

Topic 4 Student Activities

Oklahoma Wind



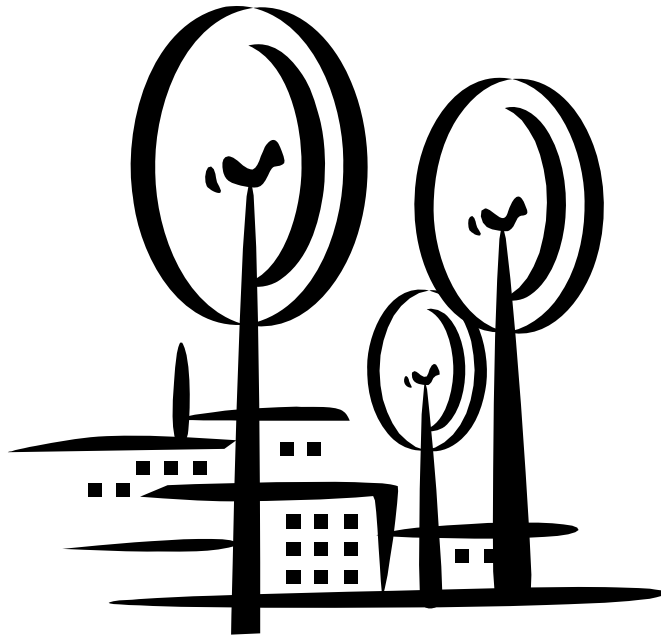
Topic 4 Student Activities

The activity in this section is designed to help the student understand the wind resource in Oklahoma as well as what is taken into consideration when building a wind farm. They should be able to identify the areas in Oklahoma suitable for wind development. Information from the teacher segment, Topic 4 - Oklahoma Wind, can be used to aid the students in completing this exercise.

**This is a computer exercise and requires internet access.*



“Siting a New Oklahoma Wind Farm” - Recommended for Middle - High School.....3



Siting a New Oklahoma Wind Farm

Name: _____

You work for **Sweepin' Down the Plains Inc.**, a new wind farm development company located here in Oklahoma. You have been assigned the task to locate a wind farm in your town, if possible. Below you will look at a number of questions that will help in deciding whether or not to build a wind farm in your local area.

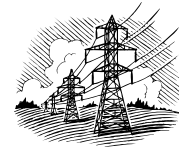


Before you begin, think about your area. Is it windy? Does the wind blow some of the time or all of the time? Is there anything around your town that might prohibit a wind farm from being built, e.g. trees, buildings, wildlife corridors? Do you have open land that would be suitable for turbines on?

- Go to <http://www.ocgi.okstate.edu/owpi> and under the “Interactive Maps” click on the wind resource map. The wind resource map, model #2 should be active.

1.) Locate your area and zoom in to your town. What wind category does your town fall under? Is this a high enough class for a wind farm? Large wind farms usually are built in Class 3 or higher winds. The faster the wind speed in your area, the better for wind farm development.

- Click on “Transmission Lines” and make them visible.



2.) The electricity from your wind farm is going to need transmission lines to transmit it across the state and into your customer’s homes. Do you have any transmission lines near your town? If not, building transmission lines can cost anywhere from \$200,000 - \$1 million per mile!

- **Regular roads and railroads should already be visible on the map. Look for railroads near your town...**



3.) Do you have a railroad that is close to your town? How about an interstate or state highway? Your wind turbines need a way to get into your town. They will come in many pieces, e.g. blades, nacelles, & tower sections. Are you going to have a viable transportation network to accommodate them?

- **Click on “Lakes” and “Rivers” to make them visible if they are not already.**

4.) In addition to roads and railroad networks, how would rivers and lakes be of use for transporting turbine pieces? This would be of significance if you are located in the northeast by Tulsa and the Port of Catoosa. Turbines can be brought in from all over the world by using this waterway, the Arkansas River, and then transporting them by road on Oklahoma’s major interstates.

- **Click on the “Topographic Map” on the right side of the screen. This will open a new page with an image of a topographic map of Oklahoma.**

5.) Elevation plays an important role in wind farm placement. If a wind farm is located in a valley, the winds may not be as strong there as they would be on top of a ridge. What is the elevation of your area? (The elevation legend is on the left side of the image) Are there areas with higher elevations than your region? If so, where?

Wind farm development needs to take into consideration the wildlife and landscape that it will surround. Let us go to the next page and look at the Oklahoma Wind & Wildlife Map and analyze the issues that wind development could bring about in the state.

- **Go to <http://www.ocgi.okstate.edu/owpi> and under the “Interactive Maps” click on the wind & wildlife map. All layers of the map will be visible. A guide to the wind and wildlife layer can be found on the right hand of the page under “Notes”.**

6.) Once again, locate your area and zoom in to your town. What is in your surrounding area? Are you located in a prairie chicken habitat? Do you have a whooping crane stopover site near your town?

7.) If you are located in one of these sensitive regions, what can you and your company do to avoid harming the wildlife in the area?

- **Now that you have answered all of the above questions, you should be able to say whether or not your company can build a wind farm in your local area.**

8.) What are the barriers to development in your area, if any?

9.) Was there anything that made wind development look promising? Excellent wind resource, access to transmission lines, etc.

10.) Now that you have analyzed your town for possible wind development, locate another town in a different region of Oklahoma and repeat the above exercise. What might you find different? Compare and contrast the different factors that make a wind farm possible.



Town used in comparison: _____

Similarities: _____

Differences: _____
