

# Wind Energy

## Presentation

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# Origin of Wind Energy

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Wind Energy. Wind energy comes from wind of course, but where exactly does wind come from? Well let's dig deeper and find out. First things first, the basics, the sun, the bodies of water, and land. Sea breezes are created when the land is being heated up by the sun, and then the warm air rises due to convection currents, then the colder air replaces the warm air. (*much like when you're boiling water, but with air*) Then that creates the wind we know today. Land wind occurs when the body of water is much cooler than the land and then the cycle is vice-versa. As a result, wind is made.

# How Wind Energy Can be Obtained

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How exactly can you obtain wind energy? Well, we'll explain that all to you, right now. You can't really keep wind in one spot, but you can use it to push wind turbines. When wind pushes a modern wind turbine it captures the kinetic energy that is being made. And that's how the wind energy can be captured.

# How to convert wind into a useable form of energy

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As mentioned in the previous slide “How wind energy can be obtained”, the wind turbines collect the kinetic energy, then rotates it turning it further into mechanical energy, the rotor part only spins 18 Rpm’s per minute which isn’t enough to produce the energy, which is why there is two other main gears inside to turn it more times then- t a d a! Electricity!

# The Three Main Types of Wind Energy being Produced

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Here are the main three types of wind energy created.

1. *Utility-scale wind turbines* can have about 100 kilowatts to several megawatts.
2. *Distributed or small wind turbines* are single little wind turbines, that are usually below 100 kilowatts, and are used to power a farm, a house, a small business, or other things that don't connect to the grid.
3. *Offshore Wind turbines* are in large bodies of water because there are lots of wind in the sea/lakes. These turbines are bigger than land turbines, and they also can generate more electricity.

# Pictures of Wind Turbines



# Pros of Using Wind Energy

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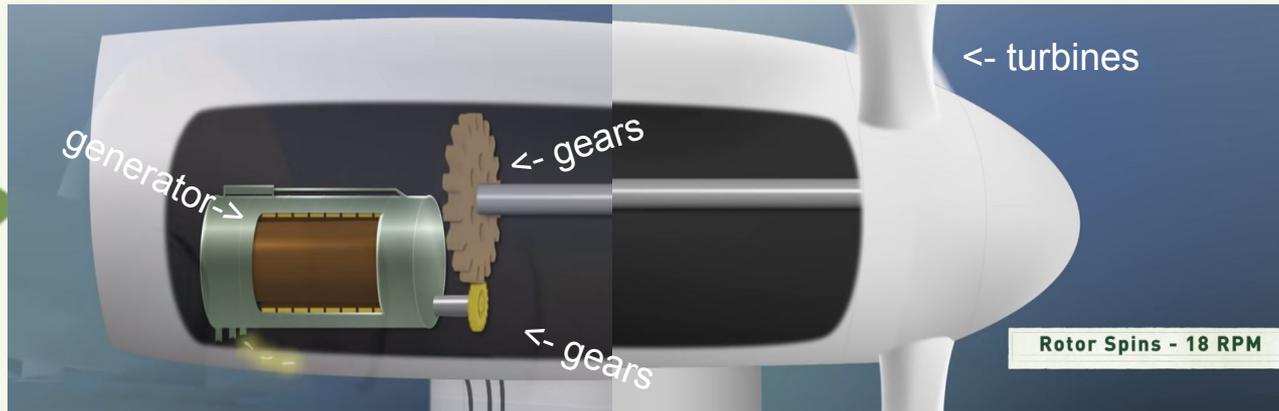
- Very cost efficient, since it's very cheap.
- It's a clean fuel source!
- It's very sustainable since it's renewable!
- Wind turbines (The thing that creates it) can be placed in most places!
- It creates a lot of jobs, and the economy is boosted because of wind energy.

# Cons of Wind Energy

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- The wind isn't very consistent.
- Safety issues because of the spinning turbines.
- Reduces local bird population.
- Takes a lot of land to set up.
- The noises that it produces are very loud

## Diagram of the inside of a turbine



the wind pushes the turbine and makes the gears spin, when the gear spins it generates energy.

# How Wind Energy is being used in Canada

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Currently, wind energy powers more than 3 million homes in Canada! There are 303 wind turbines spread across all of Canada and still more being created now. There are many wind energy's -> electricity converters all over the country as well! Wind energy also makes a lot of money for Canada, as it's easy to produce and has a high demand because of it's speed of production and amount of kilowatts they produce each year (~5 million kilowatts)

# What role this energy source could have in the future

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This will be a great energy source in the future, because wind will always exist and it is renewable. It can already power many homes, so in the future, wind might be researched enough to power electric cars, and maybe even planes someday. Wind has great potential over the other powers, because wind will always exist. Unlike water, it will be here forever, but water will deplete over time. And even now, wind has the advantage over most other power sources because of its capability of power production. Wind's potential to expand and grow is paramount and will make the world a much better and cleaner place!

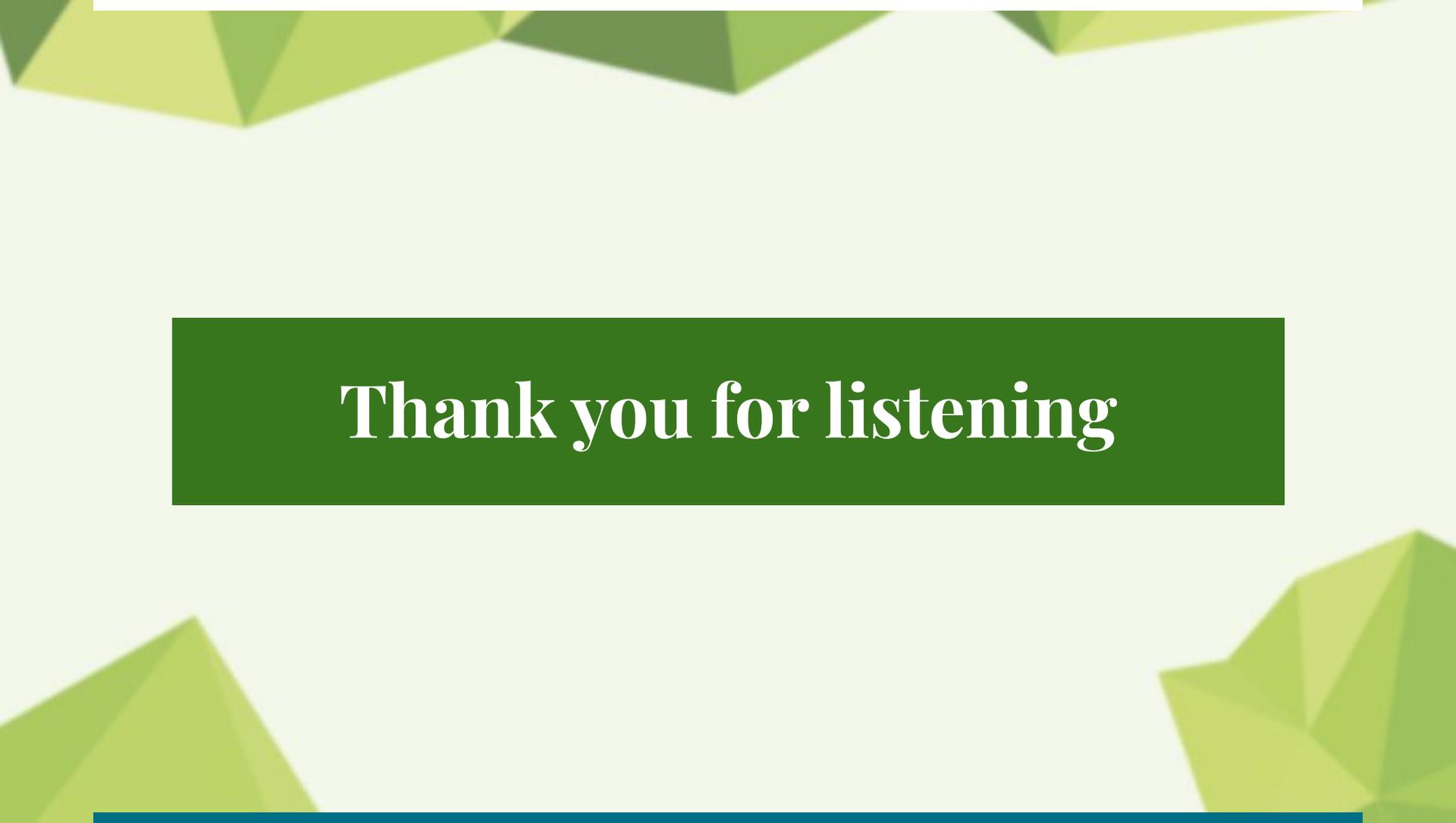
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**Thank you for listening**