

Alt Energy

By Jennifer Wray | Posted: Thursday, June 23, 2011 4:00 pm

Along a freeway lined with office buildings, gas stations, strip malls and other suburban detritus stands an unusual sight: a windmill reaching high into the sky, like an errant flower growing from the crack of a sidewalk, its petal-like blades moving in concert with the wind.

When it comes to renewable or "green" energy, the landscape has changed markedly in recent years--literally, in the case of this wind turbine, erected at Byers Mazda Subaru in northwest Columbus along Interstate 270. Credit a combination of government support, improved (and less expensive) technologies, heightened environmental awareness and a sense of alternative power's job-creation potential.

While conventional power sources remain the norm, an increasing number of businesses and institutions are finding benefits in tapping wind, solar and other renewable sources for energy.

Government's Role

In recent years, various levels of government have lent support to green energy projects. In 2008, Ohio Senate Bill 221 established renewable energy mandates for utilities. Last year, Senate Bill 232 revamped the taxation of renewable energy projects and created a mechanism to help finance more such ventures.

SB221 requires utilities to phase in the proportion of power generated by renewable and alternative sources. By 2024, 12.5 percent of power should come from renewable means (including 0.5 percent from solar) and another 12.5 percent from advanced sources such as clean coal, advanced nuclear, fuel cells and certain solid waste. Utilities can build their own wind farms, solar fields and the like, or purchase Renewable Energy Credits (RECs) earned by smaller-scale producers.

The law "creates a marketplace for advanced energy generation that Ohio didn't really have before," says attorney Terrence O'Donnell, a partner at Bricker & Eckler and member of the firm's Green Strategies practice group. "We think it's really been quite successful in attracting investment."

"Ohio is open for business, thanks to Senate Bill 221," says Greg Kuss, founder and CEO of SolarVision.

Under SB232, green power projects built through the end of 2011 qualify for an exemption on tangible personal property and real property taxes. Instead, their owners will make a much smaller payment in lieu of taxes to local municipalities. Formerly, such ventures faced an "onerous tax

burden," says O'Donnell. SB232 also expanded special-improvement district financing to renewable projects.

Also at the state level, the Ohio Department of Development has offered various loan and grant programs for alternative energy projects, funded by a surcharge on investor-owned utilities levied between 1999 and 2010. Last year, Advanced Energy Fund (AEF) grants of up to \$200,000 were so popular that \$15.6 million in funds were exhausted in less than six months. The program has since been shuttered for an overhaul.

Uncle Sam provides support through the American Recovery and Reinvestment Act of 2009, whose 1603 program offers green energy grants worth 10 percent to 30 percent of a project's cost in lieu of taking production or investment tax credits. As of late February (the most recent statistics available), the program had provided \$6.4 billion in funding to 7,180 projects, according to the U.S. Department of the Treasury.

A Place in the Sun

Huntington National Bank has made strides boosting its energy efficiency and installing renewable energy projects. The company, which spends \$14 million annually on utility and water bills, has saved \$2.2 million through energy-efficiency improvements--primarily lighting and HVAC upgrades--over the last three years, says Gene Freeman, Huntington's energy sustainability manager.

In March, Huntington hired Dovetail Solar & Wind of Athens to install solar panels on the roof of its Easton office. The project cost \$315,000 before a \$150,000 AEF grant and \$94,000 from the feds. It is expected to meet about 1 percent of the building's electricity needs and save \$200,000 in utility bills over 25 years, says Freeman. The system should pay for itself in less than six years, he says.

Freeman acknowledges this sort of arrangement isn't for everyone. "The No. 1 drawback is the funding, because it takes a while to get your money back in a simple payback model. So if you're not committed to staying at a building for a while, it's not going to work," he says.

Elsewhere around Central Ohio, other small-scale solar projects have sprung up in schools, government buildings and offices. It may come as a surprise to anyone who's experienced Ohio in February, but the area gets enough sun to make solar work. Columbus receives an average of 4.3 hours of peak sun daily, says Freeman. "Ohio may not be the sunniest place on the planet, but it's enough," says Kuss.

The bigger challenge: "We have very low [conventional] power costs here," lessening the incentive to seek other sources, says Eric Zimmer, CEO of Dublin-based Tipping Point Renewable Energy.

Cost also hampers adoption: Not everyone can afford a solar array. Third-party agreements are a popular option, especially for entities such as school districts and government that may lack the upfront capital and don't get the tax benefits to make renewable projects affordable. Under a Power Purchase Agreement (PPA), a developer pays to purchase, operate and maintain the system on property owned by a business, school or government. The host typically agrees to buy the system's energy output, generally at a discount over conventional utilities. Tax credits and RECs may be used by the developer to defray the system's cost.

Zimmer says government and schools are particularly well-suited to participation in PPAs. "They plan long term, they know the buildings are going to be there for the long term, they have good credit," he says.

PPAs aren't yet common in Ohio. "That's the part of the business that everybody's hoping will get more conventional, because it's not fundable currently," says Thomas Van Cleef, managing director of Columbus-based consulting firm Shine On Solar Solutions.

Tipping Point has established the Ohio Solar Communities Consortium (members include the cities of Columbus, Dublin and Upper Arlington, and the Southwest Licking and Licking Valley local school districts) to create a group PPA that drives down costs using economies of scale. Tipping Point hopes to secure financing and begin work on consortium projects this summer.

Similarly, in September, Kuss's Westerville-based SolarVision announced a \$5.6 million deal with Stonehenge Structured Finance, Finance Fund and FirstMerit Bank to install solar arrays at schools in Worthington and Newcomerstown, at a community center in Athens and at a water treatment plant in Washington Court House. The agreement hinged upon PPAs with the host entities.

More group deals--particularly in low-income communities--will be the norm for developers seeking funding, says Van Cleef. "We're getting to the point where you have to get four or five projects together. They need to be in distressed areas, New Market Tax Credit areas," he says.

Tipping Point has an agreement with Columbus to erect solar panels this year at its Groves Road fleet maintenance building, which will also have a compressed natural gas station. The 627-kilowatt project is "certainly the largest solar array in Central Ohio by a long shot," Zimmer says. He estimates the project will cost \$2 million to \$2.5 million and will offset about 40 percent of the building's power usage.

Columbus-based American Electric Power (AEP) announced in October that it would participate in the largest commercial solar development east of the Rockies--a 49.9-megawatt facility on a 500-acre site in Muskingum County, adjacent to The Wilds conservation center. The project is expected to create 300 permanent and 300 construction jobs. AEP Ohio negotiated a 20-year PPA for all of the output--including RECs--from the facility.

Change in the Wind

An onsite power plant might not seem like a sensible fit for an automotive business. But George Byers Kauffman, vice president of Byers Auto Group, says the company came to embrace renewable power while renovating Byers Toyota in Delaware.

Byers was working with Renier Construction on the showroom overhaul and hired Renier to install wind turbines at the Delaware and Columbus dealerships. The Byers Mazda Subaru turbine is the first commercial windmill in Columbus.

"Quite honestly, early on we looked at 'Does solar make more sense than wind?' " says Mike MacKay, project executive for Renier. "The big thing with car dealerships is they use all of their property for parking, and solar arrays tend to take up square footage."

Renier handled the entire project from site analysis to erecting the turbines in fall 2010. In all, it was "a two-year ordeal" to hammer out the details, says MacKay.

The turbine at Byers Mazda Subaru stands 150 feet tall, including a 69-foot-diameter rotor. It operates at wind speeds as low as 7 mph and is expected to produce 150,000 kilowatt hours (kwh) of power annually. That's enough to meet 10 percent to 15 percent of the location's electricity demands, Kauffman says. The 80-foot turbine in Delaware operates at wind speeds of 5 mph or greater and is expected to produce 25,000 kwh per year.

With \$200,000 in AEF and federal grants, the projects' \$600,000 price tag was cut by two-thirds. "Probably the No. 1 factor in us doing this was that we had the opportunity to do both," says Kauffman, who predicts a five- to six-year return on investment.

Still, it's unlikely that the relatively flat terrain of Central Ohio will be a wind-power hub anytime soon. "We don't have a good supply of straight-on wind, which is what you do have in western Ohio, and you need to be tall--you need to be 300 feet," says Van Cleef.

Indeed, the northwestern part of the state and the shores of Lake Erie are more likely candidates for wind farms. The American Wind Energy Association ranked Ohio 18th among the states for wind resources and cited a National Renewable Energy Lab assessment that wind could provide 95.3 percent of Ohio's electricity needs.

According to the association, wind is also a jobs driver: More than 50 Ohio companies manufacture components for the industry, which in 2009 supplied 3,000 to 4,000 direct and indirect jobs. "These are good-paying jobs and they're in the private sector," says Bill Spratley, executive director of the nonprofit Green Energy Ohio.

Geothermal, Biomass & Hydropower

Although solar and wind are the most high-profile alt-energy choices locally, they're not the only options. Geothermal, biomass and hydropower also can help businesses cut ties to conventional power.

At the Columbus Zoo and Aquarium, a new polar bear exhibit has put a fuzzy, if sharp-toothed, face on climate change. Since the early days of planning Polar Frontier, zoo officials wanted to find an alternative source of power for it. However, all the price quotes were too high. "It was always bothering us back there, that we couldn't do it," says Barbara Revard, the zoo's director of program planning.

Instead, the zoo was able to install a geothermal heating and cooling system by tying the project to a water-treatment facility overhaul. The integrated 300,000-gallon system uses well water as a non-potable water source as well as to heat and cool the air and water in the exhibit areas.

"Had we constructed both projects separately, it really would have been out of our budget," Revard says. "Instead, it came in at just under \$400,000." That amount will be paid off in six years. "Then there goes that heating bill," she says.

The zoo also has undertaken energy-efficiency upgrades, including a warehouse lighting renovation and Smart Skylights, which are equipped with solar panels, a mirror and a GPS unit to track sunlight. The projects, which were supported by AEP rebates, save \$11,000 annually, says Revard.

Elsewhere in a state in which agriculture dominates--and in a country with no short supply of waste--it's little surprise that biomass-produced power is becoming a favored source of energy. Such power is considered beneficial because it displaces fossil fuel usage, recycles atmospheric carbon dioxide and utilizes materials such as sawdust, sewage and plant-derived oils that would otherwise end up in a landfill.

Rural Ohio, which has a plentiful supply of plant and animal waste, is well-suited for such facilities. Ohio has the seventh-highest biomass potential in the nation and could meet 7.5 percent of the state's power needs by 2020, according to the Natural Resources Defense Council, citing figures from Oak Ridge National Laboratory. In addition to generating electricity--as much as 14 million kwh per year--a biomass program could keep nearly 750,000 tons of waste out of landfills, according to the council. "Biomass is the least-developed resource in the state, and it's also the largest resource," says Spratley.

Dublin-based Hull & Associates has teamed with the Campbell Soup Company and CH4 Biogas to create a \$10 million biogas plant in Napoleon. Organic waste from Campbell's nearby facility, as well as material from area food processors, waste recyclers and dairy farms, will fuel the plant's anaerobic digester, which can handle 450 tons of mixed organic waste daily, according to Hull.

Biogas produced by the digester will generate 22,660,000 kwh of electricity annually. The project is partially funded by the Regional Port Authority of Northwest Ohio.

Hydropower, meanwhile, represents 90 percent of the renewable electric energy produced in the United States, according to Green Energy Ohio. Large-scale facilities such as Hoover Dam and Niagara Falls are renewable and non-polluting, but detractors say they have a negative impact on native species, the landscape and residents.

Given the need for a steady water flow with a decent-size elevation drop, hydropower is very limited in where it can be located. The city of Columbus runs such a facility at the O'Shaughnessy Dam on the Scioto River. Its two turbines each have an output of 25.9 megawatt hours (a megawatt is 1,000 kilowatts). That's enough, says Columbus environmental steward Erin Miller, to power 584 homes annually. The city sells the power it generates to AEP.

What's Next

Earlier this year, the investment blog *24/7 Wall St.* placed the Buckeye State dead last in its survey of states' pollution, energy use and policy. Ohio, it said, "ranks fifth in energy consumption, and very little of this demand is met by alternative energy. Only 0.7 percent of the state's energy comes from renewable sources, the worst in this country."

Whether that will change under new leadership at the Statehouse remains to be seen. Former Gov. Ted Strickland was a vocal advocate of renewable power (he pushed for SB221's passage); Gov. John Kasich has been more apt to talk about Ohio's oil and natural gas resources than alternative energy.

Chad Smith, director of the Ohio Energy Resources Division at the Ohio Department of Development, says the governor is "interested in a diversified energy portfolio" that includes renewable sources. Smith says Kasich supports supply-chain manufacturing of renewable energy components, which taps into Ohio's historic strengths in manufacturing.

According to the Natural Resources Defense Council, Ohio has 2,100 companies--the fourth-highest in the country--tied to the manufacture of renewable energy system components. "I think Ohio is just well-situated in that aspect to provide the best support to these industries through those capabilities," says Smith.

Cost is likely to remain a factor in adoption rates for the foreseeable future. Overall, renewable energy remains more expensive than conventional power, says Steve Giles, director of energy markets for Hull Energy, a Hull & Associates affiliate. Electricity prices will continue to rise as coal-fired and other power plants age and are taken offline, he says, but state and federal legislation supporting green energy is still needed to approximate pricing parity.

"We know that renewable energy creates jobs, creates manufacturing centers. There are already other parts of the world that are already ahead of us on this; we need to position ourselves for the future," says Giles.

Kauffman says he hopes Byers' turbines show that renewable power can be implemented *now*, not at some indeterminate time in the future. "It's kind of like a beacon of 'tomorrow is today.' Tomorrow is here--and you can take the steps to make it happen," he says.

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