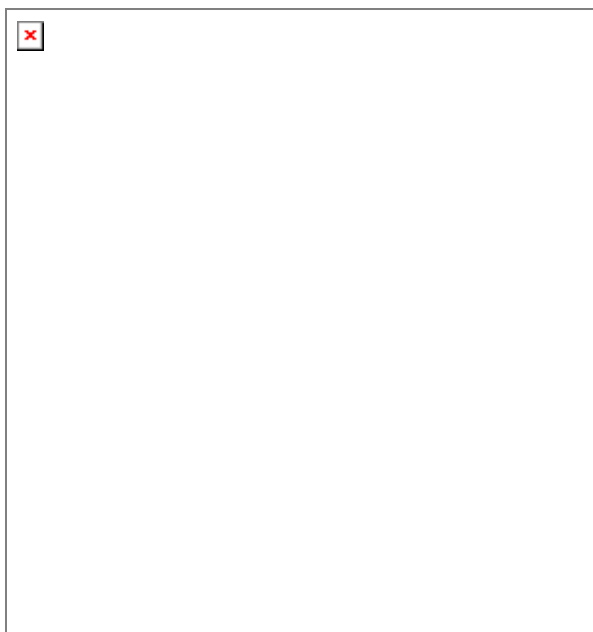


SunPower Receives \$75,000 Grant from the California Energy Commission to Develop Fresnel Lens Concentrator Technology

Sunnyvale, CA. SunPower Corporation announced today that it received a \$75,000 grant from the California Energy Commission's (CEC) Energy Innovations Small Grant (EISG) program to develop a novel semiconductor technology that converts highly concentrated sunlight directly into electricity.

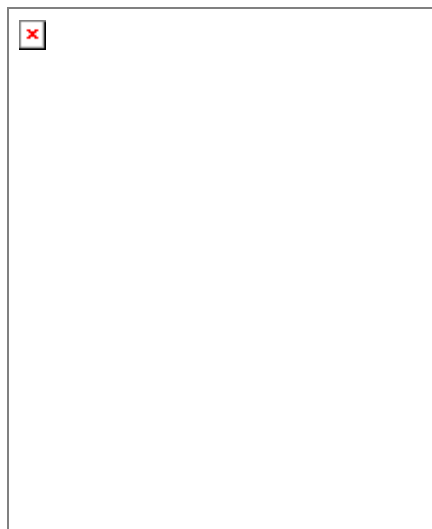
Today, the cost of conventional solar electric power generation remains prohibitively high for most applications. High-concentration solar systems, however, hold the potential to dramatically reduce the cost of solar electricity. By concentrating sunlight with inexpensive plastic lenses, the required area of costly solar cells can be significantly reduced. In addition, high-concentration solar electric systems are more efficient – compared to conventional flat-plate solar panels, they can generate about 50% more energy per unit area on an annual basis. Solar trackers are required because the concentrating lenses must be pointed at the sun. A photograph of a prototype Fresnel-lens solar electric concentrator system is shown to the right.



CEC funding will help SunPower to develop a standardized, highly reliable, plug-in solar receiver for Fresnel-lens solar concentrator systems. The plug-in solar receiver will include the concentrator solar cell together with its ancillary mechanical, electrical, and heat dissipating components in a robust, pre-engineered package that can be quickly assembled into the rest of concentrator module housing. It can also be easily serviced or upgraded as improved solar cell technology emerges. A schematic cross-section of the concentrator module assembly, including the plug-in receiver, is shown to the left.

"The plug-in receiver is to a concentrator system what a microprocessor is to a personal computer – the high-tech heart of the system," commented Dr. Richard Swanson, President of SunPower. "Selling a bare concentrator cell is like selling a microprocessor chip without its package – for most of our customers a fully-packaged solar receiver makes more sense." A schematic of the plug-in solar receiver is shown in the figure to the right.

Because it is possible to utilize conventional semiconductor packaging technology, the manufacturing process for the PV receivers can be highly automated and low-cost. Using the plug-in receiver technology, a reliable, 20% efficient, concentrating PV module should be possible in the fairly near term. For moderate volume production, the cost of



this system, including the solar tracker, is projected to be about \$3000/kW, or about half of the cost of today's flat-plate PV systems.

SunPower Corporation, based in Sunnyvale, CA, was founded in 1989 by Dr. Swanson to commercialize concentrating photovoltaic technology originally developed while he was a Professor at Stanford University. Today SunPower manufactures ultra high-efficiency silicon solar cells and a variety of other opto-electronic devices.

For more information see:

[California Energy Commission](#)

[CEC EISG Round 3 Approved Grants](#)

[SunPower's Introduction to Solar Concentrator Electricity](#)