![WIND STUDY] Wind Study is intended for grades 5-8 and 8-11
Questions posted on: Monday   Answers posted on: Friday
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2021A3   (POWER, ENERGY)

Level 1: The number of kilowatt-hours the project will produce is determined using the following equation:

$$kWh = kW * hours$$

Each 1.5 MW turbine produces 1,500 kilowatts when at rated power. This means the three-turbine project can produce 4,500 kilowatts at rated power.

$$kWh = 4{,}500kW * 2 \text{ hours}$$

$$9{,}000 \ kWh = 4{,}500 * 2$$

Level 2: Using the formula above, we can solve for kW:

$$kW = \frac{kWh}{hours}$$

Each 15-minute interval is 0.25 hours. Calculating the kilowatts produced for the first interval:

$$kW = \frac{307.63 \ kW}{0.25 \ hours}$$

$$kW = 1{,}230.52 \ kW$$

Repeating for the remaining intervals gives the following kilowatts:

TIME STAMP	KILOWATTS
5:00	1,230.52
5:15	1,125.00
5:30	1,474.88
5:45	1,606.56

A 1.5 MW wind turbine in operation.