

Big Boon for Clean Tech

The state's new global warming act promises to boost the young industry

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PENNINGTON - Local clean technology companies expect the state's new global warming legislation to become a growth engine for their niche industry, increasing investments and driving up demand for solar power and cutting-edge services like carbon dioxide capture.

Climate change is fueling the demand for solar power, says Kling. [Steven J. Dundas]

The Garden State currently has at least 20 clean technology—or clean tech— companies, says the Cleantech Network LLC in Ann Arbor, Mich, a group of investors, entrepreneurs and service providers. Clean tech, which includes renewable energy generation and methods of creating energy efficiency, refers to a broad range of products and services that optimize the use of natural resources, employ new and innovative technologies and add economic value to a project.

The Global Warming Response Act signed into law by Gov. Jon Corzine this month seeks to lower current greenhouse gas emission levels by 20 percent by 2020, and by 80 percent by 2050. Scientists believe that greenhouse gases, such as carbon dioxide, methane and nitrous oxide, raise temperatures in the atmosphere and increase the risk of catastrophic changes to the environment.

Over the next three years, the state will recommend policies and measures to hit those targets by increasing the use of renewable energy technologies and other services, says Alan Kelley, managing director of SJF Ventures, a venture capital fund in New York City that focuses on clean tech ventures.

"Most clean energy solutions are not yet cost competitive with traditional energy sources that emit unwanted carbon," says Kelley. "We need legislation like this to move clean energy technologies forward now. We may not have the luxury of waiting until clean technologies can compete without legislative assistance."

Total venture capital investment in New Jersey's clean tech industry was \$99.5 million during the first two quarters of 2007, up from \$59.3 million for all of 2006, according to the Cleantech Network. Clean tech was the third-largest venture capital investment category in North America last year after software and biotechnology, with a total investment of \$2.9 billion—up 78 percent from \$1.6 billion in 2005. In a study released in May, Cleantech said the Garden State ranked fifth in the nation in encouraging the growth of clean tech startup companies.

Investing in the clean technology industry could have huge economic benefits for New Jersey: The Edward J. Bloustein School of Planning and Public Policy at Rutgers University estimates a projected gain of 11,700 jobs by 2020.

Many clean tech companies have already seen an upswing in business activity because of concern over higher energy prices and climate change. "There has been a quickening of demand for services," says Cassandra Kling, vice president of business development at WorldWater & Solar Technologies Corp., a solar engineering and water management company in Pennington. Demand for services has tripled in the last two years, with revenues growing by 50 to 100 percent annually, she says.

WorldWater has added five employees in the past six months to bring its New Jersey work force to 30, and plans to double its headquarters space with a move to a 25,000-square-foot facility in Ewing in the next few months.

The new state regulations will continue to add to the momentum that's building, says Kling. "Now that [companies] have to comply with certain reduction schemes, they're going to really need to look at how they're using their energy. They're going to be very vested, both financially and for compliance reasons, to look at renewables, efficiency, on-site generation."

This act is a strong impetus for companies to start looking at the kinds of technologies we are developing so that they can be implemented at their facilities," says Michael Trachtenberg, CEO of Carbozyme, an environmental technology company in Monmouth Junction. Carbozyme specializes in carbon dioxide capture from power plants to prevent emissions from escaping into the atmosphere and contributing to global warming. The new law "will get more industrial partners and more commercial partners interested in participating, and that will mean more funding, research and development and engineering," says Trachtenberg.

He says many large firms either collaborate with or acquire clean tech companies to gain access to emissions-reducing technologies. Carbozyme, which expects to add five or six employees to its current staff of six over the next couple of years, captures CO₂ with the use of a biocatalyst enzyme and compresses the gas so it can be transported through pipelines and stored underground.

Some clean technologies can be expensive and complicated to use. Many carbon capture technologies use high amounts of heat energy to operate, says Trachtenberg, and can cost as much as \$50 per metric ton of CO₂ captured, compared with \$15 per metric ton for the Carbozyme process. Storage is also a challenge because of the lack of geologic sites on the East Coast that can contain the greenhouse gas, he adds.

Others question the feasibility of using clean technologies on a large scale. "Right now, power is more reliable coming from nuclear and coal and natural gas than it is necessarily coming from solar or wind," says Sara Bluhm, assistant vice president for energy and federal affairs at the New Jersey Business & Industry Association in Trenton. Bluhm says

solar energy has a 14 percent reliability rate, meaning that it can provide power only about 14 percent of the year, compared with a 70 to 90 percent reliability for nuclear power. To date, the state has spent about \$150 million to install more than 30 megawatts of solar power, according to the state Board of Public Utilities. The New Jersey Large Energy Users Coalition estimates that by 2020 the state could spend as much as \$5 billion to reach its goal of 1,800 megawatts of solar power.

"A very small percentage of our power actually comes from renewables," Bluhm says. "It's something that is important, and something that we need to continue to develop, but at the same time, I see our regular power as coming from traditional sources."

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