



MERIT ORDER for Solar in High-Demand Periods on the Grid

In Germany, merit order is the ranking for putting the most cost effective power on the grid in peak demand periods. A similar system exists in the U.S.

Germany has sufficient solar on the grid, about 3% total (much higher on sunny peaks) to drive off higher priced bidders. The Fraunhofer Institute (Germany) has found that starting in 2007 solar power has reduced the price of electricity on the EPEX (German power market) by 10% on average and up to 40% in early afternoon when demand is high and most solar power is generated.

All available sources of electric generation are **ranked** by their **marginal** cost from cheapest to most expensive, with lowest having the most merit. Solar's marginal cost is near zero so must be used first. Wind is also near zero but has much less match to peak. Since all providers in these time periods get the price of the highest bid, the return on solar is at high value while higher priced producers, mostly part-time diesel and gas generators, are out of the bidding.

European Union Energy Commissioner Günther Oettinger has said the effect of merit order ranking means the ultimate cost of decarbonizing the grid by 2050 will be the same as business as usual because higher upfront costs are offset later by lower operating costs. Calculations of the cost and value of solar on the U.S. grid need to include the merit order effect.

JOBS — Bondable projects can be a major help to the weak economy. Conservation upgrades of older buildings, renewable energy projects, Property Assessed Clean Energy (PACE) projects, toll roads, toll bridges, water and sewer projects all create jobs now and are paid for over time via bonding at net zero cost.

CHINA — has committed hundreds of billions of dollars to dominate renewable energy industries. Their government policies have helped our installers by drastically lowering prices—particularly for silicon solar—while driving many U.S. and European manufacturers out of business. The severe delay or elimination of U.S. production tax credits for wind plays to the Chinese position. Without supportive national policy in the U.S., China will create most of the jobs of the future as renewables grow world wide.

COMPETITION OF RENEWABLES WITH COAL — There are now a number of predictions that the continuing decline in solar and wind prices will put them in direct competition with coal by the end of the decade. Wind would be competitive now if there were a significant carbon tax. Major power companies are now studying the implications of this disruptive shift. Modernized control systems, including storage, major grid integration (e.g. Tres Amigas connecting East, West and ERCOT) and micro grid co-gen will integrate intermittency and variability.

TAX SHIFTING — Europe has been successful in using revenue-neutral shifting of taxes onto carbon emissions from other sources. Even Exxon Mobil has come to understand carbon taxes will be necessary.

CLIMATE — There were over 15,000 record highs across much of the U.S. in March.

Bob Freeston for NYSES

5270 Sycamore Avenue • Bronx, New York 10471-2838 • 917-974-4606 • NYSES.org

The New York Chapter of the American Solar Energy Society

We support solar, wind, energy efficiency, green building, geothermal, and more.