Texas Energy Cleans Up Its Act

Whether it's the image of the oil rig silhouetted by the setting sun or the sight of the big-tilted "E" that sits in front of Enron headquarters in Houston, Texas, the state has long played a huge role in oil-related power industries. Now Texas might just have all the "fixins" to play a big role in the clean energy business, too.

In 1999, when the Texas Electric Restructuring Statute was signed into law by then Governor George W. Bush, Texas became one of the last of 24 states to implement deregulation of its energy utilities. Under the new law, 2,000 megawatts of new renewable energy capacity must be developed by 2009, generating approximately three percent of the state's power. Texas still stands alone in mandating energy efficiency.

Texas has seven percent of the U.S. population, which uses 12 percent of the total energy consumed by the nation, according to a report recently released in Austin, Texas. In 1999, renewable energy represented less than one percent of the total sources (coal and lignite 46%; natural gas 39%; Nuclear 15%) of over 283,000 gigawatt hours of energy produced in 1999.

"Enriching Economy and Environment: Making Central Texas the Center for Clean Energy" is a report produced by the Austin Clean Energy Initiative (ACE) in conjunction with a University of Texas thinktank, IC^2 Institute. The report heralds the convergence of the recent state law deregulating electric utilities with a community in search of the next technology bug. The state capital city, Austin, is accustomed to being recognized internationally as a tour de force for technology innovation. Having attracted the software and semiconductor consortia, Microcomputer Technology Corporation (MCC) and Sematech, respectively, in the 1980s, Austin then went on to spawn a slew of Internet startups in the 1990s. It's too early to tell what technology will hit the city next, if any, but if one can be manufactured, then clean energy technologies may be just the panacea that the Central Texas region seeks to relieve the same economic slump that most technology regions are enduring in 2002.

Under the guidance of Pat Wood III, the chairman of the Public Utilities Commission of Texas when the 1999 legislation became law and now the head of the U.S. Federal Energy Regulatory Commission, the goal of the new state law was to let competition drive the marketplace – as well as consumer choice.

Apparently, the law has been successful so far. For example, in May 2002, five months after the retail competition in the sale of electricity began in Texas, the Center for the Advancement of Energy Markets (Washington, D.C.) reported that Texas leads the country in electricity restructuring. The nonprofit agency, which promotes energy deregulation, found that Texas scored 69 ()Pennsylvania, Maine and New York scored 60 out of 100 on the Retail Energy Deregulation Index.

ants, and increases durability and has applications in a range of commercial markets. Wind Kraft, Inc. develops small (1.5kiloWatts) to medium size (3.0kWs) wind turbine electrical generator systems for production distributed clean power generation.

Clean energy initiatives in Texas are not limited to the incubator. Cielo Wind Power, LLC (Austin, Texas) develops and maintains wind farms. In 2001, it launched four new projects, one of which, Noelke Hill Wind Ranch, will handle 624 MW – enough to serve 1.2 million people. Relocating from Vermont to Austin, Green Mountain Energy Company has 500,000 customers in seven states, including California, Pennsylvania and Texas. It sells only renewable energy. To make inexpensive photovoltaic cells for converting solar energy to electricity, another Austin startup, Heliovolt Inc.is using thin film technology based on copper indium selenide — instead of on silicon — to create cells for glass.

Among its many research and testing endeavors, Southwest Research Institute (San Antonio, Texas) has developed a technology that reduces the platinum loading of Proton Exchange Membrane (PEM) fuel cells by almost an order of magnitude. Attractive especially to commercial interests having fleets of vehicles, SwRI will be delivering the technology to an industrial client by the end of the year. In addition, SwRI begins a year-long demonstration project using three 5 kW hydrogen-based fuel cells in the housing at Brooks Air Force Base.

The cost of renewable energy in comparison to energy sourced from oil, gas, coal, or nuclear, has always been an issue. Structured deregulation that encourages the use of renewable energy goes only so far even when coupled with federal and state energy tax credits. For it to be successful, in the current environment, natural gas turbines, which generate electricity that costs about 3 cents per kilowatt hour is still far cheaper than wind energy which costs about twice that.

Nevertheless with the amount of sun and wind that the state receives naturally, expect to see further developments for clean energy technology. As Pat Wood said when he was Chairman of the Texas Public Utilities Commission, "We need to encourage the use of renewables. Every day lots of wind blows across Texas plains. We need to take advantage of this."

— Emily Sopensky

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As further evidence, ACE reports that Texas, which used less renewable energy than any other state three years ago, now has the world's largest wind farms and has increased wind energy capacity in 2001 by a factor of eight. The state is almost halfway towards its 2009 goal.

ACE was formed about the same time in late 2001 that the Austin Technology Incubator — also a university product — launched the Clean Energy Incubator. CEI already has six companies under its roof and is itself one of eight members of the National Alliance of Clean Energy Business Incubators, established in 2000 by the National Renewable Energy Laboratory, part of the U.S. Department of Energy.

Broadly defined, clean energy technology embraces any technology that reduces the environmental impact of energy production and consumption. Renewable energy, which includes fuel cell technology and energy efficiency, usually refers to energy sourced directly from the sun (e.g., thermal, photochemical, and photoelectric); indirectly from the sun (e.g., wind, hydropower, and photosynthetic energy stored in biomass); or from geothermal or tidal energy.

One of the first to join CEI, Power Tube Inc. (Austin, Tex.) is developing a prototype that uses Earth's energy found at least 9,000 feet below the surface. Another CEI company, Forbis Energy Solutions, Inc., improves energy savings in commercial buildings using a unique roofcooling strategy. Teletrips Inc. combines teleworker information with emissions data from the Environmental Protection Agency (EPA) and other governmental sources to calculate and validate mobilesource emission reduction credits (MERCs). Pureté Water Corp. uses an electric field to develop a replacement for the current chlorine disinfection stage of wastewater treatment. RSET, Inc. is developing a rotating engine liner that improves fuel efficiency, decreases pollut

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