Copper: Essential in PV Solar Power Growth

Copper is a key component of solar energy systems, increasing the efficiency, reliability and performance of photovoltaic cells and modules. Copper’s superior electrical and thermal conductivities are vital in the collection, storage and distribution of solar energy. Renewables, which have copper wiring, tubing, and cable, offer a potential for copper usage up to five times greater than traditional electrical generation. There are approximately 5.5 tons per MW of copper in renewable systems.

The generation of electricity from renewable energy, including solar, has a copper usage intensity that is typically four to six times higher than it is for fossil fuels.

8.3 to 12.1 percent: the amount of growth in renewable energy generation between 2008 and 2012 including wind, solar, geothermal and hydropower.

PV Solar Power Projects
Residential and Commercial: 60 – 70% compounded annual growth
Utility Scale: 4X number of installations since 2008
Estimated Copper Usage Megawatt: 5,400 – 15,400 lbs.

In recent years, a category of PV projects in the 1–30MW range, known as ‘wholesale distributed generation,’ has flourished across the country. These projects are utility-sided (rather than behind-the-meter) installations which are interconnected to the distribution grid.

Examples of these PV projects include:
- Juwi Solar’s 12MW Wyandot plant in Ohio (with American Electric Power as the offtaker)
- Lincoln Renewable Energy’s 12.5MW Oak Solar plant in New Jersey (with Macquarie Energy providing project finance as part of the Power Purchase Agreement)
- SunEdison’s 30MW Webberville plant in Texas (with Austin Energy as the offtaker)

Nationwide, 11 percent of homes now have PV solar installations.

The top 5 states using PV are California, New Jersey, Florida, Arizona and New York. California has led the way of large-scale PV; approximately 350MW of utility-scale PV projects were installed in that state in 2012.