Name_____ Period _____ Date _____

Wind Power

STEM Sims

Lesson 2: What is the Relationship Between Turbine Height and Energy Generated?
Wind speeds at ground level can be very different from speeds just a few hundred meters above the surface. How do you think the energy generated by a wind turbine is related to the height of the turbine?

Doing the Science

1. Start the Wind Power Simulation by clicking on the "Sim" tab.
2. Select the "Make Turbine" button.
3. Set the "Number of Wind Turbines on Farm" to 3 and hit enter on your keyboard.
4. Select Turbine 1 and choose a Tower Height of 100 m and Blade Radius of 40 m.
5. Select Turbine 2 and choose a Tower Height of 110 m and Blade Radius of 40 m.
6. Select Turbine 3 and choose a Tower Height of 120 m and Blade Radius of 40 m.
7. Click on the "Submit" button.
8. Choose "December" from the Calendar menu.
9. Select the "Start" button.
10. After the completion of the run, click on the "Energy Generated" button at the bottom of the screen.
11. View the graph and estimate the average energy generated for each of the three wind turbines. Record these values in Table 1 below.

Table 1.

Turbine #	Tower Height (m)	Blade Radius (m)	Energy Generated (kWh)
1	**100**	**40**	
2	**110**	**40**	
3	**120**	**40**	

Do You Understand?

1. How was tower height related to the amount of energy generated by the wind turbine?

2. List and discuss two problems workers might have in maintaining a wind turbine that was 500 meters tall.