

SunPower Corporation Wins \$2 Million ATP Award for Micro-Concentrator Development

Sunnyvale, CA. SunPower Corporation announced today that it received a \$2 million award from the U.S. Department of Commerce's Advanced Technology Program (ATP) to develop a novel solar concentrator system that holds promise to dramatically reduce the cost of renewable energy.

Tiny photovoltaic cells, about the size of a small integrated circuit chip, will be encapsulated in unique plastic concentrator lenses that function to intensify incident sunlight 200-fold. The individual Micro-Concentrator devices will be about the size and shape of a flattened golf ball. Many Micro-Concentrators will then be connected together to form a solar panel with dimensions similar to those of conventional flat-plate solar panels.

When sunlight concentrated by 200-fold illuminates a solar cell, the solar cell produces about two hundred times the power it would without concentration. Solar concentration is attractive because costly semiconductor photocell area can be displaced by lower cost plastic lenses used to concentrate the light. Unfortunately, current solar concentrator designs are somewhat large, bulky, and complicated. In contrast, the slim Micro-Concentrators can be assembled into modules less than 1-inch thick.

Like other solar concentrating technologies, tracking, or following, the sun will be required because the lenses must be pointed at the sun. The Micro-Concentrator's unique optical design, however, allows use of less accurate, and hence less costly, tracking systems. In addition, the manufacturing process is highly amenable to automation. The Micro-Concentrator manufacturing process will be similar to the process used to make light-emitting diodes (LEDs), a ubiquitous semiconductor device that is now manufactured at high-volume and low-cost.

Dr. Richard Swanson, President of SunPower, stated that "if successfully commercialized, the cost of a Micro-Concentrator solar power plant could be as low as \$1000 per kilowatt, and consumers might expect to pay about 4 to 6 cents per kilowatt-hour for solar electricity."

The 3-year R&D program to develop Micro-Concentrator technology will cost about \$3.5 million, including a \$1.5 million cost-share contribution by SunPower Corporation. The project will integrate SunPower's expertise in concentrating photovoltaic cells with the novel concentrator lens design developed by the Polytechnic University of Madrid, Spain, a recognized leader in non-imaging optics technology.

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.

The prestigious and highly competitive Advanced Technology Program provides cost-shared funding to industry for high-risk R&D projects with the potential to spark important, broad-based economic benefits for the United States. The program funds projects in a wide range of technologies including electronics, biotechnology, advanced materials, manufacturing, and information technology. ATP awards are made on the basis of a rigorous competitive review considering scientific and technical merit of each proposal and its potential benefits to the U.S. economy. Applicants must include a detailed business plan for bringing the new technology to market once technical milestones have been achieved under ATP support.

For more information see:

[1999 ATP Awards Press Release](#)
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