

Solar Zone at UA TechPark

WEDNESDAY, 21 APRIL 2010 22:28 LARRY COPENHAVER



concept illustration courtesy of The Planning Center

A 200-acre slice of sun-baked earth within the confines of The University of Arizona Science and Technology Park is now a designated Solar Zone that advocates view as the centerpiece that could help Tucson become one of the leading solar energy producers and innovators in the world.

The Solar Zone at 9000 S. Rita Road just off Interstate 10 will host commercial solar energy ventures dedicated to all aspects of this nascent industry.

Bruce A. Wright, associate vice president for University Research Parks for the UA, said that Southern Arizona – with its abundance of sunlight, availability of land, talented workforce, rapid construction permitting, connection to university assets and regional commitment to solar and other renewable energy – has the potential to become a global leader in the future of clean energy technologies.

Wright said there are five components desired for this Solar Zone:

- Using solar energy to generate electricity, either with photo voltaic panels or with parabolic reflectors that concentrate the sun's energy on pipes to produce steam to spin turbines that turn generators
- Research and development to improve efficiency of solar power generation to reduce costs and improve storage processes, so energy from solar can provide power at night or on cloudy days
- Manufacture and distribution of solar energy hardware
- Workforce education for all phases of solar equipment, from manufacturing to installation.
- Education and awareness, an initiative to help the local community understand how the public can employ solar energy for everyday use

The Tech is moving toward adopting renewable energy as its power source. In the works is a plan to install covered parking areas using solar panels for the parking covers, he said.

"The park already is a remarkable facility," Wright said. All non-potable water used at the park is from reclaimed sources. Not a drop is dumped into the sewer. All new construction must meet LEED standards, an internationally recognized green building certification system. In addition, buildings in the area, constructed by IBM in the 1970s, are being retrofitted as much as possible to LEED standards.

Success in the new Solar Zone will require world-class companies working to increase Southern Arizona's renewable energy capacity, develop cutting-edge solar products, foster imaginative next-generation technology and establish a solar demonstration model.

Key in that effort is luring new industry and talent to the region, Wright said.

The UA Tech Park is the anchor of the growing Tucson Tech Corridor, one of the largest employment centers in the metro area.

"The Solar Zone will clearly complement this area of metro-Tucson," Wright said. Ideally, companies will work not only on their own business interests, but also team up with Tech Park and key regional partners to influence the solar strategy of the region.

Already Bell Independent Power Corp. of Rochester, NY plans to start construction this summer on a 5-megawatt solar plant with a thermal storage system that will be the first of its kind in the world.

Bell, the developer of Thermal Storage Technology for Concentrate Solar Power, has pledged to commercially demonstrate its proprietary system and show how it can improve the efficiency of such a facility by 50 percent.

Bell project's proposed cost is estimated at \$32 million, and it will use 45 acres for parabolic solar reflectors, according to a report by Tucson Regional Economic Opportunities (TREO). The solar plant is expected to begin providing power to Tucson Electric Power customers by May 2011.

The Concentrate Solar Power plant and storage system could produce enough energy to power more than 1,500 typical Tucson homes while offsetting more than 16,000 tons of carbon dioxide.

TEP has already agreed to purchase Bell solar power for 20 years. TEP and other state utilities are under a mandate from the Arizona Corporation Commission to increase their use of renewable energy each year, reaching at least 15 percent of their retail energy production no later than 2025.

This new Solar Zone in the Tech Park can contribute significant value to the region economically and environmentally, Wright said.

"A lot of big ideas are being generated at the Tech Park – and this is one of those big ideas."



Paul Bonavia, President & CEO Tucson Electric Power

by Teya Vitu

Solar power still has one pitfall: No sun, no power.

For decades, solar power pioneers have produced no reliable way to store the energy for use at night or on a cloudy day. Until now.

Bell Independent Power Corp. of Rochester, N.Y. is primed to demonstrate on a commercial scale its thermal storage technology for concentrated solar power. In partnership with Tucson Electric Power and The University of Arizona Science and Technology Park, Bell plans to start construction this summer on a 5-megawatt solar plant at the Tech Park with intentions to generate – and store – solar power by May 2011.

"It's a game changer in solar power generation," Bell Independent Power President Joseph Bell Jr. said. "Nobody is at this stage. In the U.S., we're the only ones with a project under development."

Bell Independent is the flagship for the Tech Park's newly decreed 200-acre Solar Zone which will address all aspects of solar power, including research and development, manufacturing solar instruments and generating solar power, said Bruce Wright, UA's associate vice president for research parks.

The \$32 million Bell project will occupy 60 acres with a traditional concentrated solar power plant, where 22,000 parabolic mirrors will heat oil to 750 degrees, which will create steam to turn power-generating turbines.

Where the Bell plant differs is at night, on cloudy days or during thunderstorms, the hot oil will detour to a tank of molten salt what can store the energy for two hours.

"The industry will dictate what makes sense of how much to extend that," said Gerard Walter, Bell's chief financial officer. "If you build a big enough storage tank and solar field, you could store power for 24 hours."

Walter doesn't foresee that happening for the same reason that thermal storage hasn't happened so far: Traditional power sources are still far cheaper, but with a renewed interest in solar power, Bell Independent believes there's a market for storing solar power for at least a few hours.

Bell responded to a TEP request for proposals for renewable energy sources to help the local power company comply with Arizona Corporation Commission mandate that 15 percent of TEP's power come from renewable resources by 2025. TEP agreed to purchase Bell's solar power for 20 years.

"Our ambition is to be a leader in solar energy," said Paul Bonavia, chief executive at TEP and its parent company, UniSource Energy. "We want to make Tucson a national and even global leader in solar energy."

The Bell plant at the Tech Park is a demonstration project, able to produce about one-third of the park's energy needs or enough energy to power more than 1,500 typical Tucson homes while offsetting more than 16,000 tons of carbon dioxide (CO₂).

Bell Independent is a small company with 15 employees, established in 2004. Developing this thermal storage technology has been a focus ever since. The company also develops wood-based (biomass) power technology and was involved in scheduling and commissioning Nevada Solar One, the largest concentrated solar power plant that went online in June 2007 near Boulder City.

LAST UPDATED (WEDNESDAY, 21 APRIL 2010 23:25)