

Iowa Poised to Take the Lead in Wind Energy

BY P. BARRY BULTER

Developing a realistic strategy for U.S. energy independence will require an orchestrated blend of energy technologies. Among alternatives, wind energy is a critical component of national and state plans for achieving energy independence.

Indeed, last year over one-third of all new electric generating capacity installed in the United States was derived from wind. Further, the U.S. Department of Energy recently completed a feasibility study, *20% Wind Energy by 2030*, investigating the requirements for producing 20 percent of the nation's electricity from wind by 2030.

As wind energy continues its upward trajectory, we are likely to see activities clustered around strategic geographical regions. Much like Silicon Valley in the electronics and information technology industries, wind energy's centers of excellence will demand a nearby supply of highly educated talent, close partnerships between industry and research universities, a bold entrepreneurial spirit, and a welcoming business climate.

Iowa is well suited to take full advantage of opportunities in this rapidly growing industry. Our state has quickly taken a leadership role in wind farm installations as well as the manufacturing of wind turbine components, and today we are positioned to become the Silicon Valley of wind energy technology. In fact, by the end of 2008, Iowa had earned the honor of becoming the number-two producer of wind energy in the United States, second only to Texas.

Eight wind energy companies have already established manufacturing facilities in Iowa because of its strong infrastructure, including community colleges that support manufacturing and operations/maintenance training, world-class research at the universities, supportive renewable energy policies, logistics and supply chain efficiencies, a competitive business climate, and a legacy of manufacturing excellence. Consequently, these industries and their suppliers need state-of-the-art research and development to produce new technologies with greater efficiencies, lower costs, and greater returns on investment; a well-trained workforce for manufacturing and maintenance; improved supply chain management; and testing facilities to evaluate new designs.

To further establish Iowa as a focal point for wind research, education, and industrial innovation, continued growth is needed in both university-industry partnerships in wind energy research and

development as well as university and community college education and training programs. Priority areas identified by industry where Iowa's universities have expertise include

- Meteorology and precise wind monitoring and mapping;
- Electrical conversion and generation, grid management, power converters, and generators;
- Software, control, and sensors for data acquisition and interfacing for system variables;
- Electronics, control devices for reliable and efficient wind turbine/generator operation;
- Mechanical, gearbox, drive train, composites, blades, towers, and nacelle covers;
- Manufacturing, material handling and automation, and electric system operation; and
- Supply chain optimization and logistics.

But to further nourish national leadership, we need to accelerate wind energy research at Iowa's universities following the model used by the National Science Foundation to stimulate university-industry research partnerships. If successful, wind energy-related research in Iowa will grow significantly, increasing our reputation as a center of excellence for wind energy R&D activities.

In addition to partnering in research, industry has broad workforce development needs in manufacturing, wind turbine maintenance, turbine design and controls, and wind farm operations. It's clear that students are interested in careers in these areas, so our universities and community colleges have begun to offer wind power and related educational and training activities. Iowa's public universities have excellent engineering, science, and industrial technology programs that support the workforce needs of wind power and are developing both undergraduate and advanced programs that focus on wind energy. Also, our community colleges offer nationally recognized two-year associate degrees in support of the growing industry.

Iowa is ready to take full advantage of its natural resources, along with an incredible manufacturing base and workforce, to create challenging and rewarding green-collar jobs in every corner of the state, making our state the renewable energy capital of the country. Through research at our universities, innovative public policies, training and education, and expanded testing facilities, Iowa can make a major contribution to the Department of Energy's goal of generating 20 percent of electricity from renewable sources by 2030.



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