Pv solar power tracking

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The Global Solar Power Tracker is a worldwide dataset of utility-scale solar photovoltaic (PV) and solar thermal facilities. It covers all operating solar farm phases with capacities of 1 megawatt (MW) or more and all announced, pre-construction, construction, and shelved projects with capacities greater than 20 MW. Some data are also included for plants that are either mothballed, retired, or cancelled. For more information about inclusion criteria, please see our Methodology page. A solar project phase is generally defined as a group of one or more solar units that are installed under one permit, one power purchase agreement, and typically come online at the same time. Each solar farm included in the tracker is linked to a wiki page on the GEM wiki.

To learn about the various components of each GEM tracker, read About GEM’s Trackers. To receive notifications from this project, please sign up for our mailing list. If you have questions about this project, please contact the Project Manager, Kasandra O"Malia.

Manufacturers are constantly making incremental improvements to their solar panels to create a higher energy yield per unit than previous and competing models. Another proven way to increase system output is by using solar trackers, which, unlike fixed-tilt ground-mount systems, make solar panels follow the sun"s path throughout the day.

There are two main types of solar trackers available on the market: single- and dual-axis.

Single-axis solar trackers track the sun east to west, rotating on a single point, moving either in unison, by panel row or by section. Dual-axis trackers rotate on both the X and Y axes, making panels track the sun directly.

"Solar trackers make financial sense when the yield gain over fixed-tilt applications outweighs the capital expenditure of the system," said Alex Au, chief technical officer at NEXTracker. "In the past decade, the cost of solar trackers has come down considerably with [levelized cost of energy] value engineering and overall demand for these systems, given a 15 to 30% production gain over fixed-tilt systems on the same size array."

Tracking technology is not new to the solar market, but single-axis solutions have recently become a standard in utility-scale applications. Berkeley Lab found that 70% of utility-scale solar installed in 2018 used tracking systems.

"I"d say even eight years ago, trackers were either nonexistent in a utility-scale market or were just a small fraction of the share relative to plants being built in the U.S. right now," said Jeff Krantz, CCO at Array Technologies.

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Single-axis trackers will gather less energy per unit compared to dual-axis trackers, but with shorter racking heights, they require less space to install, creating a more concentrated system footprint and an easier model for operations and maintenance.

Single-axis trackers are split into centralized and decentralized tracker types. Centralized or distributed trackers use a single motor to power a driveline between rows that will move an entire segment of panels. Decentralized systems have one motor per tracking row. There are also instances of trackers with motors present on every set of racking, making rows more adjustable during installation and in some cases allowing them to track independently of neighboring modules.

"In recent years, with rapid reduction in global solar module pricing, banks and developers are favoring single-axis tracking systems" power capacity (number of modules) to achieve PPA targets over other such systems like complicated dual-axis applications that improve efficiency," Au said.

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