Renewable Energy System Checklist

- **Consider a Photovoltaic (PV) System**
  PV converts the sun's energy into electricity. Implementing a PV system can reduce the amount of energy that is needed from the grid. PV panels can be installed in a variety of places on a property including the roof, the ground, and as a shade structure. There are also applications in which the panels can be building integrated and hardly noticeable. When considering a PV system, evaluate the solar resource available, incentives available, tilt angle of the panel, azimuth angle of the panel, shading on the panel, electrical system interconnection, and the price of electricity.

- **Consider a Solar Domestic Hot Water (SDHW) System**
  Water heating uses a huge amount of energy each year in the United States. By using solar radiation to heat water, much of this energy could be saved. There are several types of systems available, with different types serving different temperature ranges and different climates. SDHW panels can be installed anywhere on a property where there is space available. When considering a SDHW system, evaluate the solar resource available, freeze protection requirements, incentives available, hot water requirements, and annual cost savings.

- **Consider a Wind Project**
  Using wind energy to produce electricity has huge environmental benefits over generation from dirty sources, namely: no SOx or NOx emissions, no particulates, no mercury, no CO_2, and no water usage. System size varies from small residential systems to large utility size systems. When considering a wind project, evaluate the wind resource, zoning restrictions, incentives, building permits, site electricity consumption, and economic factors.

- **Consider Biomass as a Fuel Source**
  Biomass can be used in a variety of ways to produce energy. Being carbon neutral, it is advantageous over traditional fossil fuels in carbon emissions. It can be combusted to produce heat, gasified to produce fuel, or made into an aerosol by pyrolysis. Most commonly it is combusted to produce heat or make steam. It is important to have a reliable and low cost source of biomass close to the site.

- **Consider a Ground Source Heat Pump to Offset Heating and Cooling Loads**
  A ground source heat pump uses the relatively constant ground temperature to provide heating, cooling, and sometimes hot water. Although the initial cost can be higher than conventional systems, the operating costs are very low, there is very little maintenance, and the life cycle cost is low. Site assessment requires training and specialized software in order to correctly size the system ground loops. Incorrectly sized ground loops will not allow a system to operate correctly.

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