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Hed: Evergreen Solar shifts focus, but tough challenges lie ahead

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LOWELL SUN

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Last in a series

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Must credit The Sun of Lowell, Mass.

The state learned a lesson from its \$21 million bet on Evergreen Solar Inc.

"You can't count on any one company to be successful," says Philip Giudice, undersecretary of energy for the Massachusetts Executive Office of Energy and Environmental Affairs.

Solar manufacturers are faced with a tough road, experts say, because the solar market is made of bubbles. And those bubbles are about to burst.

Less than two years after Evergreen created hundreds of jobs at the manufacturing plant in Devens, it eliminated them. Now the state is asking for the company to return some of the incentive money it lent for the solar-panel startup.

Will investment in any one photovoltaic manufacturer, never mind multiple companies, ever yield a return? Evergreen did everything it could to stay in the photovoltaic module manufacturing business, industry analysts say. But it couldn't hang on.

"It's our opinion that they have made the right move," says Matthew Feinstein, research associate at Lux Research in Boston, about Evergreen's shift into the wafer-making business. "They should have done it sooner."

A looming issue for solar manufacturers is the overly inflated European market, which demands and buys 80 percent of the world's solar-panel supply, says Paula Mints, principal analyst for the photovoltaic services program at Chicago-based international firm, Navigant Consulting.

To encourage the use, development and manufacturing of renewable energy within Europe, governments there have spent tens of billions of dollars annually providing “feed-in tariffs” to producers of solar, wind, biomass and hydro.

The generous feed-in tariffs often paid four to six times more than for conventional electricity. That sparked development of large-scale solar farms looking for the payoff from tariffs, Mints said. Both demand and supply were artificially inflated by the generous tariffs.

Now, European countries are abandoning the tariffs and rescinding the incentives as their governments struggle economically. Spain, one of Europe’s most aggressive incentive providers for photovoltaic energy, reduced the feed-in tariff by about 29 percent as of Jan. 1, 2009. In January, it made another 30 percent retroactive cut.

France, known for its generous solar feed-in tariff, slashed its rates by 30 percent.

Other countries, including Italy and Germany, are cutting back on their incentives, too.

Mints said her message to photovoltaic module makers is simple: “Prepare to operate in an incentiveless environment.”

For manufacturers around the world, that translates into a photovoltaic cell price of \$1 per watt. Called “grid parity,” the price is said to match the cost of coal and conventional grid energy production. If photovoltaic energy costs less than coal- and oil-fired electricity, the solar market should grow without subsidies — or, that’s the theory, at least.

The goal: cutting costs

Manufacturers are closer than ever to achieving the grid parity. Evergreen Solar is making the panels for \$1.90 a watt. The Chinese produce them for \$1.20 a watt. At least one industry analyst has claimed First Solar, a Tempe, Ariz.-based thin-film panel maker, has already reached the dollar-a-watt threshold.

Last month, the U.S. Department of Energy issued \$20 million grants specifically for developing technologies that will help American companies get there before others do.

In Lexington, 1366 Technologies will use the \$3 million it received to further reduce the cost of silicon wafers, while Veeco of Lowell will have \$4.8 million to expedite the development of manufacturing equipment for “cost-efficient” thin films that use copper, indium, gallium and selenide — alternative semiconductor materials to silicon.

Varian Semiconductor in Gloucester also received \$4.8 million to reduce the cost of interdigitated “back contact” solar cells, which turn sunlight into power most efficiently due to the lack of a wire mesh that normally covers the surface of panels.

As for state incentives, Evergreen Solar has been the single largest beneficiary so far.

Konarka Technologies Inc., a polymer-based solar-cell manufacturer in Lowell, received a total of \$6.5 million state loan for its technology development and the purchase of manufacturing equipment since 2002.

GreenRay Inc. of Westford and Wilson SolarPower of Woburn each received a \$500,000 convertible loan.

Giudice said such assistance goes a long way in raising additional public and private funds.

GreenRay eventually raised \$5 million, including a \$3.5 million Department of Energy grant. Konarka raised a whopping \$158 million, including a \$45 million investment from a French company, Total, and another \$45 million from a group of investment companies, according to the Massachusetts Clean Energy Center, a quasi-public agency that manages the state’s Renewable Energy Trust Fund.

Clean-energy hopes

Gov. Deval Patrick, who has called Evergreen the symbol of the state’s economic future, told The Sun in January that he is still counting on the solar industry to create more jobs in the Bay State. Solar manufacturing jobs “tripled and quadrupled” over the years here, he said.

According to the Massachusetts Clean Energy Center, solar manufacturing jobs grew by 172 percent between 2007 and 2010, with a 117 percent growth for solar installation and development jobs during that time period.

Giudice notes that the state is trying to invest in not just solar but all clean-energy industries. When one segment goes awry, another could be thriving.

"The entire portfolio still makes sense," Giudice said.

The state has some incentives for solar-panel consumption, including rebates. The renewable-energy certificates that the state issues can be traded as commodity. The profits — or the prospect of making profits — have allowed some grantees of the certificates to sell consumers electricity at discounted rates in exchange for harvesting solar power on their rooftops for the companies.

But Usha Haley, chaired professor of international business at Massey University in Auckland, New Zealand, believes the United States lacks what it takes to outdo China in the solar industry: incentives for production.

While pumping enormous capital into solar manufacturing, China has not invested much into developing a market for those products within the country of 1.3 billion people, said Haley, an expert on manufacturing in China and subsidies.

"I do believe what is going to happen here is that the United States is going to be subsidizing consumption," including consumption of made-in-China panels, she said.

Some experts say it may be necessary for the federal and state governments to require domestic components as a condition of solar rebates.

Giudice said solar companies must have something that makes them unique in the industry and provide exactly what their customers are looking for in order to stay alive. He agrees with analysts that the future of American solar manufacturers eventually hinges on whether the federal government will make investments that are significant enough to take on the Chinese challenge.

"It really requires a state and federal partnership to make these investments work for the long haul," Giudice said. "People conclude the government should allow the free market (to take its course). That's naive."

During his State of the Union address in January, President Barack Obama noted that the United States must improve its infrastructure to "out-innovate, out-educate and out-build the rest of the world."

"Then, put the money where the mouth is," Haley said in response.

Or else, she said, the American manufacturing industries will fail.