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Green Power Switch is a renewable energy initiative that offers consumers in the Tennessee Valley a choice in the type of power they buy. TVA and local public power companies, working in cooperation with the environmental community, developed Green Power Switch as a way to bring green power—electricity that's generated by clean, renewable resources like solar, wind, and methane gas—to Valley consumers.

Green Power Switch is sold to residential consumers in 150-kilowatt-hour blocks (about 12 percent of a typical household's monthly energy use). Each block adds \$4 to the customer's monthly power bill.

For more information, visit www.greenpowerswitch.com.

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Green Power Switch®

Wind site expansion complete



Southwest breezes are blowing more green energy our way with the inauguration on December 9 of TVA's expanded wind farm, one of the largest commercial wind installations in the Southeast. Wind energy is now a major source of power supply for the Green Power Switch program.

The 27-megawatt facility, built by Invenergy Wind LLC, is located on Buffalo Mountain near Oak Ridge, Tennessee. TVA will purchase the turbines' output under a 20-year, \$60 million power-purchase agreement.

The wind farm started small in October 2000 with three turbines on Buffalo Mountain. That facility

generated two megawatts of electricity, or enough to power 360 homes. With the addition of 15 larger turbines, the total capacity has increased to 29 megawatts, or enough for about 3,780 homes.

The new turbines are huge: they rise 262 feet from the base to the hub, and the blades are 135 feet long! The turbines are spaced about 2.6 rotor diameters apart on the west edge of a two-mile ridgeline, facing southwest. That's the predominant wind direction on Buffalo Mountain.

The turbines rotate at about 15 revolutions per minute, says Rick Carson, TVA's Renewable Opera-

tions Manager. "The speed is selected to control blade-tip speed. The smaller blades on the original three turbines rotate at 28 revolutions per minute." Those turbines produce 690-volt power, which is stepped up to 13 kilovolts (kV) by transformers at the base of each tower.

"The new turbines," says Carson, "have the transformers in the nacelles—the containers on top of the towers that house the gearbox and generator. That's where the power is stepped up to 35 kV before being stepped up again to 161 kV at the substation located on the mountain near the turbines."

The capacity factor for

We would like to thank all the current participants in the Green Power Switch program. We could not make this program work without you and your commitment. You are making renewable energy a way of life!

Comments or suggestions? Let us hear from you!

We'd like to know if you're satisfied with our newsletter, and we're interested in what you'd like to read in future issues. So e-mail us your comments today.

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—Jim West
Senior Manager
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Wind turbine exhibit

When a blade from one of the new wind turbines on Buffalo Mountain was damaged in transport, Inverengy, the site's builder, agreed to donate the blade to the American Museum of Science and Energy in Oak Ridge for an exhibit. Green Power Switch will support the project by helping to construct a foundation for the blade. The exhibit will include GPS information and open in the spring.

Upcoming Events

April 16, 10 a.m. – 4 p.m.

MTEMC Earth Day Celebration at Cool Springs Mall, Franklin, TN.

April 22, 9 a.m. – 4 p.m.

Earth Day at Ripley's Aquarium, Gatlinburg, TN

April 23, 10 a.m. – 10 p.m.

World's Fair Park, Knoxville. Earth Day celebration with live music, food, exhibits, and more.

www.knox-earthfest.org

April 23, 10 a.m. – 4 p.m.

Celebrate Earth Day 2005 at Murfreesboro Civic Plaza, Murfreesboro, TN

April 23, 12 noon – 7 p.m. (rain or shine)

Nashville Earth Day Festival at Centennial Park. Exhibits, food from local vendors, children's activities, music.

Wind site *continued ...*

the original turbines has averaged 23 percent over the past couple of years, Carson says. "The new turbines are expected to have a capacity factor of 28 percent because the towers are 49 feet taller. The low capacity factor is related to the availability of the wind resource in the Southeast." (Capacity factor is the ratio of electricity generated to the amount of energy that could have been generated at continuous, full-power operation during the same period.)

Carson says the blades start spinning

at wind speeds of two to three miles per hour. "Energy is generated when the wind speeds reach nine to 10 miles per hour," he adds. "The turbines generate at their rated capacity with winds of about 25 miles per hour and automatically shut down with winds of 55 miles per hour or more. The turbines produce some amount of energy about 70 percent of the time."

The expanded site is staffed, unlike the old one, and that allows the turbines to be available 98 percent of the time.

Watching the meter run BACKWARD

The Genovesi family of Chattanooga flipped the switch on their solar-energy system last Christmas Eve. Over the next few weeks, even in the midst of a cold snap, they took great delight in watching their electric meter run backward at times, when the system generated more power than they were using.

The Genovesis are the first family in Chattanooga, and only the eighth in the TVA region, to join TVA's GPS Generation Partners® program. The program supports small-scale green power generation by homeowners and small businesses. Any power generated is paid by TVA in the form of a credit on the local distributor's monthly utility bill at 15 cents per kilowatt-hour.

"Even though energy rates in Chattanooga are relatively

low," says Mrs. Genovesi, "we thought with the work we're already doing on our house and the wonderful sun available on our lot, that this was the time to do it." The house has 20 solar photovoltaic panels on the roof.

Although such solar systems are expensive to install and the payback period from energy savings is quite long, there are compensating benefits, says Stephen Smith, of the Southern Alliance for Clean Energy. "These solar units add tremendously to the value of one's home, and we think they are going to become much more popular in the future."

Solar investments usually boost home values by at least 80 percent of their original cost, says Thomas Tripp, president of Big Frog Corporation, a regional supplier of renewable energy

equipment. There's also the satisfaction that comes from reducing the normal environmental load involved in home use of electricity. "A solar unit of this size should reduce by over 4,000 pounds a year the amount of greenhouse gases that would otherwise be produced by burning coal," Tripp says.

Doing their part to protect the environment is perhaps the greatest reward of all for the Genovesi family. "We've always tried to teach our children about being environmentally responsible," Mrs. Genovesi says, "and we think this project is a great way to demonstrate that."

For more information on the program, visit www.gpsgenpartners.com.

Excerpted from a story by Dave Flessner, *Chattanooga Times Free Press*, Jan. 18, 2005.

Brighton-ing the future

Students at Brighton Middle School in West Tennessee are leading the way to a renewable-energy future by enrolling their school in Green Power Switch. In fact, the school is the first GPS customer for Southwest Tennessee Electric Membership Corporation, which serves a nine-county area that includes the town of Brighton.

When science teacher Chip Gordon asked his class to come up with an environmental project, they were eager to support Green Power Switch. With help from the PTA and the Tipton County Board of Educa-

tion, they earned enough money to buy green power for the spring semester. In the future a fund-raiser will be held each semester to earn money for six months of renewable energy at the school. This approach allows new students to learn about green power and participate in raising money to support it.

A permanent Green Power Switch display is planned for the school library to educate students about the program all year long. An Earth Day event will also be held to thank the students and faculty for their support of green power.



The Second Annual Southeast Student Renewable Energy Conference was held in Knoxville February 18 to 20. The conference featured seminars and discussions for student organizations from colleges and universities across the Southeast. It was a great opportunity for the students to network, find out what's happening on other campuses, learn about environmental issues, and also have fun. Over 300 people attended the conference, which included a visit to the Green Power Switch wind turbines on Buffalo Mountain.

Generation update

Solar power sites

Generation December 1, 2004 - February 28, 2005

Adventure Science Center	4,029 kWh
Dollywood Tram C	1,320 kWh
Dollywood Tram D/E	1,592 kWh
Gibson County High School	3,098 kWh
Ijams Nature Center	2,222 kWh
Cocke County High School	1,426 kWh
Duffield-Pattonsville Elementary School	1,584 kWh
Sci Quest/North Alabama Science Center	3,566 kWh
American Museum of Science & Energy	2,792 kWh
Lovers Lane Soccer Complex	5,334 kWh
Finley Stadium	14,788 kWh
Oak Ridge National Laboratories	0* kWh
Florence Water Treatment Facility	5,982 kWh
University of Mississippi	6,356 kWh
Mississippi State University	3,104 kWh
Bridges, Memphis	4,668 kWh
Generation Partners	2,054 kWh
Total solar generation	63,915 kWh

*System out of service for repairs and maintenance.

Wind power site

Generation December 1, 2004 - February 28, 2005

Buffalo Mountain Wind Farm	14,360,345 kWh
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Methane gas site

Generation December 1, 2004 - February 28, 2005

City of Memphis Wastewater Treatment Facility	7,211,491 kWh
Total Green Power Switch generation	21,635,751 kWh

Participation update

Total number of green power blocks subscribed:	21,107
Number of residential customers subscribing:	7,040
Average number of green power blocks per residential customer:	1.7
Number of business customers subscribing:	351

For a list of participating business customers and monthly updates of generation figures, please visit www.greenpowerswitch.com.

Lowe's keeps green promise

Lowe's, the largest purchaser of green power under TVA's Green Power Switch program, has signed up five more of its Tennessee retail stores as subscribers, maintaining its position as the largest business participant in the renewable energy program.

In 2002, Lowe's made a commitment to purchase green power at every available location in TVA's service territory. As more local power companies sign up for the program, the retailer is making good on its promise.

"Lowe's is proud to be a leader in the use of renewable energy," says Robin Nickles, Lowe's vice president of energy and facilities management. "Our commitment to green power reflects Lowe's core value of operating as a responsible corporate citizen in everything we do."

Lowe's stores in Dickson, Dyersburg, Harriman, McMinnville, and Paris, Tennessee, are among the most

recent to join Green Power Switch. These locations are served by Dickson Electric Department, Dyersburg Electric System, Harriman Utility Board, McMinnville Electric System, and Paris Board of Public Utilities. Lowe's stores are now buying over 300,000 kilowatt-hours of Green Power Switch each month, an amount that has the annual environmental benefit of removing 495 cars from the road or planting over 750 acres of trees in the Tennessee Valley.

"TVA, Valley power distributors, and members of the environmental community applaud Lowe's for its leadership in purchasing the most green power of any business in the southeastern U.S.," says Jim West, Senior Manager, Green Power Switch. "Lowe's commitment to the environment through its purchase of Green Power Switch is second to none. Lowe's is clearly setting a high standard for other businesses to follow."

www.greenpowerswitch.com

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