

Company Plans to Pull Solar Energy From Orbit

Ina Jaffe, National Public Radio, 12-17-09

Negotiators in Copenhagen have been trying to figure out just how far they will have to go to curb global warming. A Southern California company thinks it has the answer: 22,000 miles straight up.

The Solaren Corp. wants to produce solar power in space. The location has a lot going for it: There is sunshine 24/7, and the real estate is free.

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"The thing in space was going to be so heavy, it was going to take hundreds or thousands of rockets to put in orbit and thousands of astronauts," explains Gary Spirnak, Solaren's CEO.

So about eight years ago, Spirnak got together with a bunch of engineers he knew from his years at Hughes Aerospace. "They'd been in the business for 20, 30 years," he says. "They'd solved just impossible problems working on government programs that you can't talk about."

They began trying to figure out how to make an orbiting solar power plant light enough that it could be launched relatively cheaply. The solution they came up with was not to build one big power plant, but to put as many as four separate modules in the same geo-synchronous neighborhood. The components would track each other with radar and use small thrusters to maintain their positions.

Each component has a different function. Part 1 is essentially a big mirror that collects and focuses sunlight on Part 2, the solar panels. Those beam energy to Part 3, a really huge antenna that focuses and beams power back to earth in the form of radio waves.

"Each of those parts can fit on an existing rocket," Spirnak says, "So you don't need to design a brand new rocket." And since the parts don't have to be connected, he adds, "you don't need astronauts or robots."

Spirnak says that technologically, there's not a lot in this system that's new. Satellites already run on solar power. And everyone with a TV satellite dish already receives radio waves from space. That's why Solaren expects to have its solar power plant launched and operating in 2016.

"If it works, it could be a real game changer in the industry and indeed for the entire world," says Jonathan Marshall, a spokesman for Pacific Gas and Electric. The utility has signed the nation's first commercial contract to buy enough power from Solaren for nearly a quarter of a million homes. The price they agreed to is proprietary, but described by both parties as similar to ground-based solar. Marshall says there's no risk in the deal for PG&E.

"We're paying only for the energy if and when its delivered," says Marshall. "If they don't deliver, we don't pay."

But even if Solaren can successfully deliver power, it's far from certain it can deliver for its investors, says Severin Borenstein, the co-director of the Energy Institute at UC Berkely's Haas School of Business.

"It seems pretty clear that technologically one can put solar panels in space and beam power back to earth," he says. "The question is whether Solaren can do it cost effectively?"

But by the year 2020, all California electricity providers will be required to produce a third of their power with renewable sources of energy. That's about double what they produce right now.