Solar goes Hyper in the U.S.

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As the U.S. government continues to heap billions in subsidies to the world's wealthiest coal and oil companies, the solar industry has been struggling to make it in the United States. This is sad for many reasons, not the least of which is that we're missing out on one of the biggest growth industries in the world.

Currently there are 16 gigawatts of installed solar power globally. That number will grow to about 1,800 gigawatts in the next 20 years, making it one of the best job creators. U.S. engineers invented the solar panel, and the U.S. should be dominating that market. Instead, foreign manufacturers (particularly in China) have taken our IP and run with it, as we become increasingly dependent on foreign oil and dirty coal operations to meet our power needs.

Fortunately HyperSolar, a new U.S. company, offers a ray of sunny hope on the clean energy frontier.

The company does not manufacture solar panels. It makes them ultra-efficient using a field of science called photonics. Similar to a microchip that moves individual bits of data around at hyperspeed, HyperSolar's thin magnifying film routes and separates specific light spectrums, delivering them exactly where they're needed to make an array of PV solar cells ultra-efficient.

I saw an early prototype for such a magnifying optical layer a few years back, but the company was "dark" at the time, so I couldn't write about the innovation. But I'm as excited now as I was then for good reason -

HyperSolar's optical layer can increase PV efficiency by up to 300 percent!

Theoretically that means cutting the installation cost of a solar array in half. Instead of a home solar system costing $30,000 (or more) it would only cost $15,000 (or less), making the upfront investment much lower and payback periods much quicker.

This is a great example of a disruptive technology that could get us to the holy grail of "grid parity" - meaning that solar would be as affordable as other sources of energy like coal and natural gas. And no more polluting coal mines or fracking for natural gas! The sun (for at least the next 5 billion years) will provide free and abundant energy. It's up to us whether we want to invest in that technology or continue to destroy our beautiful landscapes for a few more years of "cheap" (i.e. heavily subsidized) coal.

Innovations like this make several recent reports ring true. If we have the political will to overcome the stranglehold of the fossil fuel industry on our nation's energy policy, we could become 100 percent renewably powered in a 2030-2050 time frame. Check out these two reports and a new study by the American Wind Energy Association (AWEA) about how large-scale wind power is now cost-competitive with natural gas:

- Physorg.com: 100 percent renewables by 2030:
www.physorg.com/news/2011-01-p … enewable-energy.html

- WWF: 100 percent renewables (no nuclear) by 2050:
wwf.panda.org/?199249/Brave-ne … d-imperative-by-2050

- AWEA: Wind cost-competitive with gas:
www.ecogeek.org/component/content/article/3422