

SOLAR STATISTICS

In 2010, Robinson Elementary School in Starksboro, Vermont installed a solar array behind the school. The electricity from these solar trackers is connected to the power grid and used to supply electricity to the school. Data showing how much electricity is being generated from the panels can be viewed online. We can use this data to learn more about mode, range and median.



Go to the All Earth Renewables website (www.alleearthrenewables.com) and look in the middle section entitled Energy Production Report. Click on the orange bar that says See It In Action! In the white box that says Enter a Site ID Number, type in 246, the code for Robinson Elementary School and click ENTER. Look in the upper right corner of the page.

How many Trackers does Robinson have? _____

What is the total capacity of all the Trackers? _____ kilowatts (kW)

BONUS: What is the capacity of ONE Tracker? _____ kW per tracker

What's a kilowatt? A watt is a measure of electrical power. A *kilowatt* is 1,000 watts.
A kilowatt hour (kWh) is a measure of how much electricity is used over time.
Example: A typical room air conditioner uses 1,000 watts (1 kW).
Running it for one hour will use 1 kWh. Running it for 4 hours uses 4 kWh.

Use the Monthly production window in the upper left to look at the month of June 2011.

The x-axis on this graph measures _____

The y-axis on this graph measures _____

How many days are there in June? _____

RANGE

What day produced the most electricity? _____ How much? _____ kWh

Which day produced the least electricity? _____ How much? _____ kWh

The range is the difference between the highest and lowest values in your sample.

What is the range for this data? _____

MODE

Make a **line plot** to display the distribution of the solar data. Use an “X” to record each day in each category. If you need help reading the bar graph, hover your mouse over the bar to get an exact reading.

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0-200 kWh	201-400 kWh	401-600 kWh	601-800 kWh	801-1000 kWh
Low	Medium Low	Medium	Medium High	High

The mode is the most frequent value in the data set.

Of the five categories in your chart above, what is the mode of this data? _____

MEDIAN

Use the DATE CHART on the following page to record the actual number of kilowatt hours of electricity generated each day in June.

Use the RANKING CHART to reorganize the data from lowest to highest values.

The median is the midpoint of the data set.

What is the median for this data? _____

EXTRA FUN

1) Go back to the Robinson data on the website. Get another copy of this worksheet and do it again for a different month. It is especially interesting to compare months from different seasons, 6 months apart.

2) Go back to the Robinson data on the website and click on the Yearly production tab near the top.

What is the Total Production for 2011? _____ kWh

What month produced the most electricity? _____ How much? _____ kWh

What month produced the least electricity? _____ How much? _____ kWh

What is the main reason that causes this predictable change from month to month?

3) Not all solar panels move. Solar trackers move throughout the day and season to stay perpendicular to the sun’s rays. The trackers face _____ at sunrise and _____ at sunset.

4) Something to think about. Robinson School uses less electricity in the summer (no school) than in the winter. The electricity the school does not use in the summer is sold to the power company, Green Mountain Power, and credited to Robinson’s electric account. In the winter, Robinson uses this credit to pay for the electricity it uses over and above what the solar trackers make that month.

MONTH: _____

YEAR: _____

DATE CHART

Day of Month kWh produced

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

RANKING CHART

Lowest to Highest kWh produced

1 = low	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30 = high	