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Solar Panel Maker Moves Work to China

By KEITH BRADSHER

BEIJING — Aided by at least \$43 million in assistance from the government of Massachusetts and an innovative [solar energy](#) technology, Evergreen Solar emerged in the last three years as the third-largest maker of solar panels in the United States.

But now the company is closing its main American factory, laying off the 800 workers by the end of March and shifting production to a joint venture with a Chinese company in central China. Evergreen cited the much higher government support available in China.

The factory closing in Devens, Mass., which Evergreen announced earlier this week, has set off political recriminations and finger-pointing in Massachusetts. And it comes just as President [Hu Jintao](#) of China is scheduled for a state visit next week to Washington, where the agenda is likely to include tensions between the United States and China over trade and energy policy.

The Obama administration has been investigating whether China has violated the free trade rules of the [World Trade Organization](#) with its extensive subsidies to the manufacturers of solar panels and other clean energy products.

While a few types of government subsidies are permitted under international trade agreements, they are not supposed to give special advantages to exports — something that China's critics accuse it of

doing. The Chinese government has strongly denied that any of its clean energy policies have violated W.T.O. rules.

Although solar energy still accounts for only a tiny fraction of American power production, declining prices and concerns about **global warming** give solar power a prominent place in United States plans for a clean energy future — even if critics say the federal government is still not doing enough to foster its adoption.

Beyond the issues of trade and jobs, solar power experts see broader implications. They say that after many years of relying on unstable governments in the Middle East for oil, the United States now looks likely to rely on China to tap energy from the sun.

Evergreen, in announcing its move to China, was unusually candid about its motives. Michael El-Hillow, the chief executive, said in a statement that his company had decided to close the Massachusetts factory in response to plunging prices for solar panels. World prices have fallen as much as two-thirds in the last three years — including a drop of 10 percent during last year's fourth quarter alone.

Chinese manufacturers, Mr. El-Hillow said in the statement, have been able to push prices down sharply because they receive considerable help from the Chinese government and state-owned banks, and because manufacturing costs are generally lower in China.

“While the United States and other Western industrial economies are beneficiaries of rapidly declining installation costs of solar energy, we expect the United States will continue to be at a disadvantage from a manufacturing standpoint,” he said.

Even though Evergreen opened its Devens plant, with all new equipment, only in 2008, it began talks with Chinese companies in early 2009. In September 2010, the company opened its factory in Wuhan, China, and will now rely on that operation.

An Evergreen spokesman said Mr. El-Hillow was not available to comment for this article.

Other solar panel manufacturers are also struggling in the United States. Solyndra, a Silicon Valley business, received a visit from [President Obama](#) in May and a \$535 million federal loan guarantee, only to say in November that it was **shutting one** of its two American plants and would delay expansion of the other.

First Solar, an American company, is one of the world's largest solar power vendors. But most of its products are made overseas.

Chinese solar panel manufacturers accounted for slightly over half the world's production last year. Their share of the American market has grown nearly sixfold in the last two years, to 23 percent in 2010 and is still rising fast, according to GTM Research, a renewable energy market analysis firm in Cambridge, Mass.

In addition to solar energy, China just passed the United States as the world's largest builder and installer of [wind turbines](#).

The closing of the Evergreen factory has prompted finger-pointing in Massachusetts.

Ian A. Bowles, the former energy and environment chief for Gov. [Deval L. Patrick](#), a Democrat who pushed for the solar panel factory to be located in Massachusetts, said the federal government had not helped the American industry enough or done enough to challenge Chinese government subsidies for its industry. Evergreen has received no federal money.

“The federal government has brought a knife to a gun fight,” Mr. Bowles said. “Its support is completely out of proportion to the support displayed by China — and even to that in Europe.”

Stephanie Mueller, the Energy Department press secretary, said the department was committed to supporting renewable energy. “Through our Loan Program Office we have offered conditional commitments for loan guarantees to 16 clean energy projects totaling nearly \$16.5 billion,” she said.

“We have finalized and closed half of those loan guarantees, and the program has ramped up

significantly over the last year to move projects through the process quickly and efficiently while protecting taxpayer interests.”

Evergreen did not try to go through the long, costly process of obtaining a federal loan because of what it described last summer as signals from the department that its technology was too far along and not in need of research and development assistance. The Energy Department has a policy of not commenting on companies that do not apply.

Evergreen was selling solar panels made in Devens for \$3.39 a watt at the end of 2008 and planned to cut its costs to \$2 a watt by the end of last year — a target it met. But Evergreen found that by the end of the fourth quarter, it could fetch only \$1.90 a watt for its Devens-made solar panels. Chinese manufacturers were selling them for as little as \$1.60 a watt after reducing their costs to as little as \$1.35 or less per watt.

Evergreen’s joint-venture factory in Wuhan occupies a long, warehouselike concrete building in an industrial park located in an inauspicious neighborhood. A local employee said the municipal police had used the site for mass executions into the 1980s.

When a reporter was given a rare tour inside the building just before it began mass production in September, the operation appeared as modern as any in the world. Row after row of highly automated equipment stretched toward the two-story-high ceiling in an immaculate, brightly lighted white hall. Chinese technicians closely watched the computer screens monitoring each step in the production processes.

In a telephone interview in August, Mr. El-Hillow said that he was desperate to avoid layoffs at the Devens factory. But he said Chinese state-owned banks and municipal governments were offering unbeatable assistance to Chinese solar panel companies.

Factory labor is cheap in China, where monthly wages average less than \$300. That compares to a statewide average of more than \$5,400 a month for Massachusetts factory workers. But labor is a tiny

share of the cost of running a high-tech solar panel factory, Mr. El-Hillow said. China's real advantage lies in the ability of solar panel companies to form partnerships with local governments and then obtain loans at very low interest rates from state-owned banks.

Evergreen, with help from its partners — the Wuhan municipal government and the Hubei provincial government — borrowed two-thirds of the cost of its Wuhan factory from two Chinese banks, at an interest rate that under certain conditions could go as low as 4.8 percent, Mr. El-Hillow said in August. Best of all, no principal payments or interest payments will be due until the end of the loan in 2015.

By contrast, a \$21 million grant from Massachusetts covered 5 percent of the cost of the Devens factory, and the company had to borrow the rest from banks, Mr. El-Hillow said.

Banks in the United States were reluctant to provide the rest of the money even at double-digit interest rates, partly because of the financial crisis. "Therein lies the hidden advantage of being in China," Mr. El-Hillow said.

Devens, as the site of a former military base, is a designated enterprise zone eligible for state financial support.

State Senator Jamie Eldridge, a Democrat whose district includes Devens, said he was initially excited for Evergreen to come to his district, but even before the announced loss of 800 jobs, he had come to oppose such large corporate assistance.

"I think there's been a lot of hurt feelings over these subsidies to companies, while a lot of communities around the former base have not seen development money," he said.

Michael McCarthy, a spokesman for Evergreen, said the company had already met 80 percent of the grant's job creation target by employing up to 800 factory workers since 2008 and should owe little money to the state. Evergreen also retains about 100 research and administrative jobs in Massachusetts.

The company also received about \$22 million in tax credits, and it will discuss those with Massachusetts, he said.

Evergreen has had two unique problems that made its Devens factory vulnerable to Chinese competition. It specializes in an unusual kind of wafer, making it hard to share research and development costs with other companies. And it was hurt when [Lehman Brothers](#) went bankrupt in 2008; Evergreen lost one-seventh of its outstanding shares in a complex transaction involving convertible notes. But many other Western solar power companies are also running into trouble, as competition from China coincides with uncertainty about the prices at which Western regulators will let solar farms sell electricity to national grids.

According to Bloomberg New Energy Finance, shares in solar companies fell an average of 26 percent last year. Evergreen's stock, which traded above \$100 in late 2007, closed Friday in New York at \$3.03.

Tom Zeller Jr. in New York and Katie Zezima in Boston contributed reporting.

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