PE-05

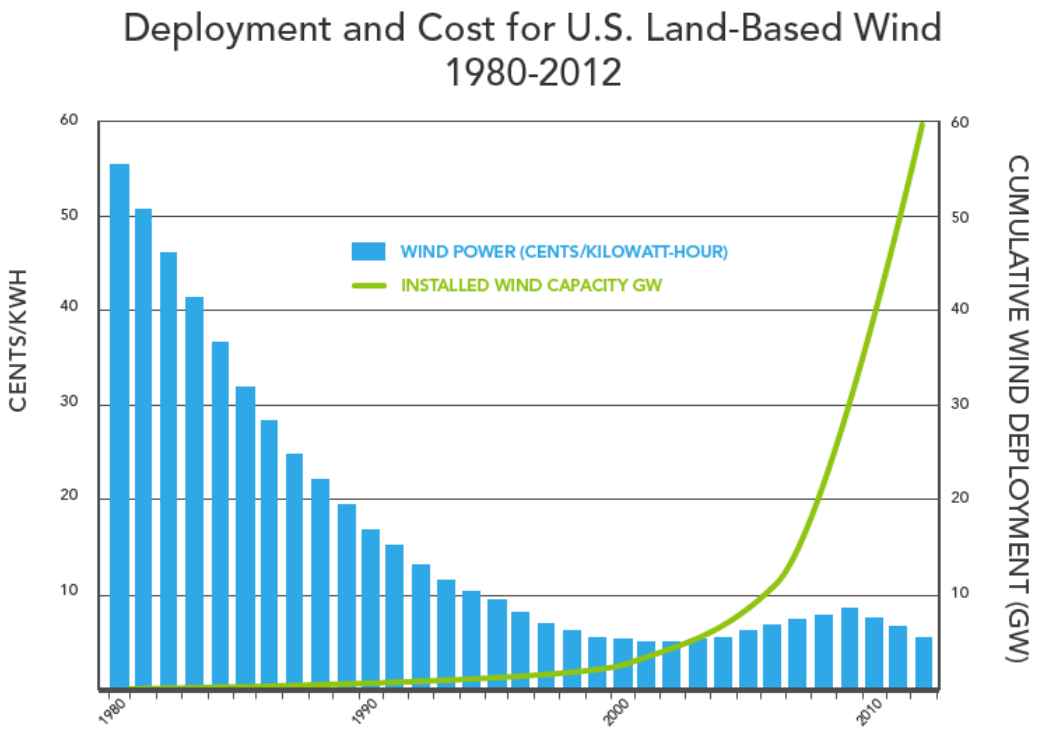
U.S. DEPARTMENT OF ENERGY

Revolution Now

The Future Arrives for Four Clean Energy Technologies

September 17, 2013

Land-Based Wind Power



Wind deployments on a steep upward climb[3]

Today, deployed wind power in the United States has the equivalent generation capacity of about 60 large nuclear reactors.[4] Wind is the first non-hydro renewable energy source to begin to approach the same scale as conventional energy forms like coal, gas and nuclear.

This success has been decades in the making – with both government and private-sector R&D dollars propelling its progress. From a technology standpoint three elements have been key to wind power's success. The first is increasing size: wind turbines have gotten progressively larger in terms of generation capacity over the past 30 years and this has helped to drive down costs. In fact, since 1999 the average amount of electricity generated by a single turbine has increased by about 260%. The second is the scale of production. As with many industries, increases in scale tend to drive down costs. Finally, wind farm

[3]Bolinger, Mark; Wiser, Ryan. *MEMORANDUM - Documentation of a Historical LCOE Curve for Wind in Good to Excellent Wind Resource Sites*; Lawrence Berkeley National Laboratory, June 11, 2012. Bloomberg New Energy Finance power plant database (1980-1994) and American Wind Energy Association wind industry database (1994-2012).

[4] This number refers to "nameplate capacity" which represents the peak generation capacity of a wind turbine, solar panel, etc. In practice, electricity generation from renewable resources is variable – which means that they do not always produce at nameplate capacity. See the Energy Information Administration's Annual Energy Outlook 2013 for a deeper discussion regarding these issues: http://www.eia.gov/forecasts/aeo/electricity_generation.cfm