

Necessity for Renewable Energy

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Recent articles in The Roanoke Times have deprecated wind and solar energy. Apparently the authors of those articles have not given much thought about how humans will get energy for electricity and transportation after fossil and nuclear fuels are depleted. We should have learned lessons from history that it is not wise to wait until a need is very obvious before planning how to fill that need.

Coal extraction in the U.S. (tinyurl.com/USCoalDepletion) is almost halfway down from its peak, which rapid decline needs to continue to reduce carbon emissions into the atmosphere and the oceans from burning coal to produce electricity.

World extraction of uranium for producing nuclear energy may not peak until the mid-2000s (<https://tinyurl.com/UraniumDepletion>), but likely nuclear accidents and the danger of storing spent nuclear fuel will make the public vacillate in acceptance of nuclear-energy as a reliable source of electric energy. Building nuclear reactors is much more expensive and takes much longer than building renewable-energy infrastructure and scraping old reactors and spent nuclear fuel is expensive and dangerous. The same is true for possible thorium reactors for producing nuclear energy.

Using optimistic oil-industry estimates of how much crude oil is left to be extracted from the earth one can show (<https://tinyurl.com/CrudeOilDepletion>) that U.S. and world crude-oil extraction will peak around 2030 and then decline rapidly. Thus we need to move quickly to electric transportation with electricity produced by wind and solar energy. Fortunately, world movement toward electric vehicles is on a fast exponential curve (<https://tinyurl.com/BEVs2019>). Thank you, Tesla! Of course, wind and solar energy have some undesirable environmental effects, but not nearly as much or severe effects as fossil-fuel and nuclear energy.

Using high estimates of how much natural gas is left to be extracted from the earth one can show (<https://tinyurl.com/NaturalGasDepletion>) that U.S. and world natural-gas extraction will peak around 2030 and then decline rapidly. Thus we need to move electricity generation quickly to wind and solar sources with battery backup. Fortunately excellent high capacity and high power batteries are available at rapidly declining prices.

One can show (<https://tinyurl.com/RenewableEnergyNet>) that in the U.S. wind energy where wind speeds are high, especially offshore, and solar energy where sunlight is high can meet demand across the nation with smart transmission infrastructure, including local networks for resiliency.