

Renewable energy: what option is right for you?

One Kentucky doctor reduces his energy footprint and encourages students to explore alternative energy projects

By Kenya Stump
Department for Energy Development and Independence



Don't be surprised if you see two wind turbines as you drive along I-64 through Mt. Sterling, Ky. They tower above the office of Dr. Richard Henry of Henry Dental. Why, you might ask, would a dentist be interested in renewable energy?

Dr. Henry is not your ordinary dentist. He is part of a growing movement of 'green' dentistry.

"I do it because it's fun, exciting, and it's the right thing to do," said Henry. "I'm a tinkerer and am always looking for projects. Being a dentist helps support my interests in technology and alternative energy."

Henry's system is composed of a 1.5 kilowatt (kW) German Windgen turbine, a 2.5 kW Skystream turbine, and a 1.0 kW solar photovoltaics (PV) array that converts sunlight into electricity. The system does not provide nearly the electricity needed by Henry's office and it is not "net metered." This means the electricity gen-



Renewable Energy Facts

- The largest solar installation to date in Kentucky is located at Fort Knox at 2.1 megawatts (MW).
- Kentucky has ~10 MW of distributed renewable resources statewide.
- Eastern Kentucky Power Cooperative leads the way in landfill gas-to-energy projects.
- Renewable energy in Kentucky accounts for 250 gigawatt hours (GWh) of net electricity produced.
- Approximately 3 percent of Kentucky's net electricity generation comes from hydroelectric power.
- The majority of renewable energy development has occurred within the Tennessee Valley Authority area due to its incentive programs for renewables.
- Kentucky's agricultural sector is one of the largest for renewable energy deployment due to U.S. Department of Agriculture funding coupled with funding from the Governor's Office of Agricultural Policy.

erated stays behind the meter and serves the office first; it will never go to the grid and Henry won't be compensated for any excess electricity produced.

But, Henry's passion for energy doesn't stop there. He is replacing lighting in his office and working with local students on alternative energy awareness projects. His latest project involves working with the school industrial technology program to build a tracking system for additional solar panels that will light the sign for his dental office. Henry tries to conduct one project a year with the students.

His future plans include an electric car charging station in partnership with the local Dairy Queen, a solar hot water system, and more solar PV panels.

"I'm not in it for the economic payback, and these projects may not be feasible for most people but it is something that I do for myself, those that work here and the community, not to mention it is great advertising," said Henry.

In fact, for many Kentuckians, installing a solar or wind energy system may not be an option for their homes. From a resource standpoint, Kentucky's wind potential is not practicable at less than ~4.5 to 5.5 meters per second. The

Continued on Page 7

ABOVE AND LEFT: Dr. Richard Henry holds a mockup drawing of his solar project and solar panels that will light his dental sign. Two wind turbines produce energy to power Henry's dental office. Photos by Eileen Hardy

Renewable energy: what option is right for you?

Continued from Page 3

state's solar potential is about mid-range at 400 to 440 watt hours/ft²/day, making solar workable but not optimal in Kentucky (see wind and solar maps created by the National Renewable Energy Laboratory at <http://tinyurl.com/b38lo9h> and <http://tinyurl.com/bpeu8mh>).

Where do you start?

Investing in an energy audit is a good first step in determining how you can reduce your energy footprint. Then, consider what renewable energy options are the right fit for you and your budget.

While the price of solar panels has dropped 50 percent since 2008, it still costs a homeowner in Kentucky between \$3 to \$5 per watt. That equates to a homeowner paying between \$10,000 and \$20,000 for a rooftop system and expecting to break even in 20 years or less.

Specific prices on systems vary based on the needs of the homeowner and other conditions like roof size and location; therefore, anyone interested in solar installation should get a quote from and work with a professional certified by the North American Board of Certified Energy Practitioners. To address these budget challenges, the U.S. Environmental Protection Agency's Sunshot Initiative is working to lower the price of solar electricity to about \$0.06 per kilowatt-hour over the lifetime of the system. This will increase the cost-competitiveness of solar electricity with other nonrenewable forms of electricity.

What else is available?

Even if the economics of owning a solar electricity system aren't feasible for most Kentuckians, there are other renewable energy opportunities. Geothermal heating and cooling, as well as solar hot water heaters are viable in today's market. Solar thermal heating can have paybacks in five to 10 years, and geothermal systems in the range of two to seven years. Also biomass, in which sustainably sourced wood can be used to heat homes through a traditional direct fire or boiler system, is not out of the question. However, biomass systems are not emission free.



If investing in a renewable energy system is out of reach, most utilities offer "green" power programs that allow customers to participate for a monthly fee, usually ranging from \$2 to \$5. These programs enable customers to support renewable energy by allowing the utilities to purchase renewable energy credits from in-state and out-of-state renewable energy generating facilities such as hydroelectric, landfill gas, biomass, wind and solar. To learn more about green power programs and how you can participate, contact your local utility company.

Like Henry, every Kentuckian has an option for supporting renewable energy development. Whether driven by economics or values, there are choices to fit everyone's needs. For more information, visit the Kentucky Division of Renewable Energy website at <http://energy.ky.gov/renewable/Pages/default.aspx>.

TOP AND LEFT: *Dr. Henry's wind turbine systems.* Photos by Eileen Hardy