



Business In The Beltway

Solar Entrepreneur To Feds: Step It Up

Andrew T. Gillies 08.20.08, 6:00 AM ET

At the upcoming U.S. political conventions, it's a safe bet you'll hear more than a little bluster from Democratic and Republican parties about the need for federal "investment"—don't call it a subsidy—in renewable energy technologies such as solar, wind and so on.

A lot of hot air? It won't be for Frank van Mierlo, co-founder and president of Lexington, Mass.-based [1366 Technologies](#). The young company has raised \$12.4 million in venture money in support of its mission to make solar power cost-competitive with coal by 2012.

Key to that mission: a more vigorous role for the U.S. government. "There is no way that we can change the energy resources in our society without real leadership from the government," says van Mierlo. "The current administration, it's sad to say, has not provided that leadership."

Van Mierlo, 48, is careful not to slam all Republicans here. California, under Republican Gov. Arnold Schwarzenegger, he suggests, is doing a decent job of nurturing new energy tech. But similar efforts need to be made nationally. "The government will really have to prime the pump for this to work," he says.

Van Mierlo's viewpoint flows from 1366's approach: a sprint to slash costs in a capital-intensive industry. The company aims to boost the energy output of photovoltaic solar cells, the silicon disks that convert sunlight into electric energy. The company claims its technology can improve both the tiny wires (measured in microns) that gather electric current from the silicon and, thanks to enhancements in silicon texture, the ability of solar cells to capture and trap light.

The result, if 1366 delivers on its promises, would be to make solar cells 25% more efficient and to bring the amount of silicon lost in cell production down below 20%. Presently, about 70% of silicon is lost during production.

The idea here is that 1366's manufacturing tweaks, combined with innovation taking place elsewhere in the silicon production process, will help push the sales price of solar power from \$3.50 per watt peak (the production of one watt on a sunny day) today down to \$1 per watt, what coal power goes for now.

The company raised its \$12.4 million last March in a first funding, co-led by North Bridge Venture Partners and Polaris Venture Partners. It plans to put 30 people to work adapting a technology proof of concept, developed by chief technology officer Ely Sachs, to a six-inch, industry-standard silicon wafer.

From there, 1366 hopes to automate the wafer production process, build a plant and bring its head count up to 2,500 by 2014. To hit its ambitious timelines, it also intends to license its technology to big solar cell manufacturers like Germany's Q-Cells or Japan's Sharp Corp.

"Speed is of the essence" says van Mierlo. "If you have a good idea, it's much better to share that widely and allow your suppliers to reach economies of scale by selling to others."

So where does the public sector fit in? Van Mierlo suggests joint research and development, grants and other subsidies, and creating markets through procurement. On the latter, he points to some semiconductor history. In 1957, the industry was still in its infancy with \$100 million in annual sales. Fairchild Semiconductor had just become the first company to work exclusively with silicon.

Two big customers then appeared: the U.S. Air Force, willing to pay big money for guidance systems for the Minuteman missile, and NASA, developing its Apollo flight computers. As noted in [this San Francisco Chronicle article](#), buying for military and space applications knocked the price of chips down by 97%.

These days, van Mierlo spends about a quarter of his time reaching out to potential partners. From the public sector, he's been in contact with the Massachusetts Department of Energy Resources, the U.S. Department of Energy (the National Renewable Energy Laboratory) and Rep. Edward Markey, D-Mass., chairman of the House Select Committee on Energy Independence and Global Warming.

But, as we [recently reported](#), the solar business has struggled mightily to get breaks from the U.S. Congress. Meanwhile, van Mierlo notes, other countries have been aggressively courting solar innovation.

"I would love to do production in Massachusetts," he says, "but you need a level playing field compared to the people who pick Germany or Malaysia as their home."

If you think van Mierlo and his ilk can get the solar biz up and running, the accompanying table lists a few publicly-traded solar companies. All but one, Germany's Q-Cells, are listed on U.S. exchanges. Given uncertainties in the technology, this speculative group is appropriate for growth-minded investors with money they can afford to lose.

Solar Plays

Company	Country	Recent Price	Price Change, 52-weeks	Price/Sales	Market Value (\$mil)
Akeena Solar	United States	3.80	-12%	2.7	109
Canadian Solar	China	27.53	260%	1.3	1,007
Energy Conversion Devices	United States	68.44	139%	13.4	2,826
Evergreen Solar	United States	9.65	8%	11.8	1,460
Q-Cells	Germany	92.99	6%	7.3	7,165
SunPower Corp.	United States	89.02	35%	6.5	7,871
Suntech Power Holdings	China	36.40	1%	3.7	5,773
Trina Solar Ltd.	Cayman Islands	29.60	-35%	2.0	774
Yingli Green Energy Holding	China	14.88	5%	2.2	1,985

Prices as of August 18. Sources: FT Interactive Data, Reuters Fundamentals and Worldscope via FactSet Research Systems.