Solar PV and Thermal

Physics and Mathematics of Sustainable Energy

College of the Atlantic.

1. A roof-top 10-panel array has a total capacity of 2.3 kW. In 2016 it generated 3467 kWh.

   (a) What is the dollar value of the electricity generated by the PV array?

   (b) What is the capacity factor of this array?

   (c) What average power did the array deliver over this year?

   (d) What fraction of a typical Maine home's electricity could be provided by this array?

   (e) Suppose the electricity generated by the PV array was instead obtained from the grid with a carbon intensity of 400g of CO_2 per kWh of electricity. How much CO_2 would be emitted? Put this number into perspective.

2. You decide to take a warm bath and fill up a 50 gallon bathtub. Estimate the energy needed to warm up the water.