Wind Manufacturing Solutions

Ohio | Department of Development

Ted Strickland, Governor

Lee Fisher, Lt. Governor
Director, Ohio Department of Development

Ohio's Aggressive Energy Policy

"Ohio's Energy Policy will ensure predictability of affordable energy prices and maintain state controls necessary to protect Ohio jobs and businesses … and we will attract the jobs of the future through an advanced energy portfolio standard … this requirement means that 25 percent of the energy sold in Ohio must come from advanced and renewable energy technologies – from clean coal to wind turbines – by 2025."

– Ohio Governor Ted Strickland

Ohio's Energy Policy requires that electric distribution utilities and other competitive suppliers located in Ohio supply a portion of their electricity from renewable energy sources to meet specific targets; beginning in 2009 with .25 percent and increasing steadily over time, reaching 12.5 percent in 2024.

At least half of Ohio's renewable energy must be generated by facilities in the state and the remainder must come from sources that can be shown to be deliverable into Ohio.

Ohio is the fourth-largest consumer of electricity in the nation, using approximately 161,546,000 megawatt hours in 2007. Moreover, 88.4 percent of Ohio's electric sales will be subject to the provisions of the foundation of Ohio's Energy Policy.

Ohio Governor Ted Strickland signs Senate Bill 221.
May 1, 2008

Ohio's Low-Cost Business Climate

Ohio has overhauled its tax system to eliminate burdensome taxes on capital investments, profits, and wealth, and has created a low-rate, broad-based tax system. The results provide greater incentives to invest in innovation and productivity and more support for entrepreneurial activity.

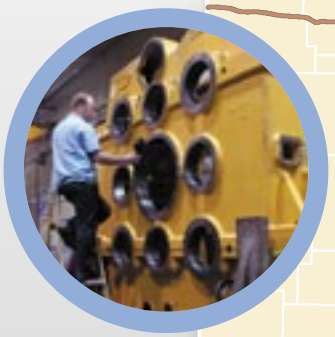
- Lowest capital investment tax rate in the Midwest region of the United States.
- Ohio has a lower per capita state tax burden than any of its neighboring states.
- Elimination of corporate income and tangible personal property tax.
- Tax-free exports outside of Ohio.
- Ohio has reduced state income taxes for all taxpayers by 21 percent over 5 years and provided one in four homeowners with a homestead exemption on their property taxes.

Ohio's Wind Supply Chain Solution

Ohio leads the way with the greatest U.S. potential for manufacturing wind industry components east of the Rocky Mountains and is transforming its steel and mining industry base to supply the world's wind power needs.

Ohio has accelerated its production of critical components for the global wind industry. In May of 2008, the Ohio Department of Development began working with the Great Lakes Wind Network on a $1.3 million project to identify, grow, support, and market the wind supply chain in Ohio. A major element of this initiative will be to provide services to bring together the specific needs of turbine manufacturers with the capabilities of Ohio's supply chain.

- **Castings** – Ohio is at the heart of a foundry-rich region producing hubs, baseplates, and gearbox housings.
- **Machining** – Ohio hosts many companies with precision boring and finishing capabilities; coordinate-measuring machine capabilities are being expanded.
- **Bearings** – As a hub for bearing manufacturing, Ohio is home to Timken and large-scale slew bearing manufacturers Rotek and Avon Bearing.
- **Gears** – Ohio's Horsburgh & Scott is a premier supplier of large scale gears and is expanding capacity to support the wind industry.
- **Forges** – Gear blanks are among the components supplied by many regional forges with capacity also serving aerospace, construction, and automotive manufacturers.
- **Fabrications** – Steel-bending, fabricating, and assembly capabilities exist at many fabrication shops across the state.



Magna Machine
Cincinnati, Ohio

Minster Machine
Minster, Ohio

Ohio's World-Class Workforce

Ohio's pool of 5.9 million workers, greater than the individual populations of 33 other states in the U.S., constitutes one of the largest labor pools in the nation, boasting manufacturing, logistics, management, and finance skills.

Ohio's colleges of engineering, housed in more than 40 universities, graduate engineers in the disciplines of composites, structural, mechanical, polymers, electrical, and aerospace engineering.

Innovative workforce development programs include Ohio Third Frontier Internships that place junior and senior level engineering students in companies and offset their wages by $3,000 per intern.

Recognizing the potential of Ohio's workforce to be front and center in Ohio's energy strategy, Ohio is investing $150 million in advanced energy through its $1.57 billion Jobs Stimulus Package that will be deployed within four years.

Research & Development

Ohio is home to three leading international suppliers – Timken Company, Owens Corning, and Parker Hannifin – who operate research and development centers in the state.

Industry research and development leading to innovation is supported through eight Edison Centers named for the inventor of the first incandescent electric bulb.

Ohio's Department of Development continues to invest in energy related research with $71 million invested since 2002. Beginning in 2008, $25 million has been available for Advanced Energy innovations including wind.

Ohio's world-class colleges and universities conduct research and development in multiple energy technologies including wind power.

Ohio is the only state with two major federal research laboratories with extensive research capabilities focused on propulsion and materials-research that provides breakthrough technologies for wind development.

Ohio's Wind Energy Resource and Potential

New wind maps created by the National Renewable Energy Laboratory show that Ohio's wind power potential exceeds 66,000 megawatts of on-shore resources. The potential for wind power development in Lake Erie is estimated to be even larger.

With more than 50 organizations, the Ohio Wind Working Group is a consensus-based collaborative led by the Ohio Department of Development to facilitate wind power development and wind manufacturing in Ohio. The U.S. Department of Energy's Wind Powering America Program awarded this organization the honor of "Outstanding Wind Working Group." More information can be found at www.ohiowind.org.

The Great Lakes in North America represent one of the largest offshore wind market opportunities of the next several decades. By some estimates, 250 gigawatts of technical potential stand ready to be harnessed. On the southern border of the centrally-located shallowest lake, Lake Erie, Ohio is uniquely well-positioned to serve the Great Lakes offshore wind market of the future.

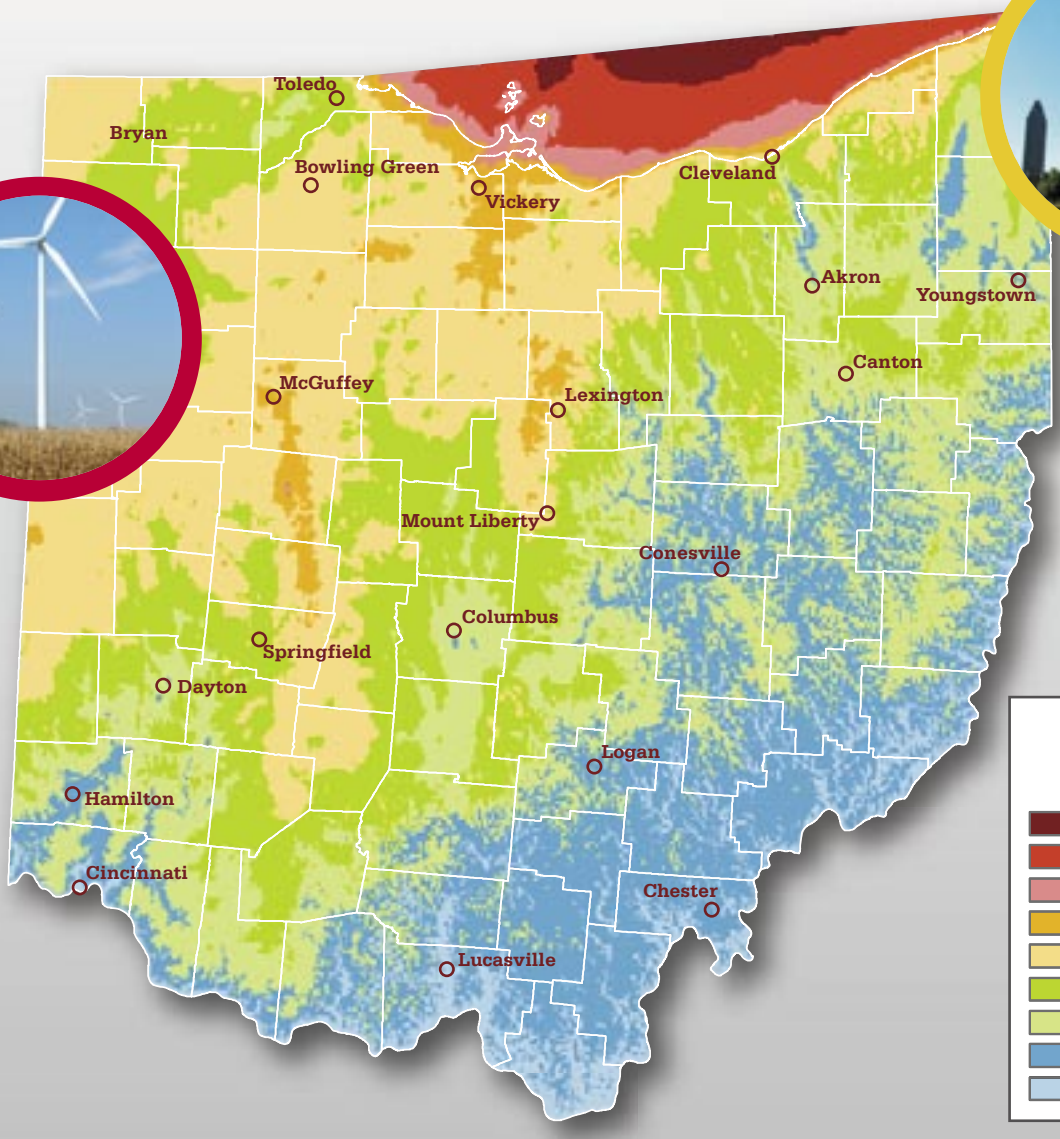
Recognizing this, Ohio is moving aggressively to capture this offshore wind market opportunity. The Great Lakes Wind Energy Center, a public-private partnership under initial development, will be comprised of two separate but reinforcing elements:

- A demonstration windfarm of approximately 20 megawatts located a few kilometers offshore downtown Cleveland; will establish the regulatory precedents necessary to enable subsequent private-sector development of offshore windfarms in the Great Lakes.
- A research and technology center, affiliated with the Great Lakes Institute of Energy Innovation at Case Western Reserve University's School of Engineering; will facilitate the development of new technologies, equipment, and approaches for offshore wind energy.

With the Great Lakes Wind Energy Center as the catalyst, Ohio is positioned to become the center of excellence for research, testing, and certification of new designs and equipment for offshore wind technologies.

Great Lakes Science Center
Cleveland, Ohio

Bowling Green Wind Farm
Bowling Green, Ohio



Ohio's Transportation Solution

Roads, rail, waterways, and international airports provide many viable, reliable options for moving wind components to your final market – whether it's in state or within the 500 miles of Ohio that reach 60 percent of the US population.

Access to potential customers

Ohio provides wind companies a strategic location with easy access to customers, suppliers, and the global market, lowering your cost of doing business.

- Due to its central location, Ohio is a cost-competitive place for manufacturing and transporting wind turbines and their large components to other states or to Canada.
- Multi-modal transportation possibilities exist in Ohio, allowing for the most competitive options for transportation.
- Ohio is within 1,000 kilometers of 60 percent of the U.S. population and 50 percent of the Canadian population.
- Ohio is within a one day's drive of 80 percent of all U.S. corporate headquarters.

Extensive transportation network

- With 5,354 miles of operating railroads, Ohio has the fourth largest rail network.
- Rail network through CSX, the largest rail carrier east of the Mississippi and experienced with transporting wind components – 1000 cars projected for 2008 alone.
- Nine ports on Lake Erie (in addition to 16 terminals along the Ohio River) rank Ohio as the fourth-largest maritime state by tonnage moved – more freight traffic each year than goes through the Panama Canal.
- Fast permit applications, within minutes, made possible with Ohio's web-based system. Map route selection process analyzes vehicle and cargo width, length, width, and height requirements to match with available routes.
- Ohio has the nation's fourth-largest interstate highway system.
- Vast highway network connecting to rail and water terminals accommodating heavy or oversize loads.

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