

More Energy and Power Practice

Physics and Mathematics of Sustainable Energy

College of the Atlantic. September 11, 2017

1. An electric pump uses 200,000 J of energy in 3 minutes. What power is this?
2. An electric toaster draws 1000 Watts. If the toaster is left on for 1 hour, how much energy does it use?
3. Suppose you leave a 1500 W electric heater is on for 8 hours in a day.
 - (a) How much energy does this use?
 - (b) How much would this cost in Maine?
 - (c) Now suppose that you left this heater on for 8 hours every day during Maine's six-month-long winter season. How much energy is this?
 - (d) How much would this cost?
 - (e) How much CO₂ would be emitted as a result of this electrical energy use? (Use the worldwide average of 520 gCO₂/kWh.)
4. An electric dryer uses 20 kWh in 3 hours. What average power does the dryer draw during this time?
5. A typical Maine home uses 520 kWh of electrical energy in a month. **Estimate** the following quantities.
 - (a) The monthly cost of this energy.
 - (b) The average power drawn by the house.
 - (c) The average amount of residential electrical energy used per person per day by a Maine resident.
 - (d) There are roughly 10,000 year-round residents on MDI. What amount of electrical power is needed for all year-round MDI residents?