

Photovoltaics

Solar cells may be the flashiest source of renewable electricity. While they have some of the greatest long run potential, currently they also are one of the priciest. They can currently compete where grid connection is impractical or expensive, with peak power costs in certain very limited locations, as replacements for extremely expensive facings on some tall buildings. Without storage, they constitute a variable source (as much less expensive wind power does) for all on-grid connections; even at current prices the economically available potential is greater than zero.

Most experts think breakthroughs will happen soon in photovoltaics. If they do, solar cells on rooftops, south walls and shading parking lots and roadways could provide most or all of our electricity, reducing the need for huge wind farms and centralized solar thermal plants in a renewable scenario. Also because photovoltaic cells (unlike concentrating systems) can be reasonably productive in non-desert climates, you can get some of the same increase in reliability from interconnections you do with wind plants. As with concentrating systems, you gain maximum benefit from a mixed grid with both wind and solar electricity.