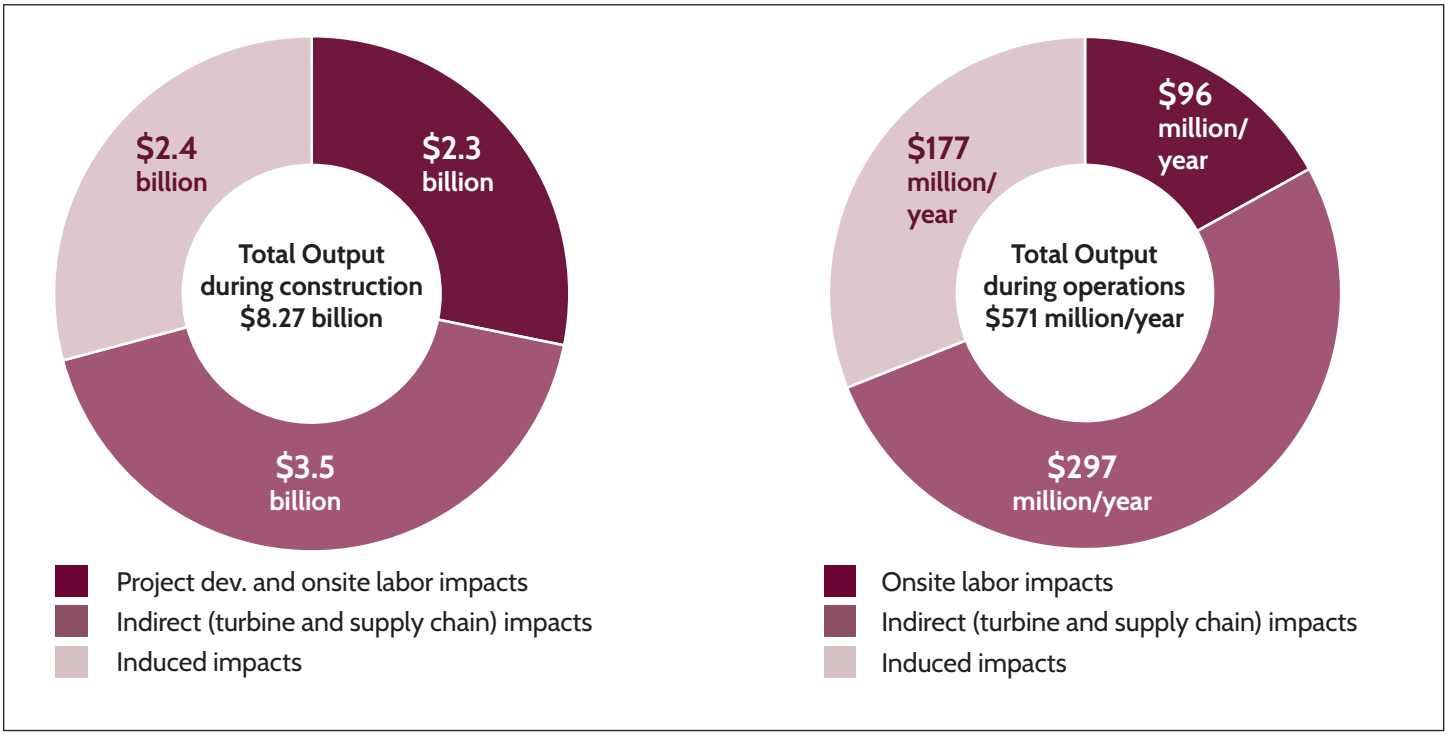
[13] The life of these projects could be longer than 30 years if these projects are eventually repowered as noted earlier.

Figure 8.1 – Economic Impacts from Illinois' Projected Solar and Wind Projects 2021-2033



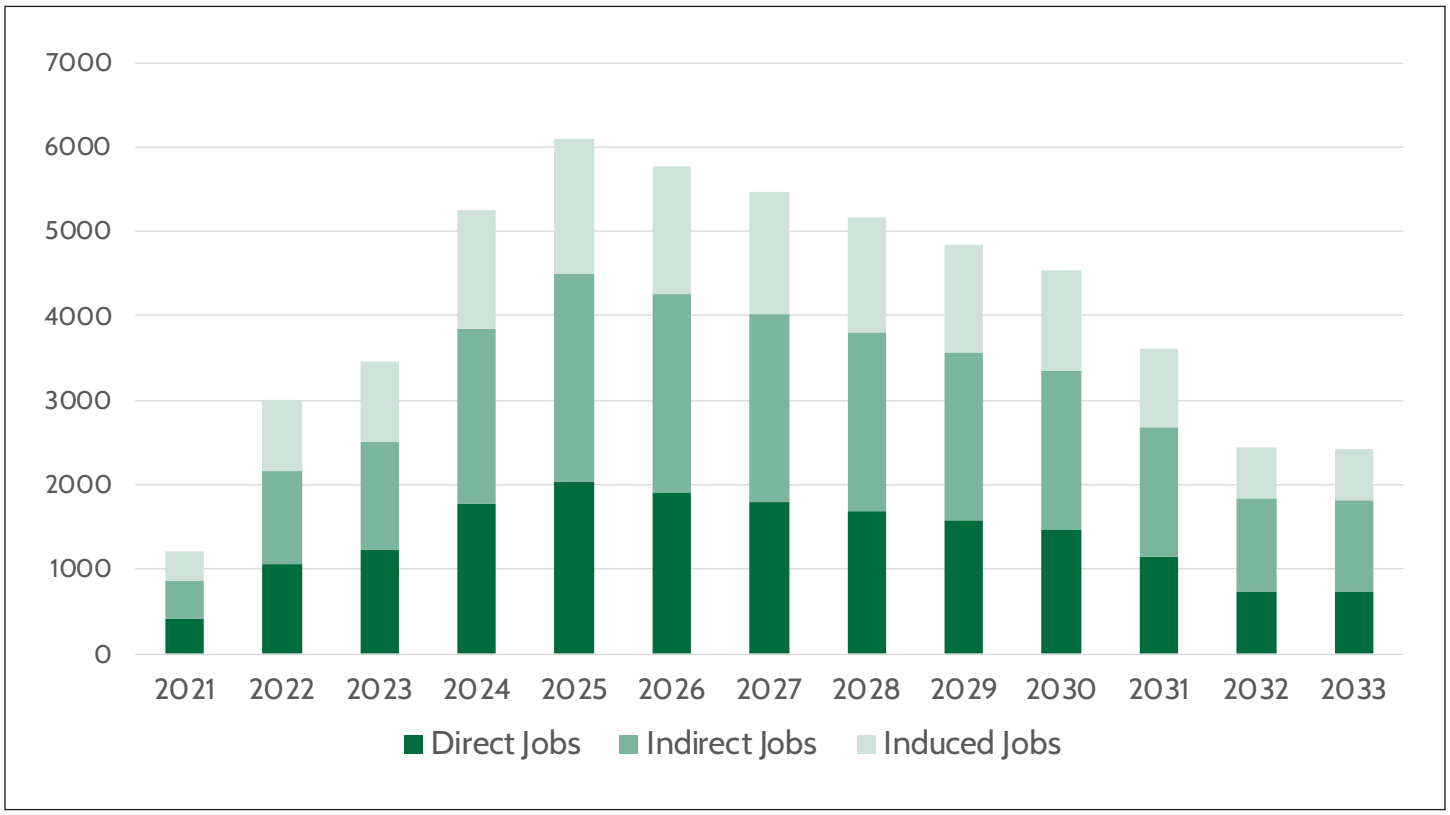
Source: Author's calculations

Figure 8.1 (continued) – Economic Impacts from Illinois' Projected Solar and Wind Projects 2021-2033



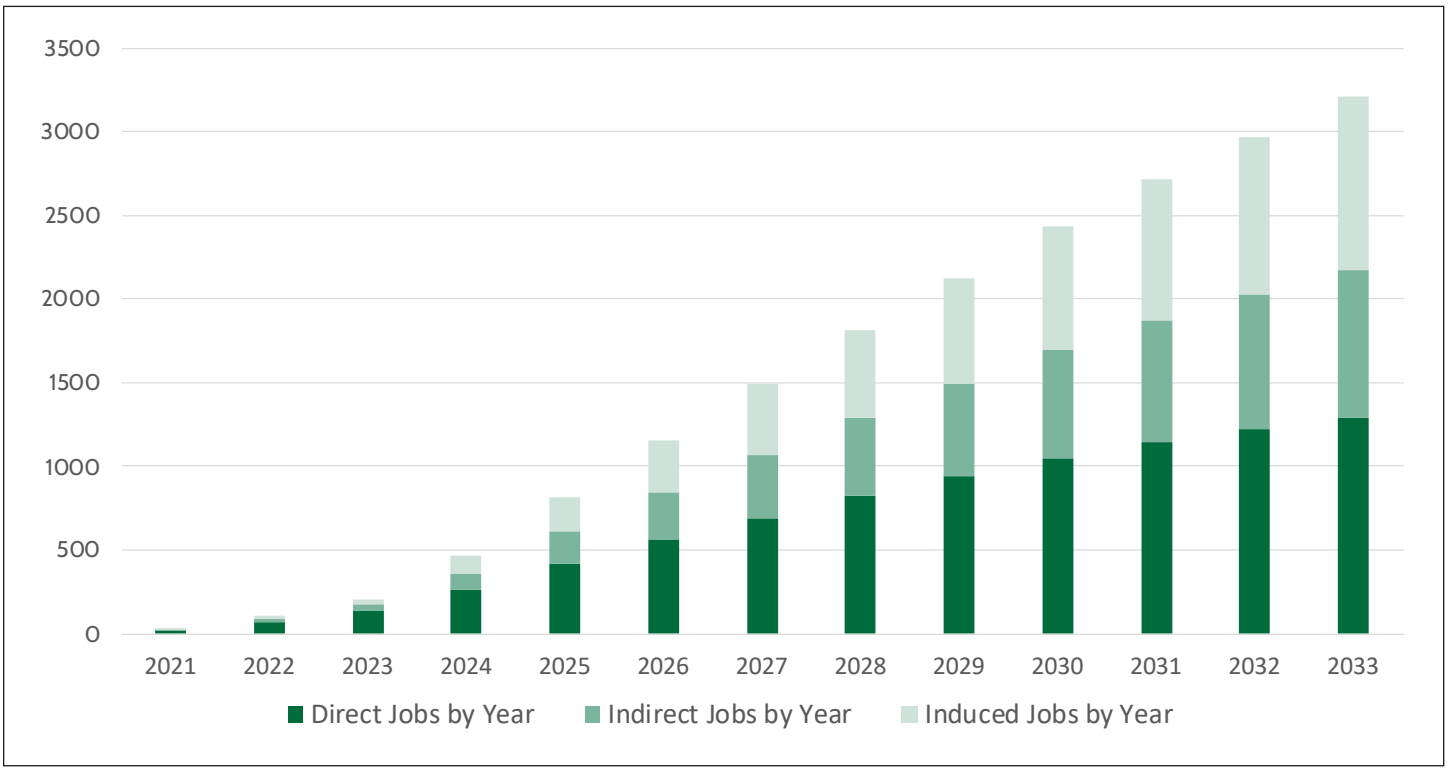
Source: Author's calculations

Figure 8.2 – Job Growth during Construction Period for Projected Wind and Solar Projects from years 2021-2033



Source: Author's calculations

Figure 8.3 – Job Growth during Operations and Maintenance Period for Projected Wind and Solar Projects from years 2021-2033

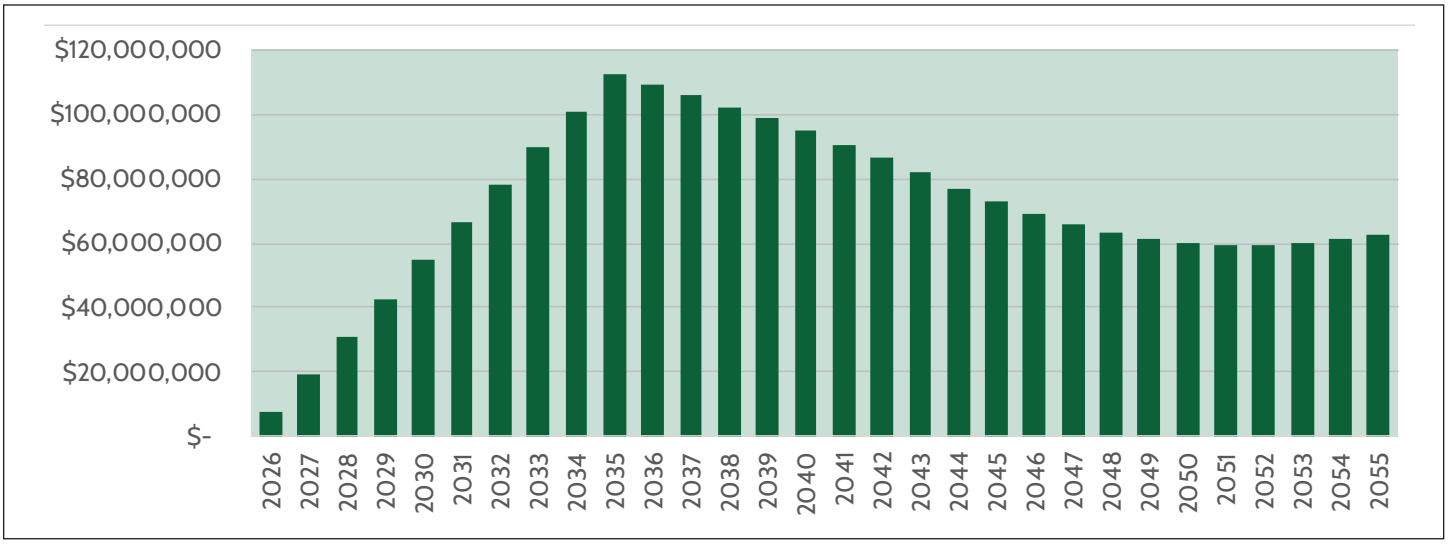


Source: Author's calculations

In addition to the jobs that will be created, these new projects will bring additional property tax revenue. To calculate the exact amount of tax revenue, the exact location of each project would be needed. However, we can estimate the property tax revenue using McLean County's tax rate of 8.517 as a representative tax rate for these new projects. Using the State of Illinois' assessed value of wind and solar projects as explain in Section 7 and assuming an inflation rate of 2.2%, we can calculate the total property taxes paid by utility-scale wind and solar projects. Figure 8.4 shows the annual property taxes projected to be paid by these utility-scale projects. This tax estimate severely underestimates the total tax impact coming from all the Path to 100 projects and it only accounts for utility-scale wind and solar and does not account for community solar, residential solar, distributed generation solar, or brownfield solar. These projects will have property tax revenue, but it is too difficult to reliably estimate it because the standardized assessment law does not apply to these types of projects.

Property taxes from the Path to 100 projects do not start until 2026 because they are assumed to be built in 2024, assessed in 2025 and start to pay taxes in 2026. These projects are assumed to pay property taxes through 2055. The projects built in 2025 will pay taxes from 2027 through 2056. Figure 8.4 shows the sum of all the projects over all of the years listed. The projects built in the later years will continue to pay property taxes past the year 2055 that is shown in the graph. Total property tax revenues rise each year until they peak in 2035 at over $112 million. Since no new projects are assumed to be added, the total property taxes decline due to depreciation. Property taxes start to rise again in 2052 after the projects reach their maximum depreciation and the trending factor starts to increase their assessed value. The total property taxes paid by the utility-scale wind and solar projects over their 30-year lifetime is over $2.46 billion.

Figure 8.4 – Property Taxes from Projected Utility-Scale Wind and Solar Projects from Years 2026 to 2055



Source: Author's calculations

IX. Conclusion

In conclusion, the Path to 100 Act (HB 2966 / SB 1781) will build upon Illinois' existing growth of utility-scale wind and solar energy projects by expanding the Illinois Renewable Portfolio Standard and ensuring that sufficient funding exists to fully implement the Illinois RPS. This analysis projects that Path to 100 will result in 53,298 jobs created or supported during construction periods and 3,215 jobs created or supported annually during operations. Also, $8.27 billion will be generated in increased total output during construction and $571 million per year in increased total output during operations.

The Path to 100 Act will ensure that these wind and solar energy projects continue to progress forward and bring more jobs, income and output to their respective communities.

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