Solar PV

Physics and Mathematics of Sustainable Energy

College of the Atlantic. October 21, 2025

1. We have 18 PV panels on our barn. The total capacity is 7.6 kW.

   (a) How much electrical energy would be generated by these solar panels in a year? (Assume a capacity factor of 13%.)

   (b) What is the average energy generated per month? Put this number in perspective.

   (c) How much would a year's worth of this electricity be worth in Maine?

   (d) If this electricity displaced electricity that was generated with a carbon intensity of 300 g of CO_2, how much less CO_2 would be emitted over one year as a result? Is this a little or a lot? (Assume a carbon intensity of 300 g CO_2e per kWh for the Maine electricity that your solar would displace, and a carbon intensity of 46 g/kWh for the solar panels.)