

SIMPLE FACTS THAT MAKE WIND POWER A POOR INVESTMENT FOR ANY NATION'S ELECTRIC POWER GRID

by Jay Lehr, Ph.D., Science Director, The Heartland Institute

THE GENERAL FACTS

1 - Wind energy contracts are coming in at three and four times the cost of traditionally generated electricity, and natural gas prices continue to drop due to its new found abundance, and states are looking to abandon the renewable energy mandates pushed through in a different economic time and political era.

2- The Production Tax Credit, enacted in 1992 was designed to get the fledgling wind energy industry up and running, but 20 years later it remains a non viable option. The industry itself recognizes that without government intervention the industry will topple.

3 - If the Production Tax Credit extension passes, it will add an extra \$6 billion to the \$20 billion in tax dollars the wind industry has already received over the past 20 years. these are monies we borrow, typically from China to give to Europe where most of the wind turbines are manufactured.

4 - Wind energy is electricity and electricity doesn't come from oil. Even if it did we do not have an oil shortage. Electricity comes from clean burning natural gas and coal both of which we have in abundance and know how to use effectively. They do not need an expensive supplement masquerading as a replacement.

5 - Optimistically, a wind turbine will generate electricity 30% of the time and we can not predict when that time will be. A true believer might be willing to do without electricity at the times the wind is not blowing, but the general population will not. During that 30% of time the blades are spinning conventional power plants are spinning on low waiting to operate during the other 70% of the time.

6 - After twenty years of subsidies, wind energy has not replaced one traditional power plant. Some argue that many technologies got their start through government support, which may be true, but 20 years of subsidies has left wind no better than it was over 100 year ago.

7 - If we truly believe in free markets, why not cut all subsidies to wind as well as every other source of energy.

8 - There is not a single wind farm in the world that pays for itself without massive subsidies. They are built either because the government requires them or developers can reap considerable profits from the subsidies.

BASIC SCIENCE OF WIND

9 - The job of a wind turbine is to extract energy from wind. Therefore the air behind the turbine must be slower than the incoming air. Turbines must be placed 10 blade diameters apart to get out of the wake and turbulence of another turbine.

10 - Doubling the diameter of the turbine's turning circumference will quadruple its power, but then the turbines must be placed that much further apart, so the power produced per unit of land or ocean area is independent of the size of the turbines.

11 - Wind arrays in good windy areas produce a year round average of about 5kW per acre, that amounts to about 300 square miles to produce 1000 mega watts which conventional plants commonly produce on a few hundred acres.

12 - When a wind farm is said to produce 100 megawatts which at an average usage of 1.3kW per person will serve a population of 70,000 people, it overlooks the fact that 100% conventional backup power is required.

13 - Keep in mind that sometimes the wind blows slowly or not at all, and windmills do not produce any power until the wind reaches about 8 mph. A location for a wind farm is not considered viable unless wind speeds average 14 mph.

14 - The percentage of rated power that a windmill can actually produce, given the variation of wind speeds at the installation site is called the capacity factor which averages about 25% across the U.S.. It will require nearly 3000 wind turbines to equal the power produced by a conventional 1000 mega water power plant.

15 - The amount of electricity generated by a wind turbine is proportional to the wind speed cubed, thus a 20 mph wind will produce 8 times as much energy as a 10 mph wind. Someone or some computer has to balance these huge variations on the grid that must be maintained in a stable position.

WIND AROUND THE WORLD

16 - The numerous wind turbines in Denmark have caused havoc on the market for electricity and raised the price to one of the highest in the world. Present prices are three times higher than the spot energy market.

17 - After the industry's recent boom years, wind power providers and experts are now concerned. The facilities may not be as reliable and durable as producers claim. Indeed, with thousands of mishaps, breakdowns and accidents having been reported in recent years, the difficulties seem to be mounting. Gear boxes hiding inside the casings perched on top of the towering masts have short shelf lives, often breaking down inside the casings. In some cases fractures form along the rotors, or even in the foundation, after only limited operation. Short circuits and overheated propellers have been known to cause fires. The 20 year promised for turbine longevity is not proving to be true.

18 - The basic concrete foundations are suffering from strains. Vibrations and load changes cause fractures, water seeps into the cracks, and rebar begins to rust. Repairs are difficult, you can not look inside concrete and you can not seal cracks from above.

19 - Off shore wind is going to be very expensive and hard to maintain. Original estimates were that offshore wind would be about 20% more expensive, but a survey by the International Energy Agency showed that it was on average twice as costly as onshore wind.

20 - European wind scientists have learned that a one millimeter build up of bugs on wind turbine blades reduces their power by as much as 25%.

21 - The difficult problem for wind farm owners is when they think they will be producing the most energy from high winds, the turbines have to be shut down to protect the stability of the grid.

22 - Because energy cannot be stored in sufficient quantities it must be produced in real time as though no wind turbines existed.

23 - Low frequency noise produced by wind turbines has driven people from their homes and made many ill as a result.

24 - The Audubon society now estimates bird deaths from wind turbines to exceed half a million annually with many being large endangered species.

25 - America's environmentalists, legislators, judges and bureaucrats have already made hundreds of millions of acres of resource rich land off limits and rendered centuries of oil, gas, coal and uranium unavailable. The EPA anti-coal zero pollution rules, and opposition to the Keystone pipeline and looming restrictions on hydraulic fracturing for natural gas are further impairing electricity availability. At the same time they promote unsustainable wind energy which kills countless birds, requires billions in perpetual subsidies and backup generation, while impairing millions of acres of scenic, wildlife and agricultural land, and depends on vast amounts of raw materials whose extraction further impairs land and water quality. And this expensive unreliable electricity kills two jobs for every one supposedly created. It just makes no sense