

## Acknowledgements

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This report is also available as a PDF on www.RenewableEnergy.ilstu.edu, under New Reports.

Cover Photo source: Janet Niezgoda Cover Map source: Illinois Institute for Rural Affairs Back Cover Photo source: Pete Juvinall



# **Illinois Wind Working Group**



The Illinois Wind Working Group (IWWG) is affiliated with the Department of Energy's Wind Powering America State Wind Working Groups. IWWG is administered by the Center for Renewable Energy at Illinois State University, including Dr. David Loomis (Economics), David Kennell (Technology), Dr. J. Randy Winter (Agriculture), and Dr. Jin Jo (Technology).

Wind Powering America (WPA) is a regionally-based collaborative initiative to increase the nation's domestic energy supply by promoting the use of Wind Energy Technology, such as low wind speed technology, to increase rural economic development, protect the environment, and enhance the nation's energy security. WPA provides technical support and educational and outreach materials about utility-scale development and small wind electric systems to utilities, rural cooperatives, federal property managers, rural landowners, Native Americans, and the general public.

IWWG is an organization whose purposes are to communicate wind opportunities honestly and objectively; to interact with various stakeholders at the local, state, regional and national levels; and to promote economic development of wind energy in the state of Illinois. The organization hosted by Illinois State University was originally funded through a grant from the U.S. Department of Energy. The Illinois Wind Working Group is comprised of 200 key wind energy stakeholders from the state of Illinois.

IWWG is part of Illinois State University's Center for Renewable Energy and hosts an annual Advancing Wind Power in Illinois Conference that covers many aspects of wind energy; an annual Siting, Zoning and Taxing Wind Farms in Illinois Conference; and Landowner Forums throughout the state.

## www.RenewableEnergy.ilstu.edu/wind/



# Why Illinois?

Companies choose Illinois as their headquarters and global destination for foreign direct investment (FDI) because of our talented workforce, central geographic location, transportation and infrastructure, easy access to key markets and positive business climate.

- Illinois ranks #1 in the Midwest, and #4 in the nation, as a destination for foreign investment.
- Illinois has attracted nearly 1,600 foreign firms, with 5,711 locations, who employ over 288,700 Illinois residents.
- Illinois has the 18th largest economy in the world, with a Gross State Product (GSP) over \$650 billion dollars, and exports of nearly 8% of GSP.
- Illinois is the sixth-largest exporting state in the US, with exports of \$50 billion in 2010, up 20% over 2009.
- Illinois exports have historically accounted for more than 15% of Illinois's GSP growth over the past 10 years, and export trade supported 632,800 Illinois jobs in 2010.
- Site Selection magazine ranked Chicago the #1 metro area over 1 million for new and expanded corporate facilities, and Illinois held its #8 ranking for states with the most private-sector capital projects (2010).
- Foreign Direct Investment named Chicago the "North American City of the Future" (2006).



# Why Illinois?

### Transportation and Infrastructure



- Illinois provides air, ground transportation, rail and waterways to provide direct routes to every U.S. and international market, and we are home to three International Airports (O'Hare, Midway, and Rockford).
- Located in the center of the country, Illinois is the transportation and fiber-optic nexus for the U.S. Whether companies are looking to ship nationwide or even globally, Illinois offers more than 2,000 miles of interstate highway and 34,500 miles of additional highway.
- O'Hare is among the world's busiest airports, served by all major international carriers and the only "dual hub" airport system in North America, handling over 3,100 flights per day with non-stop or direct global gateway to 68 international business capitals.
- In October 2009, Microsoft opened a new \$500 million data center in the Chicago suburb of Northlake, a 20-minute drive from O'Hare. Also, more than 200 of the Fortune 500 companies operate major distribution centers in Illinois, storing and distributing products regionally, nationally, and internationally.
- Chicago is the #1 container hub in the western hemisphere (#5 in the world after Hong Kong, Singapore, Shanghai, Shenzhen). Our 13 port districts throughout the state offer many companies direct links to the Atlantic Ocean, Great Lakes, and Gulf of Mexico.
- For global expansion, Chicago is also home to the some of the nation's most modern and voluminous intermodal facilities in North America. This provides seamless connections for moving products, not just between the eastern and western regions of the United States, but also to and from Asia, Canada and Mexico.
- Chicago is the largest U.S. rail gateway; East St. Louis, to the south, is also a major rail center. In all, 52 railroads provide service from Illinois to every part of the United States and we are the only state where all six Class-1 North American railroads can interchange traffic.
- Foreign trade zones, located at seven sites across the state, offer low-cost production and warehousing facilities for imported and export-bound products.

Midwest Capital for

Commerce & Trade

- Chicago is the commercial capital of the U.S. (New York is the financial capital), with two of the top international exchanges (Chicago Board of Trade and Chicago Board Options Exchange).
- Chicago is the business capital of the Great Lakes region and the Midwest (\$2.3-trillion trade area when Canadian provinces Ontario and Quebec are included).
- More than 170 export managing/trading companies and 125 international freight forwarders and custom house brokers maintain offices in Illinois.
- Over 75 nations maintain Consulates/Consuls General in the state and more than 30 international banks have established branches or representative offices in Chicago.
- Chicago has 100 international trade organizations and more than 40 international/ethnic Chambers of Commerce.
- Illinois a superb place to headquarter North American operations because of the US-Canada trade relationship (largest in the world).

# <image>

# Why Illinois?

#### Well Educated and Highly Trained Workforce



#### Thriving Research and Development Community



- One of the world's most educated and best-trained workforces with a sizeable and concentrated pool of talented workers.
- Illinois is the undisputed business capital of the heartland of America, with
- Chicago having all the professional services needs to conduct business nationally and globally, boasting a world-class infrastructure of top-tier advertising, legal, accounting, finance, logistics, human resources and management consulting firms.
- Illinois ranks fifth nationally in the number of science and engineering doctorates awarded, according to the National Science Foundation. Our state, on average, gives out 1,100 engineering degrees annually.
- With over 200 academic, government and non-profit research institutions, and more than 440 corporate R&D facilities, Illinois has one of the largest concentrations of research in the world.
- Top level R&D resources including Argonne National Laboratory, the University of Illinois, Fermilab and other institutions devoted to agricultural science, food safety and technology, supercomputing, nanotechnology, and corn-to-ethanol located across the state.
- We are consistently ranked in the top ten for R&D expenditures by universities and colleges, and industry R&D, with \$1.9 billion spent on research annually.
- Illinois is home to over 300 colleges and universities including Illinois State University, Western Illinois University, University of Chicago, and Northwestern University, and well as eight research and technology parks.

#### Economic Development For a Growing Economy Tax Credit Program (EDGE)

The EDGE program offers a special tax incentive to encourage companies to locate or expand operations in Illinois when there is active consideration of a competing location in another State. The program can provide tax credits to qualifying companies, equal to the amount of state income taxes (at a tax rate of 3%) withheld from the salaries of employees in the newly created jobs. The non-refundable credits can be used against corporate income taxes to be paid over a period not to exceed 10 years. To qualify, a company must provide documentation that attests to the fact of competition among a competing state, and agree to make an investment of at least \$5 million in capital improvements and create a minimum of 25 new full time jobs in Illinois. For more information: (217) 524-8449.

#### Business Development Public Infrastructure Program (BDPIP)

The Business Development Public Infrastructure Program provides funds for infrastructure improvements in support of economic development in Illinois. BDPIP helps local governments finance public infrastructure needed to support economic development and private sector job creation and retention. Funding is available only for infrastructure projects which lead directly to private sector expansion or retention activities. General infrastructure construction and renovation activities -- those which lead only indirectly to job creation and retention -- are not eligible for consideration. The program, which is administered by DCEO, for example, could make funding available to a community to extend a water line to permit the location of a new facility and the creation of jobs or to increase the capacity of a sewer line to meet the expansion needs of an existing facility. Program funds may be used for a wide variety of public infrastructure improvements needed to induce job creation and retention. These include local roads and streets, access roads, bridges, sidewalks, waste disposal systems, water and sewer line extensions, water distribution and purification facilities, sewage treatment facilities, gas and electric utility extensions, public transit systems, and the development and improvement of publicly owned industrial and commercial sites. There is no maximum amount of infrastructure funds which may be invested in any one project. However, the amounts must be commensurate with the number of jobs created or retained. For this program, at least one private sector job must be created or retained for every \$10,000 awarded by the department. Typically, the department will limit its assistance to \$500,000 or less. Over the last several years, the average BDPIP award amounted to approximately \$360,000. For more information: (217) 557-0513.

#### www.commerce.state.il.us



State Incentives for Proposed Wind Manufacturing Facilities

#### DCEO continued

State Incentives for Proposed Wind Manufacturing Facilities

# Community Development Assistance Program for Economic Development (CDAP-ED)

The CDAP-ED program is a federally funded program that is designed to provide grants to units of local government for economic development activities related to business retention and/or expansion opportunities. The program is targeted to assist low-to-moderate income people by creating job opportunities and improving the quality of their living environment. Local governments qualifying to receive grant funds can then make these funds available in the form of loans to businesses locating or expanding in their community. A local government may request grant funds of up to \$750,000. Funds may be used for machinery and equipment, working capital, and building construction and renovation. The local government may also use the grant funds for improvements to public infrastructure that directly support a specific economic development project. An application must document at least a 51% benefit to low-to-moderate income persons or it will not be eligible. For more information: (217) 785-6142.

#### Enterprise Zone Program (certified by DCEO)

The Illinois Enterprise Zone Program is designed to stimulate economic growth and neighborhood revitalization in economically depressed areas of the state. This is accomplished through state and local tax incentives and regulatory relief. Businesses located or expanding in an Illinois enterprise zone may be eligible for the following incentives: an exemption on the sales/use tax and/or retailers' occupation tax paid on building materials, an investment tax credit of 0.5% of qualified property, and an enterprise zone jobs tax credit for each job created in the zone for which a certified dislocated worker or economically disadvantaged individual is hired. Additional exemptions, such as an expanded state sales tax exemption on purchases of personal property used or consumed in the manufacturing process or in the operation of a pollution control facility and an exemption on the state utility tax for electricity, natural gas and the Illinois Commerce Commission's administrative charge and telecommunications excise tax, are available for companies that either make a \$5 million investment that creates 200 fulltime jobs or a \$40 million investment that retains 2000 full-time jobs. For more information: (217) 785-6193.

#### Employer Training Investment Program (ETIP)

ETIP supports Illinois workers' efforts to upgrade their skills in order to remain current in new technologies and business practices, enabling companies to remain competitive, expand into new markets and introduce more efficient technologies into their operations. ETIP grants may reimburse Illinois companies for up to 50 percent of the cost of training their employees. Grants may be awarded to individual businesses, intermediary organizations operating multi-company training projects and original equipment manufacturers sponsoring multicompany training projects for employees of their Illinois supplier companies. For more information: (312) 814-1182.

#### www.commerce.state.il.us

#### Economic Development Program (EDP)

The purpose of the Economic Development Program is to provide state assistance in improving highway access to new or expanding industrial distribution or tourism developments. The intent is to make available state matching funds that will be a positive contribution in the location-selection process and to target those projects which will expand the state's existing job base or create new employment opportunities. The focus of the program is on the retention and creation of primary jobs. Funding will be available to construct highway facilities that provide direct access to industrial, distribution or tourism developments. The program is designed to assist in those situations where development of these types of facilities is imminent. Projects which only improve opportunities for development or are speculative in nature are not eligible for EDP funding. Projects providing access to retail establishments, office parks, government facilities or school/universities are not eligible for EDP funding. Over the last several years, the average EDP award has amounted to approximately \$700,000. For more information: (217) 782-2755.

#### Rail Freight Program (RFP)

The purpose of the RFP is to provide capital assistance to communities, railroads and shippers to preserve and improve rail freight service in Illinois. The primary role of the program is to facilitate investments in rail service by serving as a link between interested parties and channeling government funds to projects that achieve statewide economic development. IDOT will generally provide low interest loans to finance rail improvements and, in some cases, provide grants. The focus is on projects with the greatest potential for improving access to markets and maintaining transportation cost savings, and where state participation will leverage private investments to foster permanent solutions to rail service problems. A benefit/cost ratio is used to evaluate potential rail freight projects. For more information: (217) 782-2835.

#### Truck Access Route Program (TARP)

The purpose of the TARP is to help local government agencies upgrade roads to accommodate 80,000 pound trucks. The routes are to provide access to points of loading and unloading and to facilities for food, fuel, truck repair and driver rest. Projects must connect to a truck route and end at another truck route or truck generator. IDOT will provide up to \$30,000 per lane mile and \$15,000 per intersection. The state participation will not exceed 50 percent of the total construction cost or \$600,000, whichever is less. Each fall IDOT solicits local projects that can be constructed during the upcoming fiscal year. For more information: (217) 785-2798.

#### www.dot.state.il.us



Illinois Department of Transportation

State Incentives for Proposed Wind Manufacturing Facilities



#### State Incentives for Proposed Wind Farms

#### Loan Guarantees for Wind Energy Facilities

Recent changes in state law clarify both the IFA's existing bonding authority and its ability to provide credit enhancement (loans guaranteed by a pledge of the State's additional security or moral obligation) for renewable energy projects, up to \$3 billion.

Key program characteristics:

- Up to \$3 billion of loan guarantees for project debt.
- Can contain long term tenors to fully repay the project debteliminating the risk of refinancing.
- Secured by the moral obligation support of the State of Illinois.

Multiple models available:

- Model A: Loan Guarantees of Private Sector Debt
  - IFA provides a loan guarantee to developer's private sector lenders
  - Private sector lender has Illinois moral obligation pledge
- Model B: Issuance of Bonds Secured by the Moral Obligation
  - IFA issues bonds secured by both project revenues and Illinois' moral obligation support
  - IFA then loans bond proceeds to developer to pay for project construction
- Combination of Model A and B
  - IFA can provide a loan guarantee to the private sector lenders on their shorter term financing (Series A) and the IFA can be the lender, on a pari-passu basis, for a Series B financing that represents longer term debt

#### www.il-fa.com

## **Community & Economic Development Organizations**

In Illinois, siting authority for wind development projects is the responsibility of county governments. The Illinois Institute for Rural Affairs maintains a statewide database of community-based economic development organizations who serve as liaisons with local government agencies.

Access the database through www.iira.org/data/iiraresource/.

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# **Supply Chain Companies**

#### **Northeast Illinois**



Information provided by the Environmental Law and Policy Center and the US Census Bureau.

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# **Supply Chain Companies**

According to the Environmental Law and Policy Center's report titled, "The Clean Energy Supply Chain in Illinois: Wind, Solar and Geothermal," Chicago is the wind industry's corporate headquarters. Chicago is home to at least 13 global or U.S. headquarters of major wind power companies. This hub of companies attracts more businesses to this headquarters city. Wind industry and supply chain companies with global and U.S. headquarters in the Chicago area include:





# **Supply Chain Companies**



The Illinois wind industry includes turbine and tower makers; manufacturers of gears, couplings, bearings and fasteners; legal, financial, engineering and consulting firms; and diagnostic software designers. ELPC identified 150 Illinois companies involved in the wind industry including:



The full ELPC report can be found at: http://elpc.org/2011/07/31/ supplychainreports.

The Center for Renewable Energy at Illinois State University authored a report titled, "Illinois Wind Turbine Supply Chain Report in June, 2010. One of the purposes of the report was to quantify the potential economic impact of wind turbine supply chain development in the State of Illinois. The report found that, depending on how quickly specific industries are able to retool to meet the precise requirements of each of the components of a wind turbine, employment, income, and output impacts could be substantial over the next several years. As a benchmark, if all of the new wind turbine capacity that is predicted to be installed in Illinois over the 2011-2015 time period were to be produced in Illinois, the report estimates that between 15.8 and 16.8 thousand additional jobs would be created. Income would increase by between \$1.04 and \$1.08 billion, while total output would increase by approximately \$3.9 billion.

The full report is available at: www.RenewableEnergy.ilstu.edu, under Reports on the right side of the page.







## **Big Sky Wind Farm** Bureau and Lee Counties, IL

Developer: Midwest Wind Energy

Owner/Operator: Edison Mission Energy

Location: Ohio, East Grove, and May

Capacity: 239.4 MW

Units: 114

Turbines: Suzlon S88 2.1 MW

Construction: 2009

Interconnection: PJM Interconnection

Online: 2011



The Big Sky Project is a 240 MW wind farm located in Ohio, East Grove and May Townships in Bureau and Lee Counties, IL. Big Sky is composed of 114, 2.1 MW turbines spread out over 13,000 acres of elevated farmland and is one of Illinois' premier wind resources. In addition to the turbine sites, Midwest Wind Energy developed and permitted an 18 mile 138kV transmission line that links the Big Sky Project to the transmission network. Edison Mission Energy is now the owner/operator of Big Sky Wind Farm.

## Bishop Hill I Henry County, IL

Developer: Invenergy

Owner/Operator: Invenergy

Power Purchaser: Tennessee Valley Authority

Location: Near Glava and Kewanee

Capacity: 211.4 MW

Units: 133

Turbines: GE 1.5 & 1.6 MW

Construction: 2011-2012

Construction Firm: Gemma Renewable Power

Interconnection: PJM Interconnection

Online: 2012



The Bishop Hill I wind project is located in Henry County, IL, near the towns of Galva and Kewanee, approximately 40 miles southwest of Moline. When operational, the wind farm will have enough installed capacity to power approximately 65,000 homes with clean energy each year. Bishop Hill I is scheduled to start commercial operation in 2012. The power generated by the wind farm will be purchased by the Tennessee Valley Authority.

## Bishop Hill II Henry County, IL

Developer: Invenergy

Owner/Operator: Sale to MidAmerican Energy Holdings has been announced

Power Purchaser: Ameren Illinois

Location: Near Glava

Capacity: 80 MW

Units: 50

Turbines: GE 1.62 MW

Construction: 2011-2012

Construction Firm: Boldt

Interconnection: MISO

Online: 2012



The Bishop Hill II wind project is located in Henry County, Illinois near the town of Galva, approximately 40 miles southwest of Moline. When operational, the wind farm will have enough installed capacity to power approximately 25,000 homes with clean energy each year. Bishop Hill II is scheduled to start commercial operation in 2012. The

power generated by the wind farm will be purchased by Ameren Illinois.



## California Ridge Champaign and Vermilion Counties, IL

Developer: Invenergy

Owner/Operator: Invenergy

Power Purchaser: Tennessee Valley Authority

Location: Northwest of Danville

Capacity: 200 MW

Units: 134

Turbines: GE 1.6 XLE

Construction: 2012

Construction Firm: White Construction

Interconnection: MISO

Online: 2012



The California Ridge wind project is located in Champaign and Vermilion Counties, IL, northwest of Danville. When operational, the wind farm will have enough installed capacity to power approximately 65,000 homes with clean energy each year. California Ridge is scheduled to start commercial operation in 2012. The power generated by the wind farm will be purchased by the Tennessee Valley Authority.

# Camp Grove Wind Farm

## Marshall and Stark Counties, IL

Developer: Orion Energy Group (OEG)

Owner/Operator: Orion Energy Group/Camp Grove Wind Farm, LLC

Power Purchaser: Appalachian Power, American Electric Power, Camp Grove, Commonwealth Edison

Location: North of Peoria

Capacity: 150 MW

Units: 100

Turbines: GE Energy SLE 1.5 MW

Construction: 2007

Construction Firm: Mortensen Construction

Interconnection: PJM Interconnection

Online: 2007

# **Crescent Ridge**

#### Bureau County, IL

Developer: Midwest Wind Energy, Community Energy, Inc., and Eurus Energy

Owner/Operator: Infigen Energy/Eurus Energy America

Power Purchaser: Exelon Corp.

Location: Indiantown, Milo

Capacity: 54.45 MW

Units: 33

Turbines: Vestas V82 1.65 MW

Construction Firm: White Construction

Interconnection: PJM Interconnection

Online: 2005



The Camp Grove Wind Farm is a 100-turbine wind farm in downstate Illinois, north of the city of Peoria. The owner of the project is Camp Grove Wind Farm LLC, which is owned by subsidiaries of Orion Energy Group LLC and other investors. The project is managed by Orion Energy Group LLC, and, at 1.5 megawatts per General Electric turbine, has a nameplate capacity of 150 megawatts.



The Crescent Ridge Wind Farm is a 54.45 MW project located across 2,200 acres of land in Indiantown and Milo Townships in Bureau County, IL. The project was co-developed by Midwest Wind Energy (formally Illinois Wind Energy), Community Energy, Inc. and Eurus Energy America, Inc.



# Eco Grove Wind Farm I

## Stephenson County, IL

Developer: Acciona Energy

Owner/Operator: Acciona Energy

Capacity: 100.5 MW

Units: 67

Turbines: Acciona Windpower 1.5 MW

Construction Year: 2009

Construction Firm: Boldt

Interconnection: MISO Interconnection

Online: 2009



ACCIONA's EcoGrove Wind Farm has 67 ACCIONA Windpower 1.5 MW wind turbine generators located on private agricultural land, and generates enough clean energy to power more than 25,000 U.S. homes. EcoGrove Wind Farm has 10 permanent employees and employed 125 people during the height of construction phase.

## Grand Ridge Phases I-IV LaSalle County, IL

Developer: Invenergy

Owner/Operator: Invenergy

Power Purchaser: I - PJM Wholesale Market; II-III -Appalachian Power Company, a subsidiary of American Electric Power; Grand Ridge IV: Commonwealth Edison

Capacity: 210 MW

Units: 140

Turbines: GE 1.5 SLE

Construction Year: 2007-2009

Construction Firm: Grand Ridge I: Boldt Grand Ridge II-IV: Gemma Renewable Power

Interconnection: PJM Interconnection

Online: 2008-2009



The Grand Ridge wind project is comprised of four phases and is located in La Salle County, IL, approximately 80 miles southwest of Chicago. The 210 MW wind farm consists of 140 turbines, generating enough clean energy to power approximately 65,000 homes each year. Grand Ridge first began commercial operations in 2008.

# GSG 1 Wind Farm

## Lee and LaSalle Counties, IL

Developer: FPC Services

Owner/Operator: Infigen Energy

Power Purchaser: Exelon Corp.

Capacity: 80 MW

Units: 40

Turbines: Gamesa G87 2 MW

Construction Firm: White Construction

Interconnection: PJM Interconnection

Online: 2007



GSG Wind Farm commenced operations in June 2007. It has a total installed capacity of 80 MW, net capacity factor of 31%, and expected annual energy production of 216.7 GWh. The GSG Wind Farm is located in Illinois, and consists of 40

Gamesa G87 wind turbines with a rating of 2 MW. Electricity generated is sold into PJM Market Pool at the prevailing spot price.



## Lee-DeKalb Wind Energy Center Lee and DeKalb Counties, IL

Developer: NextEra Energy

Owner/Operator: Subsidiary of NextEra Energy Resources

Power Purchaser: Illinois Municipal Electric Agency

Location: Afton, Clinton, Milan, Shabbona, Alto, Willow Creek

Capacity: 217.5 MW

Units: 145

Turbines: GE 1.5 MW

Construction Year: 2009

Construction Firm: Blattner Energy

Online: 2009



The Lee-DeKalb Wind Energy Center is owned and operated by a subsidiary of NextEra Energy Resources. The 217.5 MW wind generation plant is composed of 145 1.5 MW GE turbines that are capable of generating enough electricity to power more than 54,000 homes. Each wind turbine is 262 feet tall from the ground to the center of the blade hub. The wind farm began commercial operation in 2009.

## Mendota Hills Lee County, IL

Developer: Navitas Energy

Owner/Operator: Infigen Energy

Power Purchaser: Exelon Corp.

Capacity: 51.7 MW

Units: 63

Turbines: Gamesa G52 820 kW

Construction Firm: RMT

Interconnection: PJM Interconnection

Online: 2003



Mendota Hills Wind Farm commenced commercial operations in November 2003. It has a total installed capacity of 51.7 MW, net capacity factor of 22% and expected annual net energy output of 101.1 GWh. The Mendota Hills Wind Farm is located in Illinois, and comprises 63 Gamesa G52 wind turbines with a rating of 820 kW. Electricity generated is sold to regional power pool (PJM) at the prevailing spot price.

## Pioneer Trail Wind Farm Iroquois & Ford County, Illinois

Developer: White Construction, Inc.

Owner/Operator: E.ON Climate and Renewables

Location: East and North Paxton

Capacity: 150 MW

Units: 94

Turbines: 1.6 MW

Construction: 2011

Online: 2012



Located in Iroquois and Ford counties, Pioneer Trail is E.ON's second project in the MISO market and in Illinois. Pioneer Trail's 94 General Electric 1.6 MW turbines bring 150.4 MW of renewable generation to the Land of Lincoln. This wind farm can power more than 45,000 homes. It beame operational during the winter, 2011.

# Providence Heights

## Bureau County, IL

Developer: Midwest Wind Energy/Iberdrola Renewables

Owner/Operator: Iberdrola Renewables

Power Purchaser: Merchant Facility

Location: Near Tiskilwa, Bureau County

Capacity: 72 MW

Units: 36

Turbines: Gamesa G-87 2.0 MW

Construction Year: 2007-2008

Construction Firm: Infrasource

Interconnection: PJM Interconnection

Online: 2008

## Rail Splitter Logan and Tazewell Counties, IL

Developer: EDP Renewables

Owner/Operator: EDP Renewables

Power Purchaser: Regional Wholesale Market

Location: Boynton, Emminence, Orvil

Capacity: 100.5 MW

Units: 67

Turbines: GE Energy SLE 1.5 MW

Construction Year: 2009

Construction Firm: White Construction

Interconnection: PJM Interconnection

Online: 2009



The Providence Heights Wind Power Project is located in Bureau County, IL, in the north central part of the state. The 36 wind turbines at this project generate 72 MW of clean, renewable energy and contribute jobs and tax revenue to the local community. The project takes its name from an abandoned settlement (Village of Providence) located within the project boundary.



Rail Splitter Wind Farm is located in Tazewell and Logan Counties, IL, north of the town of Lincoln, near the towns of Delevan, Hopedale and Emden on a glacial moraine known as Union Ridge. With 67 GE SLE 1.5 MW turbines, the wind farm has an installed capacity of 100.5 MW, enough to power approximately 28,000 average Illinois homes with clean energy each year. The wind farm achieved commercial operation in the September 2009.

# Settlers Trail

## Vermilion & Champaign Counties, Illinois

Developer: White Construction

Owner/Operator: E.ON Climate and Renewables

Location: Ogden, Compromise, Pilot

Capacity: 214 MW

Units: 134

Turbines: GE 1.6 XLE

Construction: 2011-2012

Construction Firm: White Construction

Online: 2012



Located in Iroquois County, Settlers Trail is E.ON's first project in the MISO market and our first project in Illinois. Settlers Trail's 94 General Electric 1.6 MW turbines bring 150.4 MW of renewable generation to the Land of Lincoln. This wind farm can power more than 45,000 homes. It became operational during the winter, 2011.



## Shady Oaks Lee County, IL

Developer: Mainstream Renewable Power

Owner/Operator: Goldwind USA

Power Purchaser: ComEd

Location: Brooklyn

Capacity: 106.5 MW

Units: 71

Construction: 2011

Online: 2011



Goldwind purchased Shady Oaks from Irish developer Mainstream Renewable Power and has full ownership of TianRun Shady Oaks LLC. Goldwind will sell power to Commonwealth Edison Co. under a 20-year power purchase agreement. The Shady Oaks wind farm marks the second US Wind Farm built by Goldwind. The first was the 4.5 MW Wind farm in Minnesota that went into operation in January 2010.

## Streator Cayuga Ridge South Livingston County, IL

Developer: Iberdrola Renewables

Owner/Operator: Iberdrola Renewables

Power Purchaser: Tennessee Valley Authority (TVA)

Location: Odell, Union, Saunemin

Capacity: 300 MW

Units: 150

Turbines: Gamesa G-87 2.0 MW

Construction Year: 2008-2009

Construction Firm: Mortensen Construction

Interconnection: PJM Interconnection

Online: 2010

## Top Crop Wind Farm I LaSalle County, IL

Developer: EDP Renewables

Owner/Operator: EDP Renewables/Blackstone Wind Farm, LLC

Power Purchaser: Regional Wholesale Market

Location: Allen

Capacity: 102 MW

Units: 68

Turbines: GE Energy SLE 1.5 MW

Construction Year: 2009

Construction Firm: White Construction

Interconnection: PJM Interconnection

Online: 2009



The Streator Cayuga Ridge South Wind Power Project provides important economic benefits to the local community. When the project reached commercial operation in 2010, it was the largest wind project in Illinois. During construction, the on-site workforce peaked at over 450 workers. Over 80 American companies supplied parts and services, and contractors and crews from all over Illinois helped build this project.



Top Crop I Wind Farm converts the winds that blow over the Illinois Cayuga Ridge into clean electricity. Top Crop I has an installed capacity of 102 MW – enough to power approximately 28,000 average Illinois homes with clean energy each year.

Beginning in 2012, Commonwealth Edison will purchase 25 MW of the energy generated. Associated energy credits are used by the businesses and organizations to comply with state renewable energy mandates or to voluntarily reduce the environmental impact of their operations.



## Top Crop Wind Farm II Grundy County, IL

Developer: EDP Renewables

Owner/Operator: EDP Renewables/Blackstone Wind Farm, LLC

Power Purchaser: Regional Wholesale Market

Location: Highland, Vienna

Capacity: 198 MW

Units: 132

Turbines: GE Energy SLE 1.5 MW

Construction Year: 2010

Construction Firm:

Interconnection: PJM Interconnection

Online: 2010

## Twin Groves Wind Farm I McLean County, Illinois

Developer: EDP Renewables

Owner/Operator: EDP Renewables

Power Purchaser: Exelon Corp.

Location: Arrowsmith, Dawson

Capacity: 198 MW

Units: 120

Turbines: Vestas V82 1.65 MW

Construction: 2006-2007

Construction Firm: Mortensen Construction

Interconnection: PJM Interconnection

Online: 2007



Top Crop II Wind Farm is located in Grundy County, Illinois. The wind farm has an installed capacity of 198 MW – enough to power over 54,000 average Illinois homes with clean energy each year. The wind farm consists of 132 GE SLE 1.5 MW turbines. Constellation Energy Commodities Group purchases the clean, renewable energy generated by the wind farm.



The Twin Groves I Wind Farm is located in central Illinois outside of Bloomington on two prominent moraines in eastern McLean County. The wind farm has enough installed capacity of to power approximately 54,000 average Illinois

homes with clean energy each year. The wind farm achieved commercial operation in June 2007. J. Aron, the commodities division of Goldman Sachs, and FirstEnergy purchase the clean renewable energy generated by the wind farm.

# Twin Groves Wind Farm II

## McLean County, Illinois

Developer: EDP Renewables

Owner/Operator: EDP Renewables

Power Purchaser: Constellation Energy Commodities Group

Location: Arrowsmith, Cheney's Grove

Capacity: 198 MW

Units: 120

Turbines: Vestas V82 1.65 MW

Construction: 2006-2007

Construction Firm: Mortensen Construction

Interconnection: PJM Interconnection

Online: 2007-2008



The Twin Groves II Wind Farm is located in eastern McLean County. Phase II has enough installed capacity to power approximately 54,000 average Illinois homes with clean energy each year. The wind farm achieved commercial operation in March 2008. Exelon Energy

purchases the wind farm's energy.



## White Oak McLean County, IL

Developer: NextEra Energy Resources

Owner/Operator: Subsidiary of NextEra Energy Resources

Power Purchaser: Tennessee Valley Authority (TVA)

Location: White Oak

Capacity: 150 MW

Units: 100

Turbines: GE 1.5 MW

Construction Year: 2010

Online: 2011



The White Oak Wind Farm was originally developed by Invenergy and was acquired by NextEra Energy Resources in 2011. The wind farm is located in McLean County stretches from the Woodford County border to the Northwest side of Bloomington-Normal. The proposed White Oak Wind Energy Center will be constructed in a defined project area containing approximately 12,000 acres. Each turbine is approximately 262 feet from the ground to the hub in the center of the blades.

# **Completed Projects Under 50 MW**

PROJECT	DEVELOPER	OWNER/OPERATOR	LOCATION	CAPACITY
AgriWind	AgriWind LLC	AgriWind LLC, John Deere Wind	Bureau County	8.4 MW
Arends Bros. LLC	Midwest Underground Technology (MUTI)	Arends Bros. LLC	Coles County	0.1 MW
Big Windy	Iberdrola	Great Escape Restaurant	Cook County	0.108 MW
Bureau Valley School District	Engineers Architects Professional Corp	Bureau Valley School District	Bureau County	0.66 MW
City of Geneseo Wind Turbine	Johnson Controls, City of Geneseo	City of Geneseo	Henry County	3 MW
Erie Com. Unit School District #1	Johnson Controls, Erie CUSD #1	Erie CUSD #1	Whiteside County	1.2 MW
Gob Nob	ob Nob Rural Electric Conv.enience Coop. Project		Montgomery County	0.9 MW
Illinois Rural Electric Coop.	Illinois Rural Electric Coop.	Illinois Rural Electric Coop.	Pike County	1.65 MW
ISU Turbine at Horticulture Center	ISU Renewable Energy Program	ISU Horticulture Center & Renewable Energy Program	McLean County	0.001 MW
Libertyville Turbine	Aldridge Electric	Aldridge Electric	Lake County	0.05 MW
Midwest Underground Technology (MUTI)	Midwest Underground Technology (MUTI)	Midwest Underground Technology (MUTI)	Champaign County	0.1 MW
Other World Computing	Other World Computing	Other World Computing	McHenry County	0.5 MW
Pigeon Creek	Adams Electric Cooperative	Adams Electric Cooperative	Adams County	0.9 MW
PORTA High School	A High School Ameresco Energy Services Co. of Chicago, Porta CUSD #202		Menard County	0.6 MW
Richland Community College	WES Engineering	WES Richland Community College	Macon County	0.1 MW
Sherrard High School	Ameresco Energy Services Co. of Chicago	Sherrard Com. Unit School District #200	Rock Island/Mercer	0.6 MW
Turbine ADAM	FPC Services/GSG Wind	FPC Services/GSG 3, LLC	Lee County	2.5 MW
Prairieview-Ogden CC#197	Heston Wind & Renewable Energy, LLC & CTS Controls Technology & Solutions	Prairieview-Ogden CC#197	Champaign County	50 kW

# Permitted Projects Over 10 MW

PROJECT	DEVELOPER	OWNER/OPERATOR	LOCATION	CAPACITY
Baileyville Wind Farm	Navitas Energy	Navitas Energy	Ogle County	80 MW
Bright Stalk Wind Farm I (Chenoa Wind Farm I)	EDP Renewables	EDP Renewables	McLean County	133.3 MW
Bright Stalk Wind Farm II (Chenoa Wind Farm II)	EDP Renewables	EDP Renewables	McLean County	133.3 MW
Bright Stalk Wind Farm III (Chenoa Wind Farm III)	EDP Renewables	EDP Renewables	McLean County	133.3 MW
Ford Ridge Wind Farm Phase I	BP Alternative Energy	BP Alternative Energy	Ford County	100 MW
K4 Wind Farm	Vision Energy	Vision Energy	Iroquois, Ford, Livingston & Kankakee Counties	460 MW
Lancaster Wind Farm	Navitas Energy	Navitas Energy	Stephenson County	80 MW
Midland Wind Farm	Iberdrola Renewables, CPV Wind Ventures	Iberdrola Renewables	Henry County	104 MW
Minonk Stewardship Wind LLC	Tiskilwa firm and a Paris Company	Tiskilwa firm and a Paris Company	Marshall County	40 MW
Minonk Wind Farm	Navitas Energy	Navitas Energy	Woodford & Livingston	200 MW
Monarch I	Monarch Wind Power LLC	Monarch Wind Power LLC	Warren County	19.2 MW
Otter Creek	Iberdrola Renewables	Iberdrola Renewables	LaSalle County	200 MW
Panther Creek Wind Farm Phase 1	Affinity Wind, LLC and SURE Power, LLC (Suzlon)	Affinity Wind LLC	Pike County	36 MW
Roanoke Wind Farm	Navitas Energy	Navitas Energy	Woodford County	100 MW
Sangamon Wind One Wind Farm (Meridian Wind Farm)	American Wind Energy Management Corp. AWEM, Oak Creek Energy Systems, Inc., The Wind Company GmbH	American Wind Energy Management Corp. AWEM, Oak Creek Energy Systems, Inc., The Wind Company GmbH	Sangamon County	400 MW
Shady Oaks Wind Farm	Mainstream Renewable Power	Goldwind USA	Lee County	106.5 MW
Spring Creek Wind Farm	Iberdrola Renewables, CPV Wind Ventures	Iberdrola Renewables	Henry County	200 MW
Stewardship Wind LLC	Stewardship Energy, LLC	Stewardship Energy, LLC	Marshall County	40 MW
Streator Deer Run Wind Farm	Iberdrola Renewables	Iberdrola Renewables	Livingston County	300 MW
Twin Groves Wind Farm IV	EDP Renewables	EDP Renewables/Black Prairie Wind Farm I & II, LLC	McLean County	200 MW
Twin Groves Wind Farm V	EDP Renewables	EDP Renewables/Black Prairie Wind Farm III, LLC	McLean County	200 MW
Walnut Ridge Wind Farm Phase I	Midwest Wind Energy	Midwest Wind Energy, Walnut Ridge Wind, LLC	Bureau County	210 MW

## **Economic Impact**

In June 2011, the Center for Renewable Energy at Illinois State University published a report, "Economic Impact: Wind Energy Development in Illinois." The following information is provided from that report.

A number of factors have contributed to the rapid growth of wind power capacity in Illinois from 50 MW in 2003 to 2,443.13 MW in 2011, including federal and state policies, energy security, energy costs, environmental benefits, and economic development opportunities. One key policy driver in Illinois was the passage of the Illinois Power Agency Act in 2007 which included a Renewable Portfolio Standard of 25% by 2025, of which 75% of the renewable energy resources must come from wind.

As of April, 2011, Illinois ranked 7th in the United States in existing wind-powered generating capacity and ranked 16th in the United States in potential capacity (AWEA, 2011a). Illinois installed the second most new generation capacity amongst the other states during 2010 (AWEA, 2011b). Illinois currently has 31 wind projects online, which account for 2,443.13 MW of wind generating capacity. This report will analyze the economic impacts from only the projects that exceed 50 MW of capacity. Illinois has 17 projects larger than 50 MW, which account for 2,422.01 MW or 99% of the state's wind energy generating capacity (see Table 1). Although project specific data were used in this report, proprietary information about the wind farms will not be released. It is important that stakeholders and decision makers are educated about the economic development impact wind energy has brought to the state and local communities so that informed decisions regarding future adoption of wind energy projects can be made. By analyzing the impacts of Illinois' wind energy, this report supplies interested parties with information concerning the economic development benefits of wind energy.

According to this economic analysis (see Figure 1), the 17 largest wind farms in Illinois:

- Created approximately 13,323 full-time equivalent jobs<sup>1</sup> during construction periods with a total payroll of over \$762 million
- Supports approximately 598 permanent jobs in rural Illinois areas with a total annual payroll of over \$35 million
- Supports local economies by generating \$22 million in annual property taxes<sup>2</sup>
- Generates \$10 million annually in extra income for Illinois landowners who lease their land to the wind farm developer
- Will generate a total economic benefit of \$4.1 billion over the life of the projects<sup>3</sup>



This report is available as a PDF at www.RenewableEnergy.ilstu.edu, under New Reports.

<sup>&</sup>lt;sup>1</sup>Job calculations 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 1,473 new jobs during construction; though the construction of the wind farms may have actually involved hiring closer to 3,000 workers. Thus, due to the short-term nature of construction projects, the JEDI model significantly understates the number of people actually hired to work on the project. It is important to keep this fact in mind when looking at the numbers or when reporting the numbers.

<sup>&</sup>lt;sup>2</sup>Property tax revenue is listed for the first year (where there are property tax abatements during the first few years of the wind farm project or Payments in Lieu of Taxes (PILOT), an average figure over the first ten years is utilized). This figure will change over time due to several factors: (1) whether the county increases/decreases the local property tax rate; (2) depreciation over the life of the project; and (3) if the state law regarding wind farm valuation changes in the future. <sup>3</sup>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.

## **Economic Impact**

Wind Farm	Location (County)	Capacity (MW)
Streator Cayuga Ridge South Wind Farm	Livingston	300.00
Big Sky Wind Farm	Bureau and Lee	239.40
Lee-Dekalb Wind Energy Center	Dekalb and Lee	217.50
Top Crop Wind Farm Phase II	Grundy	198.00
Twin Groves Wind Farm Phase I	McLean	198.00
Twin Groves Wind Farm Phase II	McLean	198.00
White Oak Wind Farm	McLean	150.00
Camp Grove Wind Farm	Marshall and Stark	150.00
Grand Ridge Energy Center Phase II, III, and IV	LaSalle	111.00
EcoGrove Wind Farm Phase I	Stephenson	100.50
Rail Splitter Wind Farm	Logan and Tazewell	100.50
Top Crop Wind Farm Phase I	LaSalle	102.00
Grand Ridge Wind Farm Phase I	LaSalle	99.00
GSG Wind Farm	Lee and LaSalle	80.00
Providence Heights Wind Farm	Bureau	72.00
Crescent Ridge Wind Farm	Bureau	54.45
Mendota Hills Wind Farm	Lee	51.66

#### Table 1.—Illinois Wind Farm Projects Larger than 50 MW



• 11,496 jobs

• \$11.32 million/year to local

economies

- \$1.67 billion to local economies **Operational Phase:**
- 458 local jobs
- \$84.8 million/year to local economies

#### **Totals**

(construction + 25yrs)

**Total Economic** Benefit: \$4.16 billion

**Local Jobs During Construction:** 13,323<sup>^</sup> Local Long-Term Jobs: 598

#### Figure 1.—Economic Impacts from Illinois' 17 Largest Wind Farms (2,422.01 MW)

Notes: All dollar values have been converted to 2008 dollars. JEDI versions 1.09.03b, 1.09.03e and 1.10.03 were utilized in the calculations. + The landowner payments are appropriately adjusted for inflation throughout the life of the project such that the amount received each year will most likely increase.

\* Property tax revenue is listed for the first year. This figure will change over time because of several factors: (1) whether the county increases/decreases the local property tax rate; (2) depreciation over the life of the project; and (3) if the state law changes in the future.

^ All jobs reported are full-time equivalent (e.g., one person works half-time for one year, it is counted as 0.5 jobs; four people working full-time for three months = 1 job). Job calculations are based on a full time equivalent (FTE) basis for a year. In other words, 1 job = 1 FTE = 2080 hours worked in a year. A part time or temporary job may be considered one job by other measures, but would constitute only a fraction of a job according to the JEDI model. For example, if an engineer worked only 3 months on a wind farm project (assuming no overtime), that would be considered one-quarter of a job by the JEDI model.

## Renewable Portfolio Standard

The Illinois Power Agency (IPA) is responsible for keeping Illinois utilities in compliance with the state's Renewable Portfolio Standard (RPS), which mandates that 25% of Illinois' electricity come from renewable sources by the year 2025. The Illinois Power Agency Act (IPAA) also contains a cost-cap provision stating that the RPS cannot cause utility bills to increase by more than 0.5% annually, with 2007 being the base price year. This provision will be reviewed by the ICC in 2011 to determine if it has hindered the procurement of renewable energy (Public Act 095-1027). Electric cooperatives and municipal utilities are exempt from the RPS requirement. The RPS requires utilities to meet the benchmarks outlined in Table 2. The RPS has a specific carve out for wind, with a mandate that 75% of all renewables procured for Investor-Owned Electric Utilities (IOUs) come from wind (see Figure B). A solar carve-out was added in 2009, requiring that by 2015, 6% of the renewables mandate come from solar photovoltaics.



Figure B: Percentage of Illinois Utility RPS From Wind and Other Renewables (IWEA 2010)

The amount of energy a utility is required to purchase is determined by applying the mandated percentage to the utility's eligible retail sales from the prior planning year. This means that the 2010-2011 compliance period, beginning June 1, 2011, the mandated renewable energy procurement will equal 5% of eligible retail sales from June 1, 2008 to May 31, 2009. The IPAA gives the Agency the authority to fulfill its renewable energy requirement through the purchase of bundled products (i.e. renewable power and its associated Renewable Energy Credits (RECs), or by just procuring RECs). In 2008 and 2009, the RPS targets were met using RECs only. This means that only the credit is purchased and not the power generated.

The methods allowed for Alternative Retail Electric Suppliers' (ARES) renewable energy purchases to differ considerably under the law. ARES must meet at least 50% of the mandate through Alternative Compliance Payments (ACPs). The price of these payments is determined by averaging the REC prices in the most recent IPA REC procurement event. The ACP rate is different for each utility, and an ARES' ACP varies depending on which utility service territory that particular ARES operates. Then, the percentage mandated in the RPS is applied to the actual amount of metered electricity the ARES provided their customers to determine how many ACPs they owe. At their discretion, ARES may fill the remaining 50% of their compliance through bi-lateral REC or bundled power procurement, or from within their own portfolio, or simply by paying more ACPs to the Agency. The ACPs go directly to the Agency's Renewable Resources Fund, which is statutorily required to utilize them to procure RECs.<sup>3</sup> In addition, the RPS for ARES only has a 60% carve out for wind instead of the 75% wind carve out for utilities.



This report is available as a PDF at www.RenewableEnergy.ilstu. edu, under New Reports.

Table 2: RPS Targets				
	RPS	Wind (IOUs)	Wind (ARES)	
2008	2.0%	1.50%	1.2%	
2009	4.0%	3.00%	2.4%	
2010	5.0%	3.75%	3.0%	
2011	6.0%	4.50%	3.6%	
2012	7.0%	5.25%	4.2%	
2013	8.0%	6.00%	4.8%	
2014	9.0%	6.75%	5.4%	
2015	10.0%	7.50%	6.0%	
2016	11.5%	8.63%	6.9%	
2017	13.0%	9.75%	7.8%	
2018	14.5%	10.88%	8.7%	
2019	16.0%	12.00%	9.6%	
2020	17.5%	13.13%	10.5%	
2021	19.0%	14.25%	11.4%	
2022	20.5%	15.38%	12.3%	
2023	22.0%	16.50%	13.2%	
2024	23.5%	17.63%	14.1%	
2025	25.0%	18.75%	15.0%	

# Center for Renewable Energy









## CENTER FOR RENEWABLE ENERGY Illinois State University

Illinois State University established the Center for Renewable Energy, and it received Illinois Board of Higher Education approval in 2008. The Center was initially funded by a \$990,000 grant from the U.S. Department of Energy to research renewable energy, to establish a major in renewable energy at Illinois State and to administer the Illinois Wind Working Group (IWWG). The Center also received a grant from the Illinois Clean Energy Community Foundation to help complete its state-of-the-art renewable energy laboratory.

The Center has three major functional areas:

- Supporting the renewable energy major at Illinois State University
- Serving the Illinois renewable energy community by providing information to the public
- Encouraging applied research on renewable energy at Illinois State University and through collaborations with other universities.

#### Founding Members:

Founding members include EDP Renewables, Iberdrola Renewables, State Farm Insurance, and Suzlon Wind Energy Corp.

#### Support of the Renewable Energy Major:

Many new workers will be needed in the renewable energy industry. To meet the growing demand for trained and educated workers, we have developed an interdisciplinary renewable energy major at Illinois State University. Graduates of the renewable energy program are wellpositioned to compete for new and existing jobs.

The Center supports the renewable energy major through:

- Creation of an advisory board of outside experts
- Establishing a renewable energy internship program
- Bringing renewable energy experts to campus for seminars for faculty and students
- Funding scholarships to ensure high quality students in the major
- Providing ongoing financial support for the major.

#### www.RenewableEnergy.ilstu.edu

# **Illinois Institute for Rural Affairs**

#### About Us

The Illinois Institute for Rural Affairs (IIRA) builds the capacity of community leaders and policymakers by providing technical support, applied research, policy evaluation, and training across the state. IIRA is a clearinghouse for information on rural issues, coordinates rural research, and works with state agencies on issues of importance to rural communities.

#### Mission

The Illinois Institute for Rural Affairs seeks to improve the quality of life for rural residents by partnering with public and private agencies on local development and enhancement efforts.

IIRA provides services through various programs that support our goals of promoting a sound statewide rural policy, advancing the state of knowledge about rural issues, and providing high quality training and technical assistance to rural leaders. These programs are the cornerstones of our success in improving the quality of life for rural citizens.

#### Wind Research & Outreach

IIRA has a dedicated wind outreach program in order to empower rural communities, organizations, and residents to make comprehensive decisions about the feasibility and scope of wind energy development. The Illinois Clean Energy Community Foundation (ICECF) is the primary funder of the IIRA's wind outreach programs. IIRA's wind energy information resources can be found online at IllinoisWind.org.



Key Projects & Resources:

- Operates the state's only anemometer loan program with public access meteorological data reports for 32 sites across Illinois
- Conducts regular surveys of Illinois county wind zoning ordinances highlighting the regulatory attributes of each ordinance for small and utility-scale wind projects
- Provides technical assistance and public outreach to rural communities on wind energy
- Supports the Renewable Energy Concentrations Interdisciplinary Studies undergraduate programs at Western Illinois University

www.illinoiswind.org www.iira.org





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