

# STANDING SEAM SPOTLIGHT

## An Educational Bulletin for Metal Roofing Professionals

### Photovoltaics & Metal Roofing: A Natural Partnership

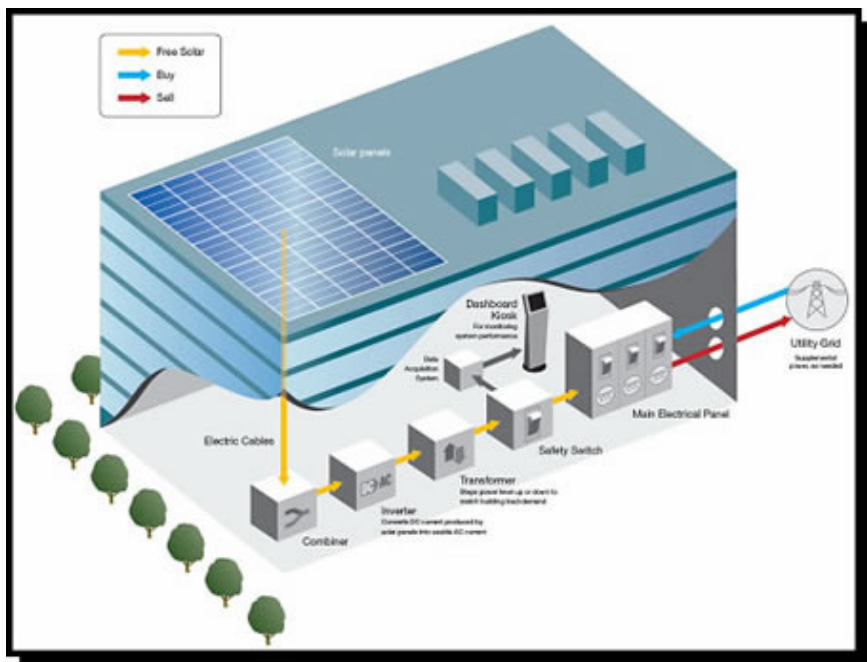
#### Harnessing the Sun's Power to Put Your Roof to Work for You

by Amy Stokes

Experts believe that a critical stage for photovoltaics has arrived on the wings of increasing political and market pressures, technology improvements, and support from federal and local agencies. While it may be some time before solar power offers a comprehensive and global alternative to oil, tremendous opportunities exist right now for design professionals and builders to provide an economically viable renewable energy option as part of a long-term investment strategy.

With the cost of photovoltaics declining sharply over the past 20 years, and the availability of state and local incentives, buy-down programs and subsidies, photovoltaics are becoming a more viable solution for a broader range of customers. PV systems are going into grid-connected commercial buildings, schools, public facilities, and homes. In some communities, the local utilities may provide net-metering, a technology that allows a PV system to interconnect with the utility grid, which allows consumers to feed excess power back into the grid for credit. More typically, building owners use the saved energy directly to supplement the energy provided by the utility company. For buildings designed for LEED rating, supplying more than 5% of a building's energy demand with an alternative energy source, including solar, can contribute to LEED credits.

PV offers the added benefit of reducing the peak loads, since the PV system operates most efficiently at precisely those times when demand for power is highest - that is, during the heat of the day when air conditioning and other devices are most heavily used. Utilities in some areas are eager to shave their peak energy demand, and even a few grid-connected PV systems can make the difference between needing a new power station or not. For this reason, utilities across the country are willing to purchase "green" power at a premium, and in some cases, even install PV systems to "donor" rooftops.



Roof-mounted solar systems make the best use of available space, turning unused space into an energy-producing asset. Standing seam metal systems have been deemed by architects and solar designers as the ideal material for rooftop PV installations. In addition to its performance characteristics and long lifespan, standing seam roofing provides a more complementary aesthetic to PV systems than other roofing materials.

Rob Haddock of RSI states, “the concept of mingling PV arrays with standing seam metal roofing is growing, and for good reason. A 40-year power source on a 40-year roof without any surface penetration perhaps is the most sustainable roofing solution available today.”



Metal is widely adored by proponents of green building for its recyclability, efficiency and performance. And with a total lifecycle cost that is significantly lower than other roofing materials, metal roofs appeal to those who are inclined to invest in products, like PV, that yield long-term savings.

Whether designing for solar power today, or keeping options open for tomorrow’s possibilities, some standing seam metal roofing products allow designers to plan for the future with profiles that will accept thin-film PV systems now or at a later date.

But PV is not only for new buildings. When an existing building needs a new roof, why not take the opportunity to install (or plan for) a PV system as well? Since standing seam roofs can be installed over virtually any type of roof, what once was a costly maintenance project can now become an energy-generating mission.

There are two basic types of rooftop PV technology - crystalline (mono- and poly-) and thin-film. Polycrystalline modules offer higher annual energy production due to minimal temperature dependence and excellent low light response. Racks of these modules can be clamped securely to the seams of a metal roof without creating penetrations. While installers can use hat channels to mount racks on metal, a rated clamp designed for that specific metal profile helps prevent liability issues that can arise on large projects. With an engineered product, such as S5! clamps available from IMETCO, PV racks can meet the required wind uplift and load ratings without penetrating the roof.

Thin-film amorphous silicon technology panels feature a flexible membrane created from layers of silicon on a thin sheet of stainless steel. While this type of system is less efficient than crystal modules (and requires a greater coverage area to produce the same wattage), it is less expensive to manufacture. These thin film modules can be adhered to the pan of a 16-inch standing seam metal roofing panel and wired through the ridgecap with no penetrations for mounting or wiring. Grid pairing is also possible with thin film modules.

