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Sustainable Systems

Reading Response

February 13, 2019

“The Pros and Cons of Various Methods of Generating Electricity” is a short text that briefly describes the most common methods used for generating electricity (and a few novel ones) and an objective listing of the good and bad points of each. The different types of methods described in the text include fossil fuel fired large-scale power stations, non fossil fuel large-scale power generation methods, non fossil fuel small-scale power generation methods, and fossil fuel small-scale power generation methods. There are also cases that are difficult to allocate to a particular one of the above classes.

Fossil fuels power stations usually supply power to a distribution grid, and some may supply power to particular factories. The primary fuel for fossil fuel power stations include coal, natural gas, and oil. These are low cost fuels, not sustainable, and produce carbon dioxide.

Non fossil fuel large-scale power stations generally supply power to a distribution grid. The technology used in this power stations include biogas, biomass (including firewood), geothermal, hot dry rock, hydro (falling water), conventional nuclear, fast neutron nuclear (combined with pyrometallurgical recycling of fuel), solar photovoltaic (solar electrical panels), solar thermal, solar chimney (a type of solar thermal), wave, and wind (large turbines). These technologies are sustainable and non-

polluting. Some of these technologies have not been proven on a commercial scale. Some rely on unreliable sources of energy such as the wind. During wartime, these forms of technology would be difficult to destroy.

Non fossil fuel small-scale power generation methods are usually small and built to provide power to a homestead, village, or small factory. The technology that is used in the non fossil fuel small-scale power generation include bio-voltaic or bio-electricity, micro hydro, solar photovoltaic (solar electrical panels), wind, and small turbines. These technologies are sustainable and are proven technologies. These technologies do not provide enough power to be considered reliable.

Fossil fuel small-scale power generation methods utilize technologies such as diesel and petrol powered generators and fuel cells. Diesel and petrol powered generators are small, portable, and low cost. Fuel cells can be highly efficient at converting a fuel to useful energy, although it is not available at a commercially competitive cost.