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At Wind Speed: How the U.S. Wind Industry is Rapidly Growing Our Local Economies

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INTRODUCTION

Over the last two decades, the U.S. wind industry has grown dramatically and is providing communities across America with tremendous benefits. More than 50,000 megawatts of wind power—the power equivalent of thirteen Hoover Dams—are installed in the United States. Meanwhile, American companies such as General Electric dominate the global wind turbine industry, and in almost every state are expanding to meet the increasing global demand for wind power. This report shows how wind power is rebuilding individual communities in America, while creating much-needed jobs, reducing pollution that harms our children's health, and cutting our dependence on dirty and limited fossil fuels.

Americans like wind power and want our country to support even greater deployment of this clean, renewable resource. In some surveys, nine out of 10 voters say they support efforts to increase wind-power generation, and two-thirds of Americans say they think clean energy technologies, such as wind power, will be an important source of economic growth in the future.[1]

Surprisingly, while the benefits of a well-sited wind project or expanding wind manufacturer can be significant—from new jobs and local worker training programs to increased city tax revenues and more school funding—they are often overlooked or underestimated. This report seeks to rectify that. In an attempt to show fully the real-world benefits of the wind industry, this report focuses on four case studies in Illinois, Iowa, Ohio, and Oregon, drawing from accounts of the actual residents from those communities.

Reaping the Community Benefits of Wind Power

Sherman County, Oregon, has seen huge increases in revenues from local wind farms. Before the wind energy industry came to town, this rural community had few employment opportunities and a small tax base. As almost any Sherman County resident will tell you, since installing a swath of power-producing wind turbines, the county has reaped impressive benefits including increases in per capita income and the local tax base.

Residents of Livingston County, Illinois, tell a similar story of economic development. There, the wind industry has boosted the local tax base, created new jobs, and provided lease payments to local landowners. Wind developers in Livingston County also pay fees that are dedicated to spurring local economic development and helping the county's small businesses.

Other towns are reaping the new economic benefits from companies that manufacture parts for the wind industry. In Cedar Rapids, Iowa, two wind companies helped create a renewable energy technician program at Kirkwood Community College that is now training workers for new, good-paying wind industry jobs. And, in Canton, Ohio, a wind company built the first wind energy research and development center of its kind.

Lessons Learned from Wind-Boom Communities

Across each of these case studies, there are a number of commonalities and overarching themes. Hence, while a limited sample size, several lessons can be taken from these efforts and serve as useful guidance to communities eager to participate in the growing wind industry:

- **Distributing the economic benefits of wind energy can ensure that all community members share in the wind wealth.** While the wind industry benefits land owners and workers most directly, in both Sherman and Livingston Counties, a wide range of community members have prospered from wind farm development. Since the wind farms have moved into town, small businesses have seen increased activity, schools have secured more funding for students, and farmers have found new revenues from turbines planted in their fields. In addition, a compensation program in Sherman County directly distributes the revenue from wind farms to each household, awarding every resident an annual check for $590.
- **Reinvesting new revenue from taxes and special fees on wind farms in the community can ensure long-lasting benefits of wind farm development and advance other priorities critical to communities.** In Sherman and Livingston Counties, a substantial portion of the revenue from wind farms has gone to local school systems, allowing them to buy new equipment, hire additional teachers, and expand elective programs.

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In addition, Livingston County has dedicated the $6 million fee collected on Streator Cayuga Ridge South Wind Farm to spurring economic development in the region. With many city, county, and state budgets currently constrained, these new revenue streams can help communities maintain and advance other critical priorities. Such investments in the future also ensure that the economic boosts to these rural communities will last for years to come.

- **The extent of the wind energy supply chain creates potential for clustering in communities participating in the wind industry.** Where there is wind farm development, a range of businesses—including management firms, construction companies, and fuel suppliers—are needed to support the industry. Moreover, communities involved in wind energy manufacturing can become hubs for renewable energy. For instance, in Canton, Ohio, the success of one large wind company has created new opportunities for local businesses to join the wind energy supply chain. It also resulted in the creation of a Wind Energy Research and Development Center, generating hundreds of American manufacturing jobs and making the city a center for technological innovation.
- **Training programs developed in partnership with the wind industry benefit local students and wind companies alike.** Wind farms create hundreds of jobs in manufacturing, construction, and operation. Communities can help ensure these jobs stay local by creating wind energy technician training programs. Cedar Rapids, Iowa's new Energy Production and Distribution program at Kirkwood Community College, for instance, trains both seasoned manufacturing hands and young students to participate in the quickly growing wind manufacturing sector. In Sherman County, Columbia Gorge Community College's renewable energy technician program teaches local residents to be wind turbine operators, creating a new base of skilled labor in the rural community. These training programs benefit wind companies by giving them access to skilled workers trained on the very equipment they will manufacture and operate, and communities by enhancing the existing skills of local workers and providing students with new training and job opportunities.

Extending Important Incentives to Build on Wind-Powered Returns to Communities

It is important to point out that smart policies and incentives have played a critical role in producing all the gains that come with wind power. We need to ensure that these means to advancing the wind industry are preserved and expanded.

Unfortunately, critical federal incentives, such as the Production Tax Credit (PTC), which provides a tax credit to wind projects for the clean renewable power they generate, is scheduled to expire at the end of this year. Across the nation, the PTC has played a valuable role in leveling the playing field for wind power and growing an industry that now provides jobs to 75,000 Americans. The PTC has encouraged innovation and better wind technologies that have led to a 90 percent reduction in the cost of wind power since 1980.

Extending the PTC could create another 17,000 new wind-energy jobs; letting it expire could cost 37,000 Americans their jobs. In previous years when the PTC expired, there have been massive drops in wind installations. In 2000, for instance, when Congress declined to extend the PTC, new wind installations fell 93 percent.[2]

The communities of Sherman and Livingston Counties, Canton, and Cedar Rapids represent powerful cornerstones of a growing American manufacturing and innovation resurgence—where we learn how to most effectively produce clean, renewable energy like wind power and use it to help our citizens, our schools, our workers, and our children. Only by insisting that our lawmakers continue to support renewable power with important programs like the PTC can we help ensure that the wind industry—and the communities and residents that benefit from it—keep growing.

CASE STUDIES

SHERMAN COUNTY, OREGON

Wind Farm Development Benefits Sherman County, OR

- $17.5 million in property taxes and fees
- Annual payments of up to $7,800 per turbine to landowners
- Per capita income increases, from $18,354 in 2001 to $52,530 in 2011, to become the highest in the state
- $1.8 million grant to school district in 2011 to fund new equipment, classes, and teachers
- Five-hundred onsite construction jobs
- Eighty long-term jobs in operation
- Increased economic activity helps keep small businesses alive
- Annual check of $590 to all residents
- Renewable energy technician training program at Columbia Gorge Community College

"When I was young, they used to have a machine at the fair. It had a big flywheel you'd turn by hand, and you gave the guy a quarter. Then you put a penny in it, and it smashed that penny out. I look out there and I see those wind turbine blades turning and I think of that big wheel. Every time it goes around, it just chunks out a coin."[3]

— John Hilderbrand, wind and wheat farmer, Sherman County, OR

Sherman County, a rural region in northern Oregon, got its first wind farm in 2002. Over the last decade, 11 more wind farms have been built, bringing the county a host of welcome economic and social changes. With a population of 1,735, Sherman County used to be dependent on one crop: wheat. However, its breezy conditions and proximity to power transmission lines connecting to California have made the region an ideal location for a second crop: wind energy.

Sharing the Wind Prosperity Among the Community and its Citizens

Thanks to the booming wind energy industry, the county has benefitted from more than **$17.5 million in new tax revenues and fees on more than 1,000 megawatts (MW) of new wind capacity.** Annual revenues collected by the government from wind farms have jumped from $315,000 in 2002 to $10 million in 2010.[4]

This new stream of revenue has led to long-lasting benefits across the community. Property leases to wind companies have helped many landowners remain financially solvent; the half-acre required for each turbine, which previously yielded approximately $125 in wheat, now brings in additional revenue from wind—between $5,500 and $7,800 in annual royalty payments.[5]

Furthermore, the construction and operation of the wind farms played a large role in decreasing the unemployment rate from 10.2 percent in 2001 to 4.9 percent in 2007.[6] As farming technology advances, employment opportunities in agricultural communities can be lost, but wind farms offer new opportunities that did not exist previously. In Sherman County, more than 500 jobs were created onsite during construction, and 80 long-term jobs remain during operation, a significant number in this community.[7] The wind industry is now Sherman County's largest employer.

It is not only the landowners and new hires who benefit; many small businesses are kept alive by increased spending when wind farms move into town. In Sherman, motels, restaurants, and gas stations all see increased business from construction workers, wind technicians, and tourists hoping to get a glimpse of the giant turbines. In an interview with Northwest Public Radio, Kathy Neihart, owner of the Lean-to Cafe, reported that business has doubled in recent years, and the increased activity has helped pull her restaurant out of debt.[8]

Only a decade ago, Sherman County was one of the poorest sections of Oregon. In 2001, the per capita income in the county was $18,254 compared to $29,250 statewide. With agriculture as the primary source of income, residents were especially vulnerable to drought and falling wheat prices, and recognized the need to diversify the county's economy**. In just 10 years, the wind industry helped Sherman County boast the highest per capita income in the state**. In 2011, the county averaged $52,530 compared to a statewide average of $36,317.[9] In fact, Sherman County Judge Gary Thompson reported that wind was the number-one source of income in 2012. While the price of wheat has increased, the considerable income gains have much to do with the wind farms scattered across the north.[10]

Ensuring Long-Term Prosperity through Citizen Rebates, Better Schools, and Well-Trained Workers

Even more impressive is the effect property taxes and licensing fees have had on Sherman County's local government revenue stream. Property taxes have nearly tripled since the wind farms moved into town, increasing from $2.35 million in 2001 to $6.1 million in 2011, enhancing the stability of the local tax base over the next few decades (see figures 1 and 2).[11] The stream of revenue is being shared among all Sherman County residents. In fact, each year the county issues a $590 check to each head of household, a total of $416,540 that goes directly back to local residents.[12] These payments are modeled after Alaska's resident compensation program, and ensure that all members of the community benefit from wind farm development, even if they do not directly lease their land to the wind companies.

Additional revenue is funneled into public development projects and the local school system. Each of the county's four towns—Grass Valley, Moro, Rufus, and Wasco—receives $100,000 annually. The county has already constructed a new library, school, sewage treatment system, and two new city halls. Judge Thompson noted that the additional revenue has been especially helpful to the school district, explaining, "In Oregon, schools are paid per capita. What wind farms have done is given the county an opportunity to give grants; last year alone the county gave $1.8 million. While other school districts are being forced to cut back, Sherman County has been able to continue buying new equipment and paying teachers' salaries."[13] In fact, the school district receives around 20 percent of the wind farm revenue each year, and has purchased new computers, musical instruments, and robotics equipment, as well as staffed electives.[14] These improvements to public infrastructure and education, as well as increased economic activity, ensure that wind energy projects are bringing sustainable value to Sherman County.

In addition, wind farm development has created the opportunity for skilled labor in a small rural community. When Dr. Susan Wolfe, chief academic officer at Columbia Gorge Community College (CGCC), saw truckloads of wind turbine components being transported into Sherman County, she recognized the need for a workforce to operate the new farms.[15] Through collaboration with wind energy partners,

the college created a renewable energy technician program with foundations in mechanics, electronics, and hydraulics. Early on, the wind companies helped the program get off the ground by providing a framework for curriculum, scholarship funding, classroom training, and equipment. In the program's first year, 22 of the 24 students who completed the program immediately found jobs paying more than $20 per hour.[16]

The program helps ensure the wind technician jobs in Sherman County stay local; however, for the first time since its conception, CGCC's renewable energy technician program's fall class is not at full capacity. Mary Kramer, director of career and technical education at CGCC, speculates that enrollment has dropped because of uncertainty in the industry due to Congress's failure to extend the PTC.[17]

In rural counties, like Sherman County, wind farms have pumped new life into the economy. Although many of the jobs associated with wind farms are in construction, the economic stimulus that wind development has provided Sherman County is not temporary. Improvements to public infrastructure and the school system, as well as the opportunity to lease land to wind companies, have encouraged young people to stay in the county to continue its rich agricultural traditions. "People talk of wind power changing the look of a county, and it does," Jan Johnson of Iberdrola Renewables told *Sustainable Business Oregon*. "[W]ind power changes a community in just the kinds of ways that we're talking about. Libraries, schools and public services."[18]

Figure 1. Total Taxes Collected ($)

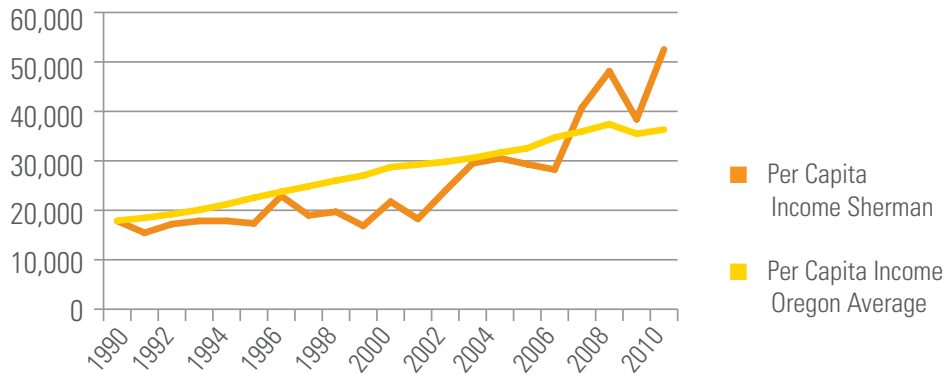
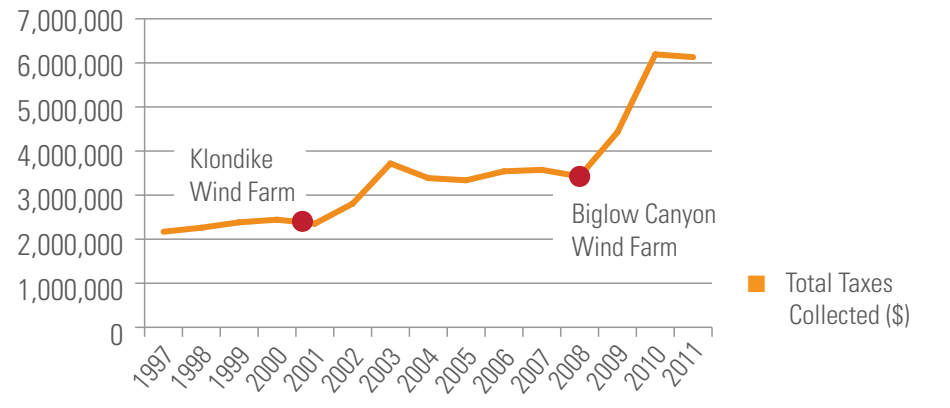


Figure 2. Property Tax Revenues for Sherman County



LIVINGSTON COUNTY, ILLINOIS

Wind Farm Development Benefits Livingston County, IL

- $3.5 million in annual property taxes
- $1.2 million in annual payments to landowners ($8,000 per turbine)
- $6 million initial fee on wind farm, funds dedicated to spurring economic development in the rural region
- Increased funding for school district
- More than 400 jobs created in construction
- Fifteen long-term jobs in operation
- Twelve Illinois companies involved in supply chain
- Two more large wind farms under construction in the county

When Streator Cayuga Ridge South Wind Farm began operation in March 2010, it became Illinois's largest wind project. Located in Livingston County, between the townships of Odell and Emington, the farm consists of 150 separate 2 MW wind turbines. In addition to providing **enough clean, renewable energy to power more than 90,000 homes**, the 300 MW wind farm offers a range of economic and social benefits to surrounding communities.

Royalty Payments and Job Creation Support Local Communities

Iberdrola Renewables, the project developer, pays approximately **$1.2 million in annual royalty payments to landowners**.[19] Each turbine occupies less than a half acre of land, but brings in an average of $8,000 per year, helping many landowners remain financially secure while still continuing their farming practices.

In addition to creating an additional revenue stream for landowners, the wind farm has created hundreds of jobs in the county. During the construction phase, which lasted from October 2008 through March 2010**,** the wind project employed an average of 180 workers onsite, with a peak of more than 400.[20] Sixty percent of the labor was local.[21] According to Livingston County Board Chairman Bill Fairfield, one full-time maintenance job remains for every 10 turbines during the operational phase.[22] The wind farms provide the opportunity for skilled labor in a rural community. A native of Livingston County, Evan Bonnell described how grateful he was for his job as a wind technician in an interview with Iberdrola Renewables, explaining, "I would have otherwise had to commute somewhere more suburban if I wanted something related to what I studied in school—electronics."[23]

Wind Farm Supports Local Businesses and the Larger Economy

Furthermore, the wind project has generated a number of indirect jobs and value along the supply chain. The construction of Steator Cayuga Ridge South Wind Farm involved 12 companies in Illinois, seven of which were in a 100-mile radius, and three of which were in Livingston County itself (see figure 3). Phalen Steel Construction Company, located in Mendota, served as the operations and maintenance building contractor. Sargent & Lundy, an electrical engineering group out of Chicago, designed the switchyard. Narvick Brothers, in Morris, and Prairie Material, in Bridgeview, supplied the concrete and rock. Pontiac companies H.J. Eppel and Company Inc., Masching Excavating, and Meier Oil did the road and tile work and supplied the fuel.[24] Leo Weber of Meier Oil said his company sold nearly 250,000 gallons to Iberdrola Renewables over the duration of the project—and the added businesses came at a time when his company needed it badly.[25]

The businesses involved in the construction and operation of the wind farm are not the only ones that have benefited. An agreement between Livingston County and Iberdrola Renewables stipulated that the company pay a $6 million fee on the Streator Cayuga Ridge South project. The funds have been set aside to spur economic development in the rural region, and the Greater Livingston Economic Development Council has already helped more than a dozen businesses start up or stay afloat through a revolving loan program and grants.[26] In Dwight, a $100,000 loan helped a local car dealership stay open, keeping 29 people employed full-time.[27] In Cullom, a $13,000 grant provided half the capital needed to open the Cullom Community Market, creating six new jobs in a town of only 500. The community market prevents Cullom residents from having to drive nearly 20 miles to purchase basic groceries such as canned goods, fresh meat, and produce.[28]

Wind Farm Benefits Townships and Local School District via Annual Property Taxes

The tax revenue, up to $3.5 million, has already funded the construction of a Law and Justice Center and new school gym.[29] In an interview posted on the Iberdrola Renewables website, Pontiac High School superintendent Leo Johnson reported that the additional funds had increased the district's assessed valuation by 10 percent, noting, "The additional

income can help us keep in place the teaching staff that we have. It will completely replace our boiler system…it will add air conditioning to some very vital parts of our building…this extra money, at this point, is certainly going to be helpful in keeping our quality programs in place."[30]

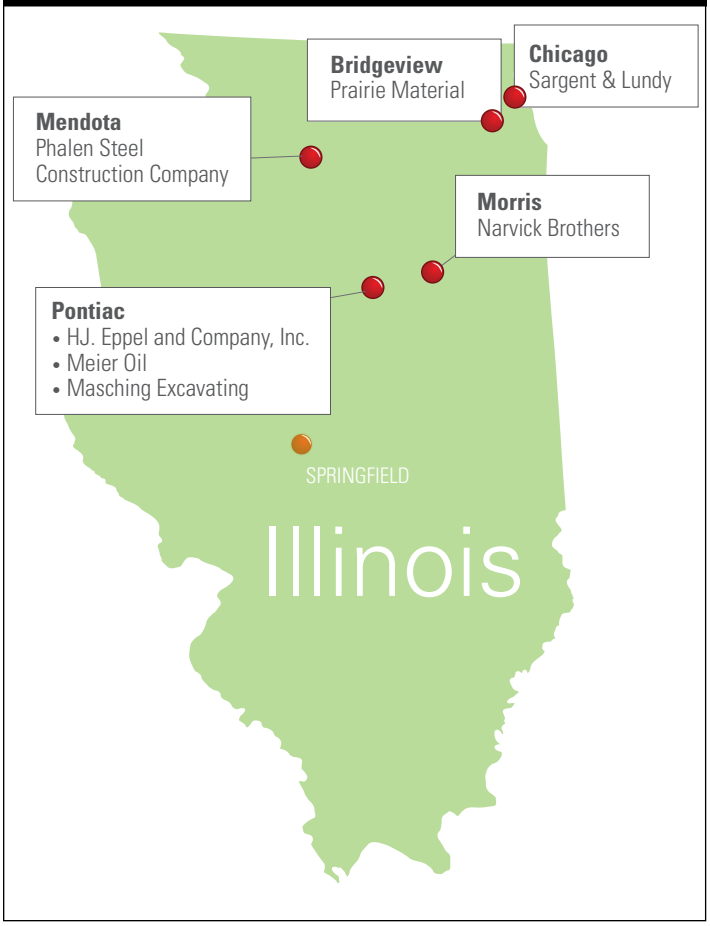
Increased Illinois Wind Projects Offer Promising Vision of Clean Energy Future

The impacts of Streator Cayuga Ridge South Wind Farm are only the beginning of the story for Livingston County, where two additional large wind farms are currently under development**.** Another Iberdrola Renewables project, Streator Deer Run Wind Farm, is constructing 165 turbines across 17,000 acres in the north, near the townships of Sunbury, Newtown, and Esmen.[31] Minonk Wind Farm, a 200 MW project owned by Algonquin Power & Utilities Corp. is putting up turbines in Livingston County and the neighboring Woodford County.

Livingston County provides a small glimpse into the economic boost wind development can provide American communities. A recent study by Illinois State University estimates that wind farms have contributed **$5.8 billion to local economies** in the state, creating more than **1,900 construction jobs and 800 long-term jobs** and paying a total of **$1.1 billion to workers**.[32]

Across Illinois and the United States, wind farms help diversify rural economies, providing residents with career and income opportunities otherwise unavailable, and generating long-lasting and widespread benefits by expanding local tax bases.

Figure 3. Streator Cayuga Ridge South Wind Farm Supply Chain



CEDAR RAPIDS, IOWA

Wind Energy Manufacturing Benefits Cedar Rapids, IA

- Manufacturing jobs created: 460
- Hundreds of jobs indirectly created along supply chain
- Technical products manufacturing salaries increase to $93,450 in 2011
- Creation of the Energy Production and Distribution Technologies Program at Kirkwood Community College in 2010

"We know there are already more than 40 companies in our regional supply chain providing services to the energy industry . . . [t]hat translates to more than 2,500 current positions in the region, directly supported by the industry."[33]

— Kim Johnson, vice president of continuing education at Kirkwood Community College

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Located in the heart of America, two long-time manufacturing communities in eastern Iowa have seen a resurgence in jobs thanks to the growing wind industry. A long-time industrial city, Cedar Rapids, Iowa is used to seeing factories come and go. However, since wind turbine manufacturer Clipper Windpower began operation of its 330,000 square-foot facility in 2006, the company has given the community reason to believe it is here to stay.

Recently, Clipper and other companies described here have announced layoffs, in large part attributable to the uncertainty over whether or not Congress will extend the PTC, and the impact this has had on the U.S. wind market. Whether these job cuts are just a temporary blip depends on how quickly the PTC policy issue is resolved. More importantly, the story of Clipper Windpower and others demonstrates why growing a domestic wind industry could be so beneficial to local communities around the country.

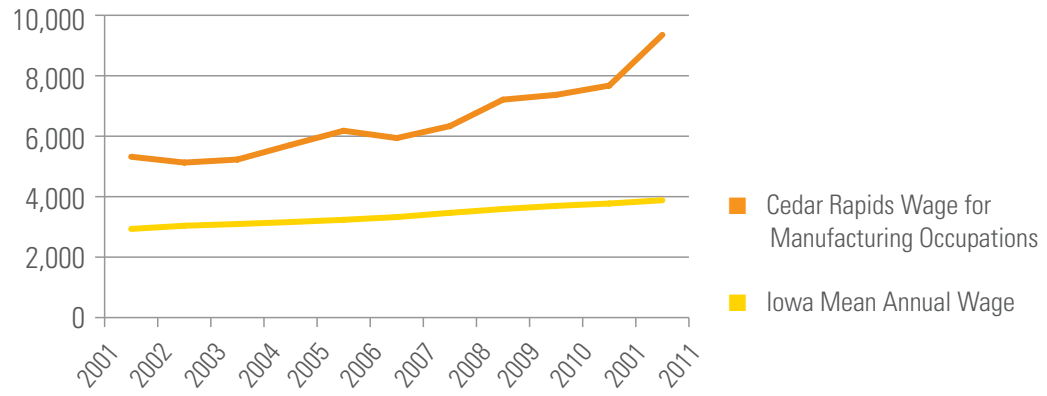
Clipper is one company among many in Iowa's growing wind industry. Less than an hour's drive down Interstate 380 from Cedar Rapids, Acciona Windpower began operation in the town of West Branch in 2007. Manufacturing 1.5 MW and 3 MW wind turbine generators, the Spanish-owned company has shown a strong commitment to American suppliers and has helped to generate hundreds of jobs in the region.

In fact, Iowa has the fourth largest wind manufacturing workforce in the nation, and more than 200 companies in the state are involved in the wind energy supply chain. How did this sparsely populated state become a hub for renewable energy? When it comes to manufacturing wind turbines, location is a top consideration. Each of Clipper Windpower's signature 2.5 MW Liberty turbines costs upwards of $2.5 million and weighs an enormous 800,000 pounds. In addition to the lofty 300-foot tower, the turbines have three 150-foot long blades that weigh 8,000 pounds each.[34] These large components are both difficult and expensive to transport, and therefore it makes sense to manufacture wind turbines close to their site of installation. Central to major roads and rail services, Cedar Rapids and West Branch provide access to the center of America's new Wind Belt.

Iowa's Skilled Workforce, an Advantage in Developing a Vibrant Wind Supply Chain

In addition to ideal location, eastern Iowa has something else to offer the wind industry: an experienced manufacturing workforce. In fact, Clipper Windpower's selection of Cedar Rapids as the location for its manufacturing plant relied

Figure 4. Average Per Capita Income Increase



heavily on new plant manager Bob Loyd. Before he joined Clipper, Loyd ran assembly operations at Goss Graphic Systems, a Cedar Rapids company that manufactured newspaper printing presses. When the Goss plant closed in 2001, it left 370 workers jobless.[35] These skilled manufacturing workers were well-suited to begin operation of Clipper Windpower's new plant. "When we started off this plant, I literally picked up the phonebook and started calling people I knew," Loyd told Philip Warburg, author of the new book, *Harvest the Wind*. "I knew good mechanics and electricians, guys who know gears. If you think about a printing press, it's a big gearbox with hundreds of gears."[36] These skills could easily be transferred to wind turbines, which could also be seen as big gearboxes.

Over the next few years, Clipper Windpower created 350 manufacturing jobs in Cedar Rapids. Since the plant began operation in 2006, the mean annual wage of technical manufacturing professionals in Cedar Rapids has increased from $59,390 to $93,450 in 2011 (see figure 4).[37] These high-skill manufacturing jobs come with high reward. When Acciona Windpower opened in West Branch, it created an additional 110 direct manufacturing jobs, a significant number in a community with a population of only 2,322.[38]

Training the Next Generation of Wind Workers

In addition to taking on seasoned professionals, Clipper Windpower and Acciona are investing in the next generation of Cedar Rapids workforce. With the help of Kirkwood Community College, Clipper has fostered a lasting relationship with the local workforce and invested in the next generation of wind technicians. In response to the area's growing wind industry, the college created a new Energy Production and Distribution Technologies program in 2010.

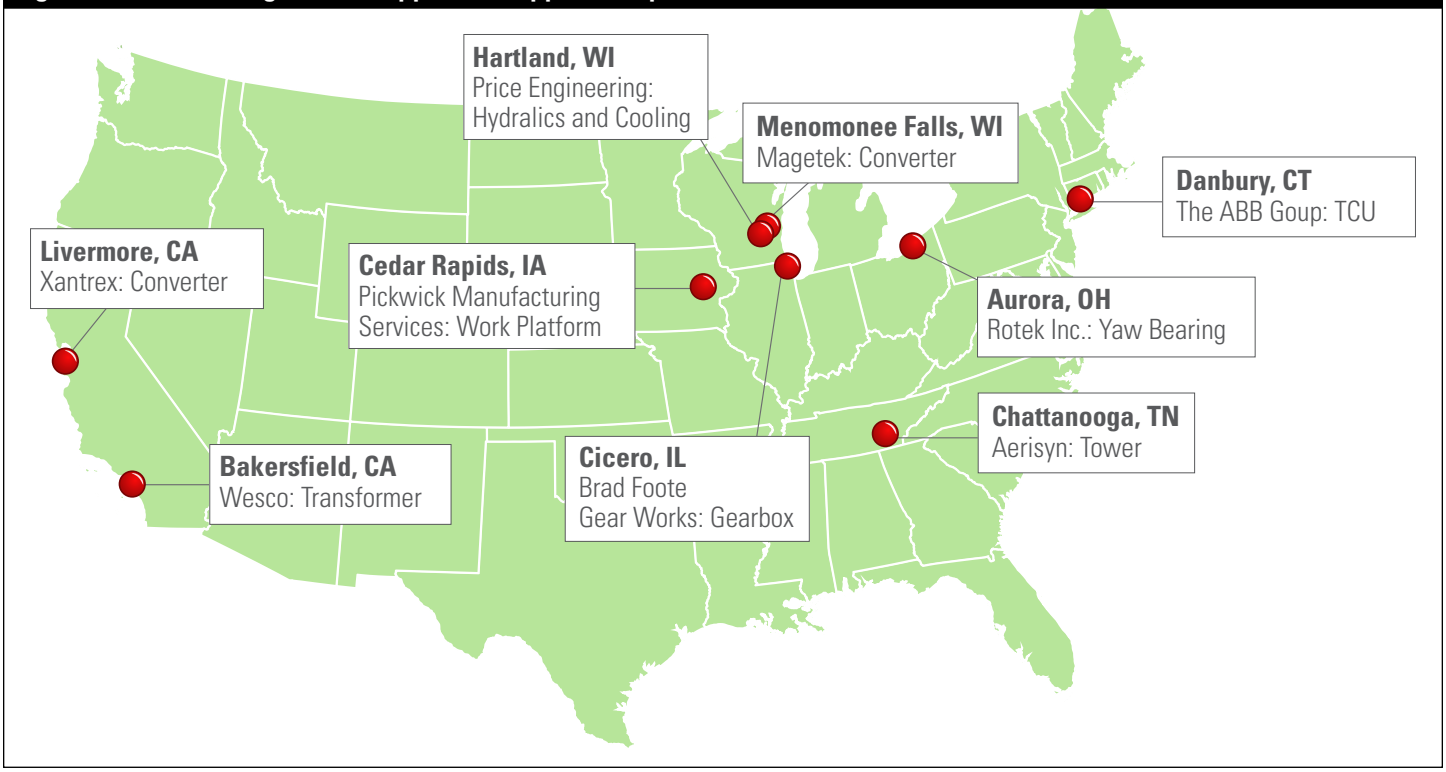
In an interview with *The Gazette*, Kirkwood President Mick Starcevich explained, "At Kirkwood we are always leaning on our local industries to find out exactly what their needs are, what skills their employees are lacking, and what skills they will need in the future."[39] The new program trains wind turbine technicians, photovoltaic solar array installers, and solar thermal hot water system installers, professions that typically earn annual salaries in the range of $40,000 to $60,000.[40]

In its first year, the Energy Production and Distribution Technologies program received a $464,726 grant from the State Energy Sector Partnership (SESP) to train 40 incumbent workers and 90 students. Clipper Windpower and Acciona donated wind turbine components for training, and Kirkwood brought on Clipper Windpower's lead trainer, David Bennett, as an instructor.[41] The partnership has proven beneficial to not only the college, but to the wind companies, too. Clipper and Acciona now have access to skilled workers graduating from the program, trained on the very wind turbine they will manufacture at the two companies. Moreover, Clipper and Acciona send employees to Kirkwood for additional training each week.[42]

Kim Johnson, vice president of continuing education and training services at Kirkwood, expressed confidence that the program would provide graduates with career options for years to come. In an interview with *The Gazette*, Johnson explained, "The number of energy-related jobs will increase as additional energy sector employers expand and locate their facilities here in this region. Currently, supply chain vendors are hiring Kirkwood industrial technology graduates. We know the additional grads will find additional opportunities as these companies locate and expand."[43]

In addition to the jobs directly created at Clipper and Acciona's manufacturing plants, the wind companies are

Figure 5. Partial Listing of U.S. Suppliers – Clipper Windpower



helping generate hundreds of indirect jobs along the supply chain. Acciona's former North American CEO, Peter Duprey, estimated that the West Branch plant has led to the creation of 1,300 jobs, including the 110 jobs created by his company.[44] In Acciona's first two years of operation, the company went from 0 to 63 percent of its wind turbine components being supplied by North American suppliers.[45] Clipper Windpower, too, has a significant impact on the supply chain; the company relies on 120 outside suppliers for components and subcomponents, and of its 16 largest suppliers, nine are U.S.-based companies (see figure 5).[46]

Although Clipper Windpower has built a strong relationship with the Cedar Rapids workforce and generated hundreds of jobs in the community, the company has still experienced its share of financial troubles. Fraught by expensive on-site repairs and the PTC—the unstable U.S. policy surrounding renewable energy—the company was bought out by United Technologies in 2010 and then sold to Platinum Equity in August 2012.[47] Clipper's troubles shine a light on **what is at stake if Congress fails to extend the PTC that is set to expire in 2012**. Kirkwood's current students and recent graduates are only a few of many skilled, young professionals that would be affected by Congress' failure to maintain stable wind energy policy.

CANTON, OHIO

Wind Energy Manufacturing Benefits Canton, OH

- Nineteen companies involved in wind energy supply chain
- $86,350 average salary for wind technicians
- Industry partnership with Stark State College
- Wind Energy Research Development Center
- Community engagement by wind companies: 'Engineer for a Day' program

"They're creating a new industry with new products. The byproduct for our students and our state is new industries and new high-skill, high-tech jobs."[48]

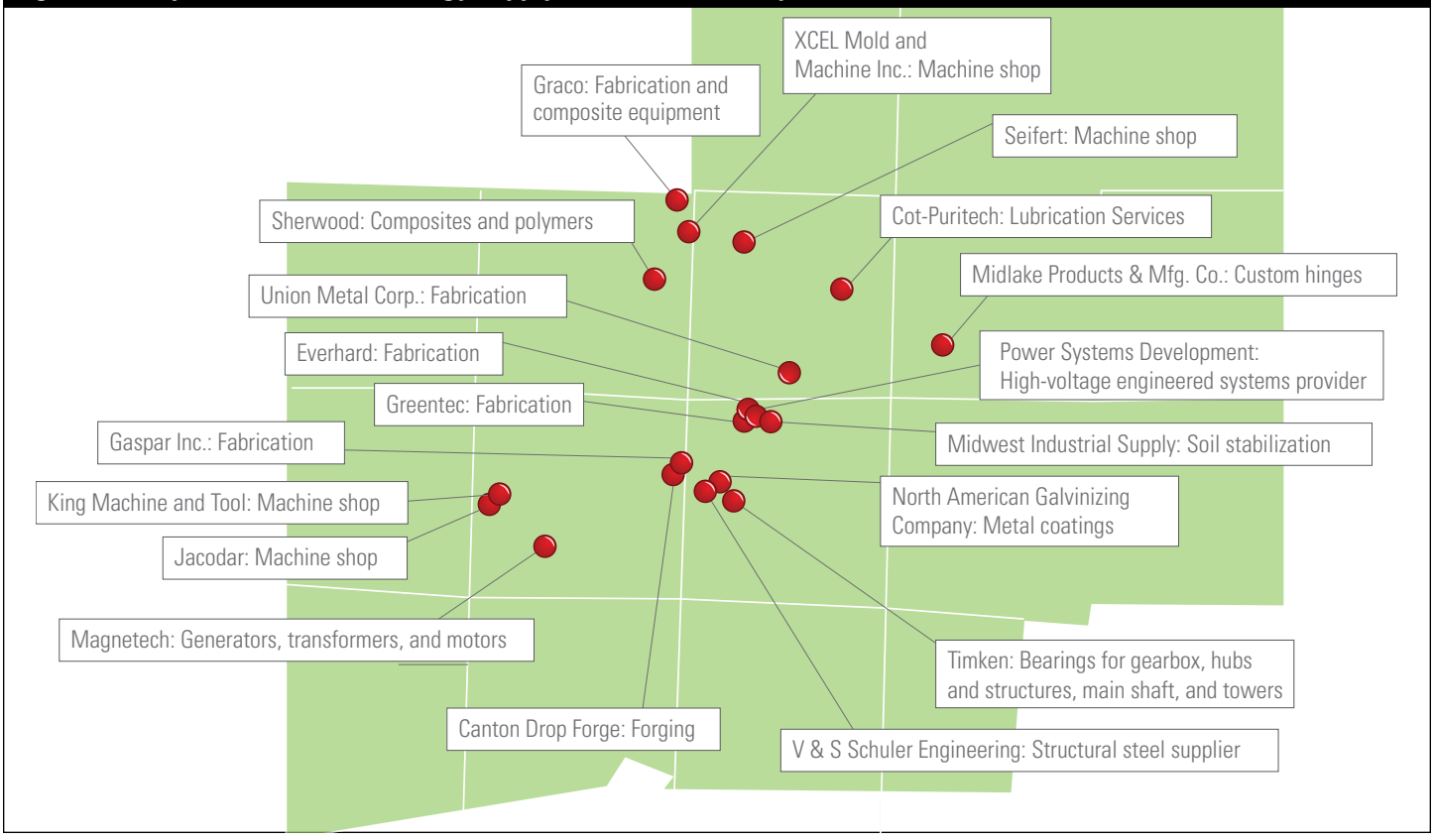
— John O'Donnell, president of Stark State College

Canton's Manufacturing Background, Skilled Workforce, and Adaptable Companies Open Door to a Growing Wind Sector

Central to major railways, and in the heart of America's Rust Belt, Canton, Ohio was once one of the Midwest's premier manufacturing cities. With the decline of American heavy manufacturing, however, the city's industry shifted into a service economy, including healthcare, retail, and education. The wind industry is changing that and beginning to restore American manufacturing jobs in Canton and the larger Stark County. The city is quickly becoming a wind energy hub, fostering technological innovation and creating high-tech, high-paying jobs (see figure 6).

The wind industry first took root in Canton when the Timken Company began supplying the energy market in 1982. Timken employs more than 4,000 workers at its 10 locations in Ohio. Five of those are in Canton and employ over 400 workers.[49] Although the company produces bearings for a variety of industries, the wind industry accounts for a growing share of its sales.[50] More than 100 of Timken's employees in Canton work solely on highly-engineered bearings for wind turbine gearboxes and main shafts, and on condition monitoring services for the wind industry.[51]

Figure 6. Companies in the Wind Energy Supply Chain, Stark County, Ohio



As the area's wind industry has grown, Canton companies have shifted production to supply this emerging market. Graco, long-time provider of pumps and spray equipment for the construction, manufacturing, processing, and maintenance industries, saw an opportunity in wind turbine component manufacturing. In Canton, Graco employs 150 workers and now produces protective coating for turbine towers, manufactures rotor blades, and provides automatic lubrication for wind turbines.[52] As Howard Learner, executive director of the Environmental Law and Policy Center told *North American Windpower,* "It's your classic rust belt manufacturer that has been making parts and equipment for many industries over time, and in the growing clean energy economy sees a new market for its products and services and sees a chance to either maintain current jobs or grow and expand."[53] A total of 19 companies in Stark County are now involved in the wind industry. Suppliers range from V & S Schuler Engineering, a structural steel supplier that employs 280, to Canton Drog, a forge manufacturer that employs 300, and Gaspar, a machine shop that employs 55.[54]

Next Generation Wind Technologies Being Launched in Canton

One of the most promising results of the wind industry clustering in Canton is the founding of the city's new Wind Energy Research and Development Center. The first of its kind in North America, the $11.8 million research and development center for mission-critical power systems is expected to begin operation in November 2012. The center has already created 65 jobs directly, and will offer a one-year technical certification program in wind turbine maintenance technology through Stark State College. The 18,000 square-foot facility is a collaborative effort between Stark State, Stark County Port Authority, and The Timken Company.

Having invested more than $6 million in the facility, Timken plans to test ultra-large bearings and sealing systems at the center using equipment that mimics the operating environment of large commercial wind turbines. Developed for the next generation of wind turbines, the largest bearings are expected to weigh more than five tons. "The partnership will support the development of clean energy academic programs and internships for students," John O'Donnell, president of Stark State College explained in a Timken Company press release. "Also, the return on investment is that it will position Ohio as a leader in renewable energy technologies."[55] The center is expected to advance power-transmission component technologies for the wind industry and increase opportunities for skilled labor in Canton by training technicians to provide a range of services to wind turbine manufacturers and operators.[56] **The average salary for wind technicians in Canton is $86,350, with starting salaries more than $71,100.**[57]

The new research and development center represents a continuation of Timken's engagement with the Canton community. Every year, the Timken Technology Center in North Canton hosts "Engineer for a Day" for Canton high school students interested in science and technology. Students are given the opportunity to spend a day with engineers on the job, and work together to learn problem-solving strategies in testing, marketing, and product design. Since the program began, more than 1,000 students have attended the event.[58]

The industry's rapid growth and the wind companies' investment in educational programs in the community indicate that the benefits from wind energy in Canton are only just beginning. As demand for wind capacity in the state grows, more companies will enter the wind energy supply chain, creating American manufacturing jobs and further advancing wind energy technology.

CONCLUSION

Wind energy is an important part of our future. As we replace our aging energy infrastructure and look for ways to both rebuild our economy and compete in new global industries, all while minimizing pollution, renewable energy resources like wind power can provide the secure, reliable, and clean energy options that Americans of all political stripes want. As this report shows, moving forward and embracing clean, renewable energy that is found in the United States has the ability to transform our communities in dramatic ways.

Each of the communities profiled in this report have been on the frontlines of the growing wind industry. While the details may differ, the story remains the same: wind development, when pursued sustainably, with strategic reinvestment, and a broad distribution of benefits, can be immensely helpful to communities around the country. A community can leverage its historical advantages, the existing skillsets of its residents, and its local resource base to support wind manufacturing and an accompanying supply chain. Or, a community with good wind resources can harness that wind energy and use the accompanying financial returns to reinvest in their schools, their roads and local economic development.

Unfortunately, all of this gain is under threat, due to the increasing uncertainty of not extending important support for clean, renewable energy like wind power. Passing an extension of the PTC and preserving and bolstering other successful federal and state policies would help American communities in all sorts of ways, from keeping and creating local jobs, to cleaning up local air and water, to increasing government revenues that can be reinvested in schools and roads, to growing local industries that can benefit the entire area. On the other hand, allowing the PTC to expire will block the wind industry's growth, and could hinder other communities from seeing the kinds of benefits outlined in this report.

Ultimately, the choice is ours. We can ignore the considerable benefits from wind power or we can move forward and invest in this new, and exciting clean energy future, bringing these benefits to communities across America.

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