

# More Energy and Power Practice

## Physics and Mathematics of Sustainable Energy

College of the Atlantic. September 16, 2019

1. An electric pump uses 200,000 J of energy in 3 minutes. What power is this?
2. A largeish electric heater draws 2000 W. If I leave this heater on for 4 hours, how much energy has it used?
3. An electric toaster draws 1200 W. If I make toast for half an hour, how much energy has the toaster used?
4. An electric toaster draws 1000 Watts. If the toaster is left on for 1 hour, how much energy does it use?
5. 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?
6. An electric dryer uses 20 kWh in 3 hours. What average power does the dryer draw during this time?
7. 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. Express your answer in Watts, kW, and kWh per day.
  - (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?