Pioneer Central High School

2010 New York State Virtual Wind Farm
Contest School Submissions

Central High School

Home Academies Activities Community & Parent Resources Curriculum & Instruction Departments & Services Libraries Our School

Teachers Web Resources Calendar

Teachers

Home > Teachers > Science

Dave Reling, Science

- Overview
- **Wind Farm Community Outreach**

Wind Farm Community Outreach

Students in Ms and my Earth Science classes participated in a New York State Virtual Wind Farm contest this winter. Students worked collaboratively to place virtual windmills on a Google Earth map in positions that would create the most efficient wind farm design. They learned about wind characteristics, topography and engineering design of windmills.

Part of the contest involved a community outreach project. Since we have a couple wind farms in our district and others may be coming, we chose to focus on benefits of windfarms to landowners, communities and schools as well as negative impacts wind farms can have. Please click the links below for topics. Some links include specific information about the Bliss wind farm.

What does the community get from a wind farm?

Windmills and birds

Windmills and bats

Flicker effect

Noise from windmills

www.pioneerschools.org/88170111102454/blank/browse.asp?a=383&BMDRN=2000&BCOB=0&c=59127

What does a community get from a wind farm?

Windmills create jobs!

Construction of the wind farm created over 400 jobs, and the vast majority were filled by Western New York based employees.

Operation of the wind farm has created 35 full-time local jobs.

What does a community get from a wind farm?

What do landowners get for having windmills on their property?

- When windmill companies build windmills on other peoples land the owners are going to expect something in return. The windmill companies must give them something in return but their trying to spend as least money as possible but at the same time they want to persuade the landowners. Some windmill companies guarantee $6000 a year per windmill.
- In addition some windmill companies have profit sharing laws where landowners receive additional money if the power company makes more power in that month, but the landowner will always receive the minimum amount they were promised. The landowners profit will never go lower but it can go higher.
- The landowners make sure they are signing a valid legal contract before they agree to anything. Also landowners need to know how long the contract is going to last for and whether it can be renegotiated. Another thing landowners look for is what will happen if the windmill company goes bankrupt. What would happen to the windmills? Would they just sit there and rust or would they be taken down?
- If you add up the amount of windmill payments for each landowner it averages around $1million each year.

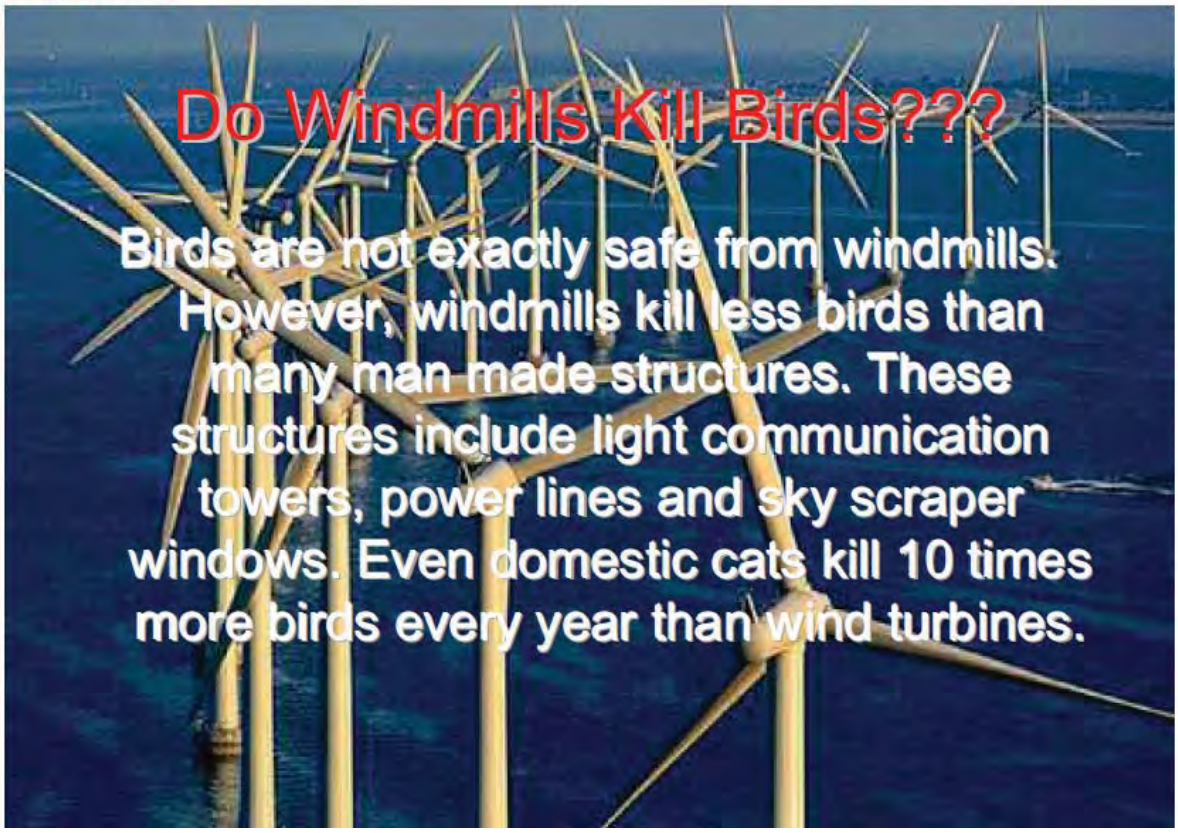
What does a community get from a wind farm?

What do schools and towns get for having windmills near their property?

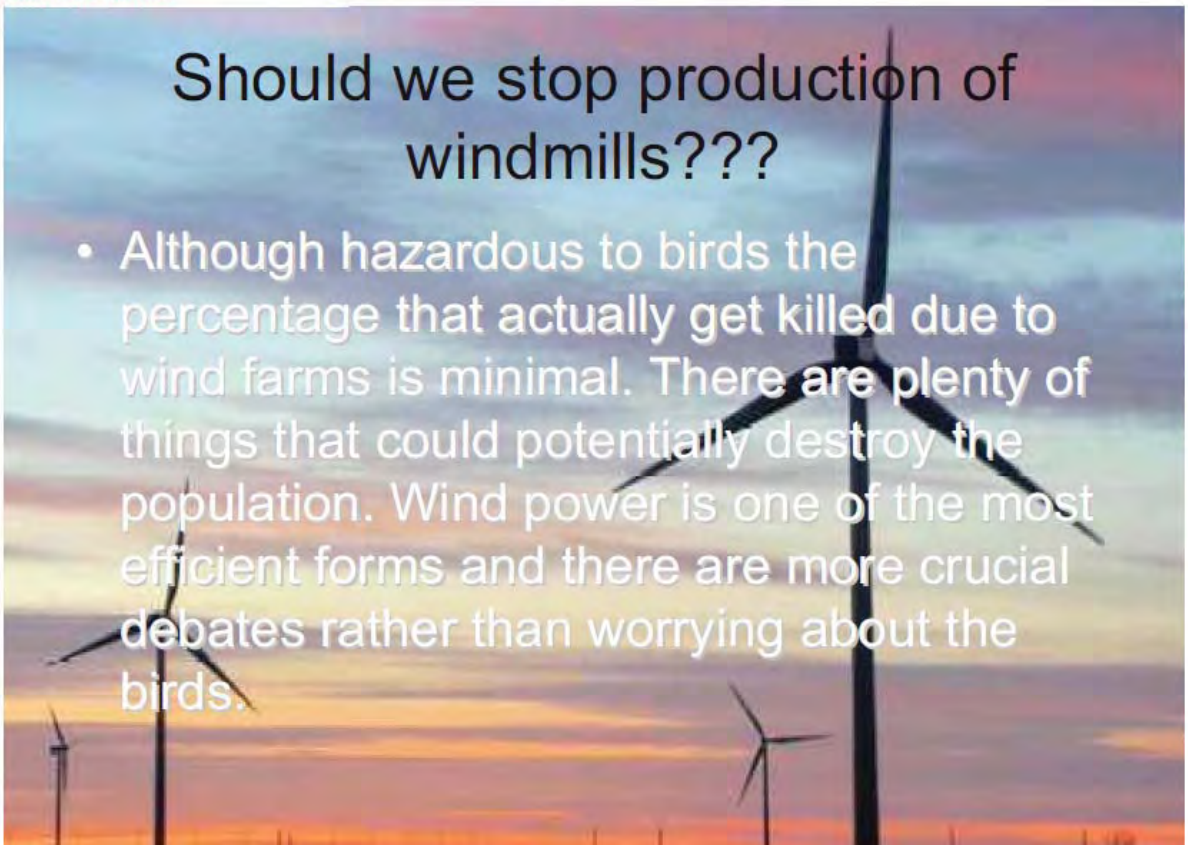
- Windmill companies offer compensation to most schools and towns around where their windmills are placed. This means that residents of these towns and district have to pay less or maybe even no tax at all! Also the windmill companies will build better roads for that town and it wont cost them a cent.
- In some cases windmills are placed closer to a neighbors house than the landowners house. In this situation some windmills companies will pay both of the houses but they wont pay the neighbor as much as they would pay the actual landowner.
- Also some windmill companies will pay some of the school taxes and the residents of that school district wouldn't have to pay as much school tax as other schools.

Windmills and birds

Windmills and birds



Windmills and birds



Windmills and bats

Do windmills kill bats?

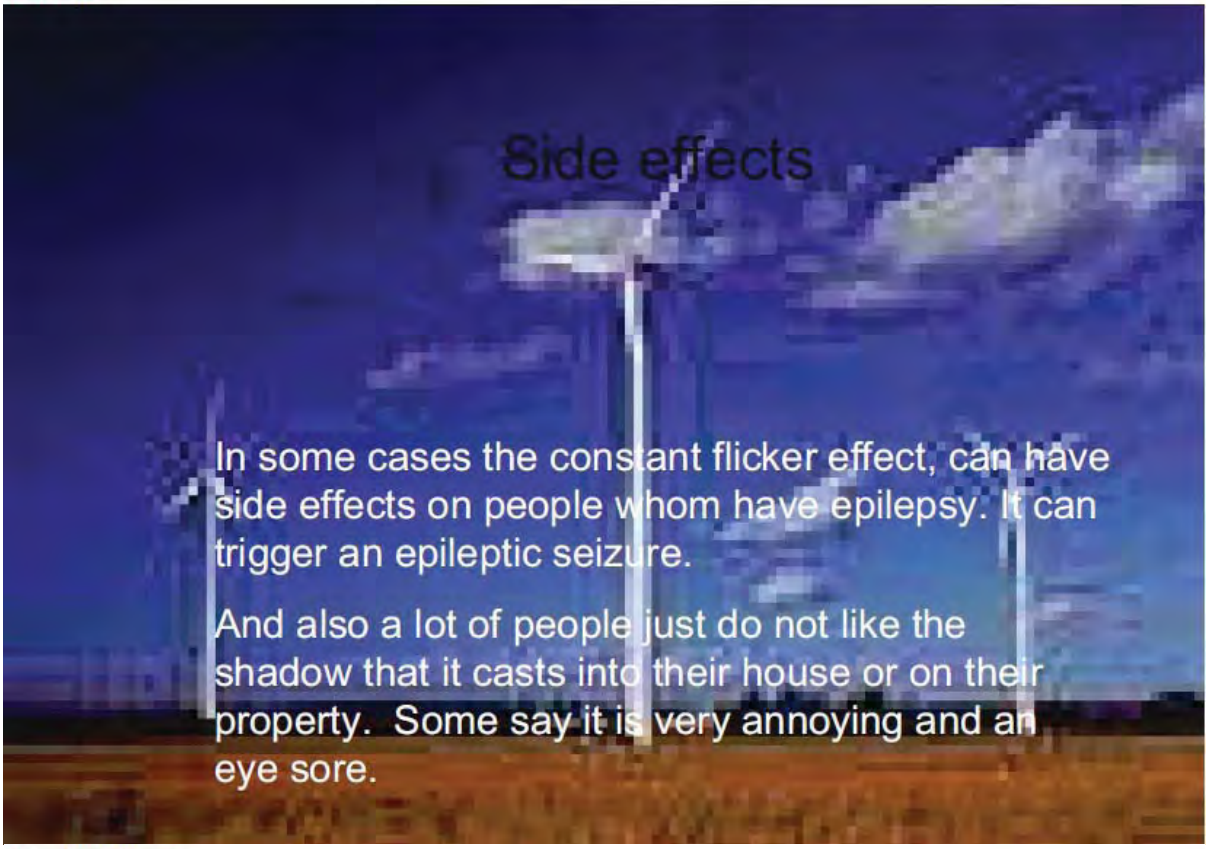
- Windmills are killing bats all over the United States. Windmills kill bats by creating a vacuum near the rotors which causes the bats lungs to explode. Some scientists estimate that perhaps only one bat is killed per turbine in a year while other scientists think that it could be much higher.
- When its really windy, which is when the turbines are reaping the most energy, bats don't like to fly. I would say that you could shut the windmills off when its not windy. Not as many bats would be killed then.
- Of course, bats not killed by windmills are the ones that reproduce. So their young will inherit a trait that will allow them to live with windmills. In other words, I believe evolution could take care of the problem.

Flicker effect

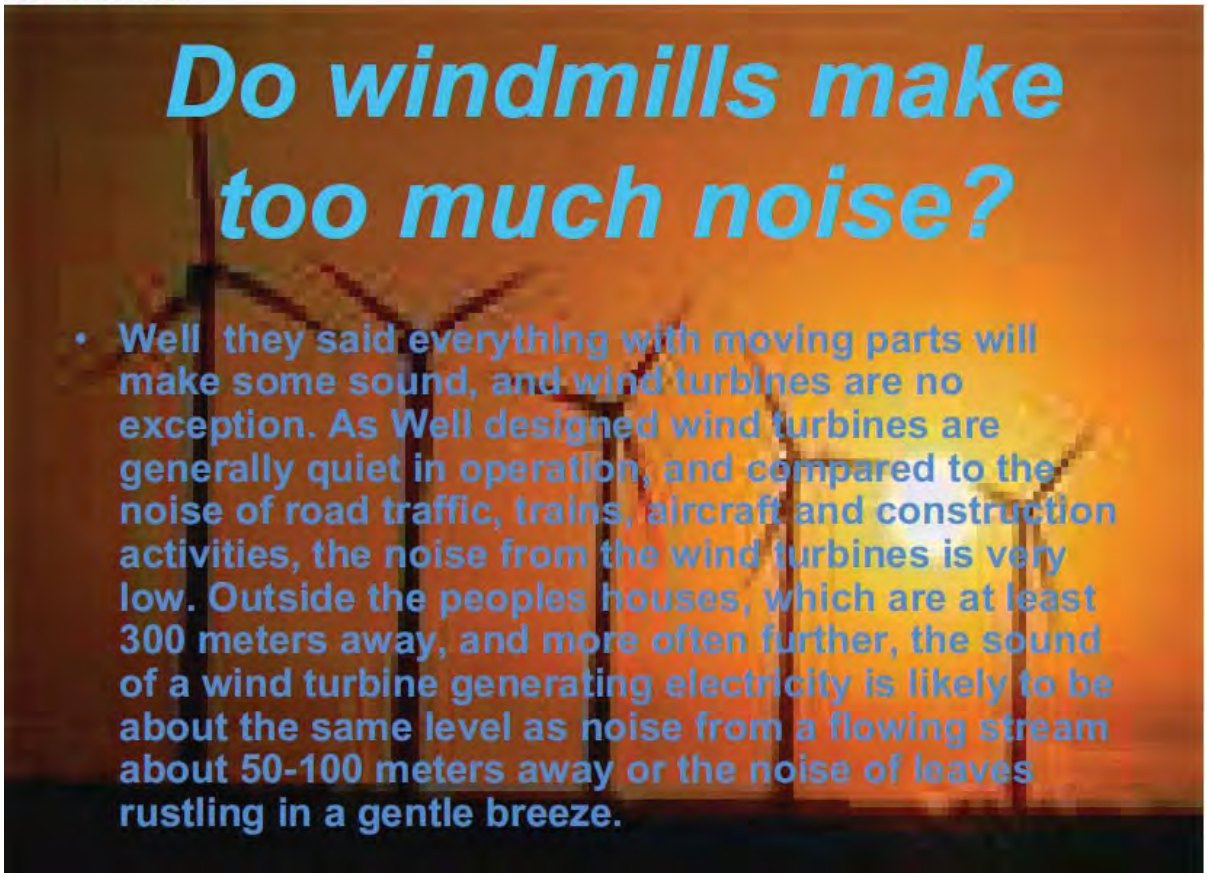
Flicker effect

- Tall structures such as wind turbines, also known as wind mills, cast shadows. These shadows vary in length according to the sun's altitude and position. The rotating wind turbine blades cast moving shadows which only under certain conditions cause flickering at nearby properties or households.

Flicker effect



Noise from windmills

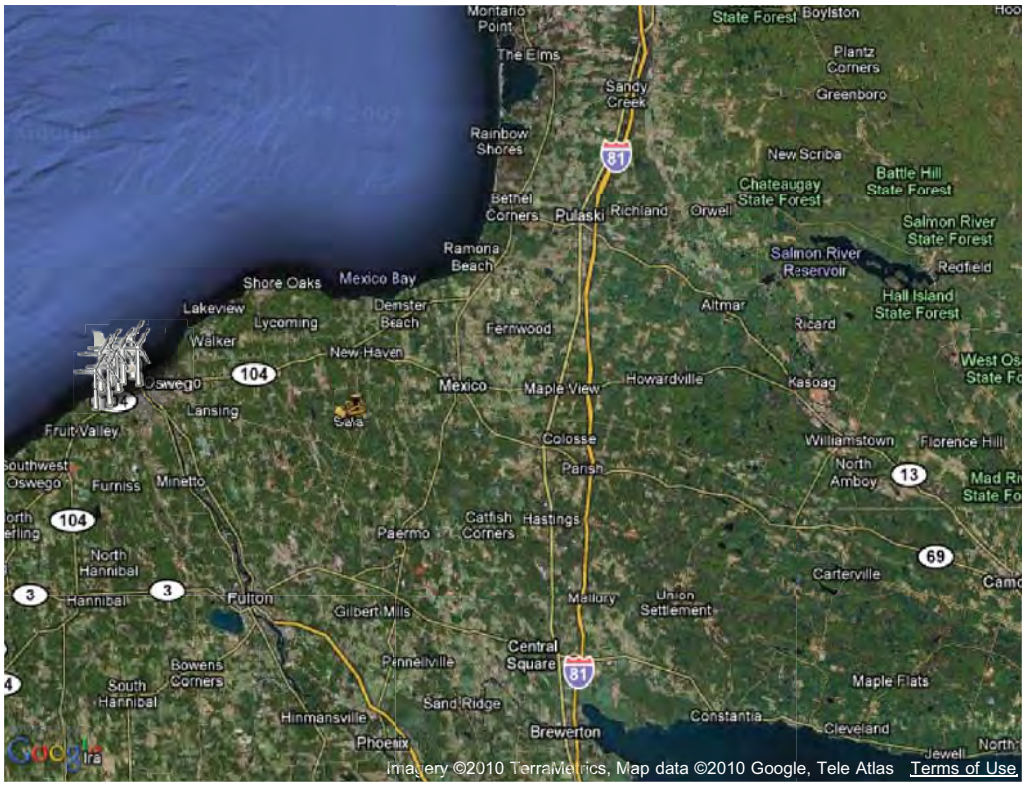


Synopsis

Windmills are more efficient around water, roads and power lines to save money. Because money is key, and the more roads you make, the more money it'll take. So if you make the windmills taller, it'll get more wind because the higher in the atmosphere, the windier it is. And closer to the road and power lines, you'll spend less money!!

Water makes more wind, by less friction. And putting them by power lines would also make the energy less expensive because you don't have to make the extra lines. Same as the roads. The bigger and taller your windmill is, the better it will work. The prevailing wind comes from the west so it's best to put the windmills on the eastern shore of the lake to get more wind. Putting windmills on hills was thought to be a better strategy but it really doesn't matter as much as we thought.

SchoolPower ...Naturally



Welcome Pioneer11

Wind Farm Energy Summary

Number of Turbines	8
Wind Farm Area (km2)	2.69
Power Capacity (MWh)	24.00
Energy Output Yearly (kWh/yr)	67,352,000

Wind Farm Emision Offsets

Sulfur Dioxide	
Kilograms per Year	57,006
Nitrogen Dioxide	
Kilograms per Year	27,897
Carbon Dioxide	
Kilograms per Year	24,591,151
Equivalent number of Cars Removed	4,471
Equivalent number of Trees Planted	4,170,324

Wind Farm Cost Summary

Turbines & Towers	$32,148,000
Installation	$3,312,000
Transmission Lines	$1,941,190
Service Roads	$708,423
Total	$38,109,613
Cost To Energy Ratio ($/kWh)	0.57

Print Page