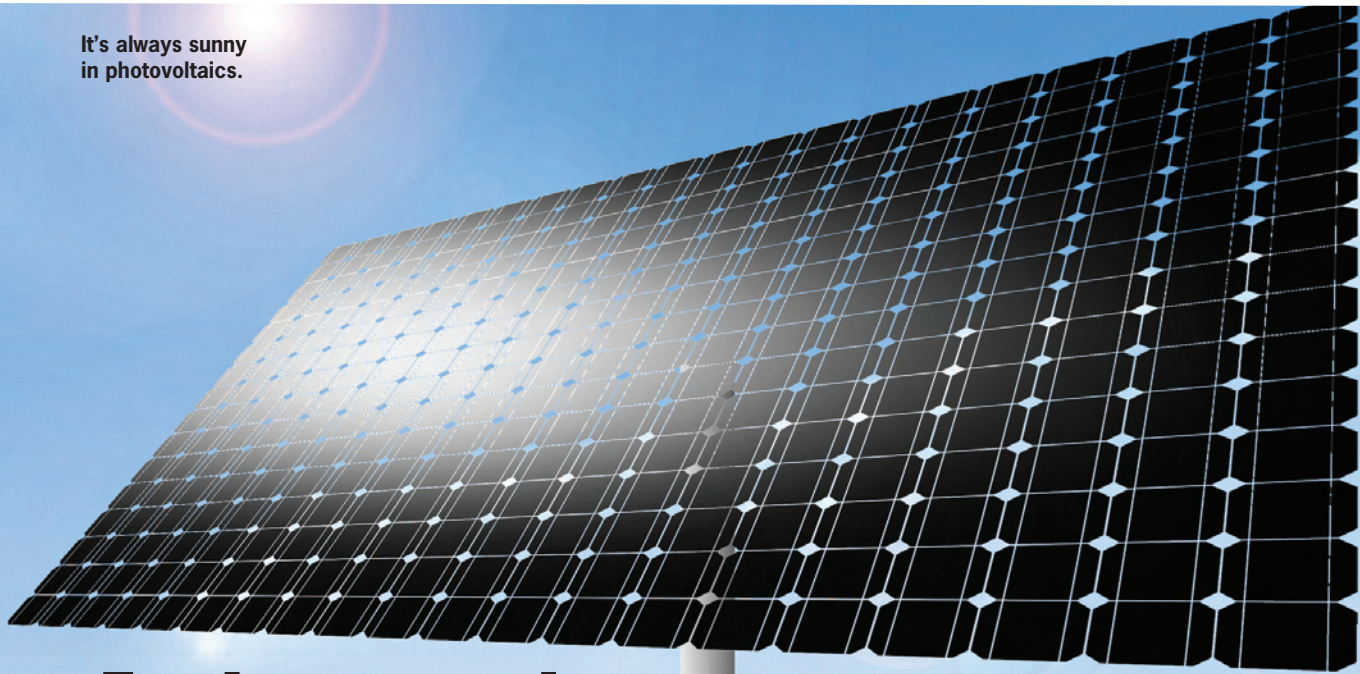


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It's always sunny
in photovoltaics.



A place in the sun

Where should electrical distributors focus their PV sales efforts? **by Jerry Yudelson**

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In 2007, solar photovoltaic (PV) installations in the United States, in terms of installed capacity, grew 21% over 2006 totals, reaching about 500MW total. At about \$8 million per MW installed, this represents about \$4 billion worth of investment. With another 20% growth in 2008, solar power could become a 180MW annual market, with an installed value of about \$1.4 billion per year. About half the total investment cost is equipment, meaning product sales come in at about \$700 million or more per year.

So if solar power really is the next big thing in the energy world—and not just a niche player—who in the electrical distribution industry is specifying systems, what role do system integrators play in large commercial projects, and what opportunities are there for electrical sales?

- **The residential market.** A rapidly growing residential solar power market is very possible, which means increased sales of solar panels, mounting hardware, inverters, conduit (to take wiring from the roof to the garage), and various meters, monitors, controls, and protection components.

Earlier this year, I installed 1.5kW of solar panels (nine panels rated at 170W,

peak) on the south-facing roof of my home as well as a 3kW inverter to double the size of the system in 2009. (Fortunately, the *Emergency Economic Stabilization Act of 2008* provided for an eight-year extension of the 30% investment tax credit for both solar electric and solar thermal systems and also removed the \$2,000 credit cap from residential systems.)

Tucson Electric Power, my local utility provider, will pay me \$3,000 per kW for my PV system. Together with the federal solar tax credit of 30%, my \$12,000 1.5kW PV investment in 2009 will cost me (net) about \$3,900. Assuming it produces about 2,700kWh per year of grid-tied electricity (not a bad esti-

mate in southern Arizona), I can avoid buying power at \$.10 per kWh (about the national average retail consumer cost). In addition, my annual gain will be about \$270 (assuming no maintenance costs) for a solid-state electronic system that should last 25 years.

What's the big deal about making \$270 per year on a \$3,900 investment? With the utility incentive and the higher federal solar tax credit (and remember, a tax credit is a dollar-for-dollar reduction in tax liability), my solar investment will produce a 7%, tax-free and inflation-protected annual return (homeowners are not taxed on savings as a business would be and electric utility rates are likely to grow faster than inflation). As long as the sun shines, I'm making money, and as part of my investment portfolio, it's a pretty good deal. The solar system will also add value to my home when it's time to sell.

- **The commercial arena.** Companies such as Google—which in June of 2008 installed the largest system (1.6MW) in northern California—are

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installing large commercial solar power systems. In 2003, Kettle Foods, the potato chip company, installed a 450kW system at its plant in Salem, Ore., at the time the largest such system in the Northwest.

• **The investor market.** Alongside the corporate properties market, the investor market for solar power is growing. In 2007 and 2008, investors organized solar power partnerships in states that have generous utility payments for PV (\$2,500 per kW or more). These third-party partnerships raise money and then make deals with companies, like grocers and department stores, to install PV systems on the roof, at no cost to the retailer. They then sell electricity produced by the PV system, typically at a 10% discount from prevailing utility prices, for a specified 15 to 25-year period. Prominent retailers with dozens of such systems include Wal-Mart, Safeway, and Kohl's. Typical system sizes are about 300kW, costing about \$2 million installed.

In these arrangements, everybody wins. The retailer gets a visible sign of commitment to renewable energy, at no direct cost. The partnership gets the utility incentive payments, the federal 30% tax credit, a federal and state accelerated depreciation on the rooftop system—worth about another 25%—and a long-term electricity-supply contract with the retailer.

In some states, such as Oregon, there are additional state tax benefits for solar power installations.

These large projects are very important to the overall PV market. The average residential installation in 2007 was 4.8kW (about \$38,000), while the average non-residential installation was 69kW, with a price of about \$400,000 to \$500,000.

In 2007, five states accounted for 90% of new grid-connected PV installations—California (89MW), New Jersey (16MW), Nevada (15MW), Colorado (13MW), and New York (4MW). A total

of 30 systems larger than 500kW accounted for 30% of the 2007 installed capacity, showing a highly concentrated market.

Distributors may want to consider the stand-alone market for PV systems not connected to the electric grid. These are typically in rural or remote areas, where it's either too costly to run utility lines (at \$10,000 to \$15,000 per mile) to connect individual homes or where people truly want to cut their utility bill entirely. There are also smaller PV systems for many other commercial uses such as parking lot lighting, highway signage, and rural highway rest areas off the grid.

From a sales standpoint, it makes sense for electrical distributors to focus their attention on the residential market, where hundreds of small installing contractors around the country will need their inventory, technical expertise, and financial assistance.

Larger distributors might want to focus on the solar partnership market, especially in states with strong local utility incentives. With federal solar tax credits presently in place through 2016, it's an easily accessible market and one that's likely to grow 20% or more per year in installed capacity. In addition, the number of states now mandating "renewable power standards" for investor-owned utilities is also likely to grow as well, with solar power incentives forming a part of the response to such mandates. ■

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