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Oct. & Nov. 2012, Issue 151
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Pole-Mounts, Carports & Awnings

Ground- and pole-mounted PV racks commonly rely on a combination of steel and aluminum support structures—most often using steel poles supporting aluminum rails, although all-steel galvanized racks are becoming common (see "Ground Mounts for PV Arrays" in *HP139*).

Pole-Mount Racks

The most common top-of-pole mount uses 4- to 8-inch steel poles embedded in a poured concrete foundation to support standard racks and rails. While pole mounts keep modules cooler, providing plenty of airflow around the array, there is a lot of excavation and concrete work needed to provide wind-loading support. The higher the array is mounted, the longer the buried pole needs to be.

Brian Mehalic

DPW Solar's top-of-pole mounts, set at a low tilt for high summer production.

DPW Solar's Multi-Pole mount uses 3-inch-diameter (or larger) steel poles to support a column of up to four modules in landscape orientation. 4- by 4-inch (or 5- by 4-inch) steel box tube, set horizontally, supports the module rails. The Multi-Pole mount can be adjusted from horizontal to 55°, making it a flexible solution that can be adapted to various array sizes.

DPW Solar's Multi-Pole mount can be installed at tilts up to 55° and heights up to 14 feet above the ground.

Courtesy DPW

Trackers

Trackers can also be incorporated with pole-mounted systems to increase energy production in areas with wide-open solar windows. AllEarth Renewables offers its AllSun Tracker, a pole-mounted, dual-axis active tracker for 20- or 24-module systems. Dual-axis trackers follow the sun's azimuth and altitude angle. AllSun Trackers include a string inverter mounted on the pole, and a GPS-enabled sun-tracking mechanism that replaces irradiance sensors common on residential trackers. Array Technologies manufactures dual-axis trackers, as well as residential-scale, single-axis tilt and roll trackers—also known as horizontal linear-axis trackers.

Courtesy AllEarth Renewables

AllEarth Renewables AllSun Tracker is a dual-axis tracker with pole-mounted string inverter.

Zomeworks is a long-time manufacturer of reliable, single-axis passive trackers. These passive trackers use the sun's heat and the weight of a phase-changing gas that flows through tubes to keep the rack following the sun's azimuth (east-to-west path). Zomeworks focuses on small trackers, made for residential or remote ranch applications.

Four Zomeworks passive trackers, aligned from north to south to avoid potential shading from the long shadows each casts in the morning and afternoon.

Courtesy Zomeworks