

Section 3
Advantages and Disadvantages of
Electric Generating Stations

Advantages of using NUCLEAR ENERGY (Know 2)

- Nuclear energy produces a lot of electricity.
- Nuclear power plants do not produce greenhouse gases such as Carbon Dioxide.
- There is no acid rain produced by nuclear power plants.

Disadvantages of using NUCLEAR ENERGY (Know 2)

- Nuclear power plants produce radioactive waste.
- Nuclear power plants are expensive to construct.
- Nuclear power plants contaminate the environment.

Advantages of using WIND ENERGY (Know 2)

- ◆ Wind turbines do not produce greenhouse gases.
- ◆ Wind turbines do not produce acid rain.
- ◆ Wind is free, so it is not expensive.

Disadvantages of using WIND ENERGY (Know 2)

- ◆ Energy cannot be produced when there is no wind.
- ◆ Energy cannot be stored.
- ◆ Wind turbines are expensive to build and operate.

Environmental consequences of using WIND ENERGY (Know 2)

- ☼ Wind turbines are a threat to birds.
- ☼ Wind turbines produce sound pollution.
- ☼ Wind turbines produce visual pollution.

Advantages of using GAS TURBINE THERMAL POWER PLANTS (Know 2)

- ☺ Thermal power plants cost less to build.
- ☺ Electricity can be produced as needed.
- ☺ Thermal power plants can be built quickly.

Disadvantages of using GAS TURBINE THERMAL POWER PLANTS (Know 2)

- ♣ Thermal power plants produce greenhouse gases such as Carbon Dioxide.
- ♣ Thermal power plants contribute to acid rain.
- ♣ Thermal power plants can produce air pollution.

Rather than building new power plants, Hydro Quebec has suggested adding more turbines to the already existing hydroelectric power plants during high periods of production.

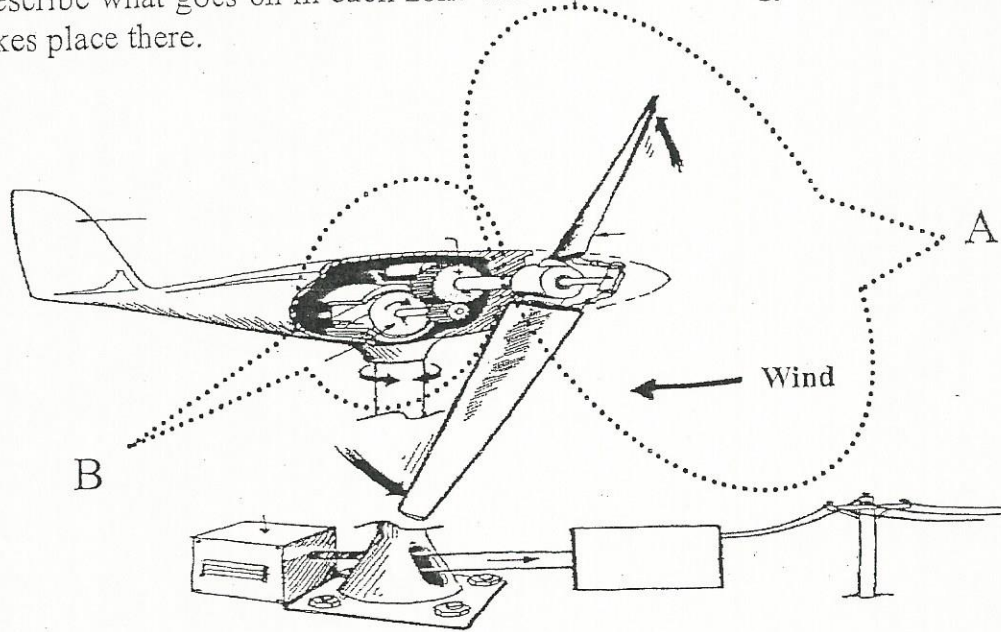
Advantages (Know 3)

- ♪ It will cost less than to build new power plants.
- ♪ There would be no additional negative consequences to the environment.
- ♪ More power would be provided during these peak hours.
- ♪ Electricity would be produced more quickly.

Disadvantages (Know 1)

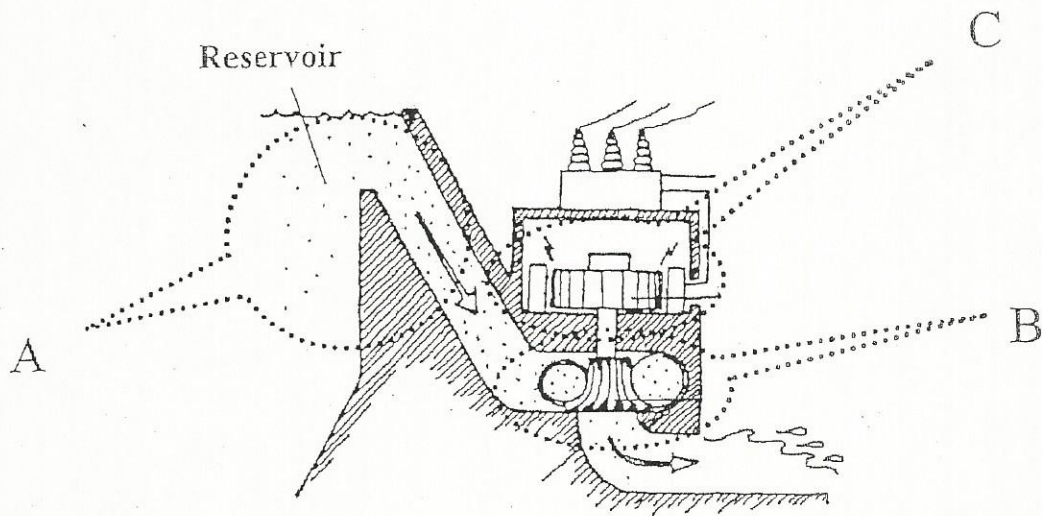
- ▣ Electricity production would still be dependent on rain (water).
- ▣ There would be no developments in the wind energy industry.

Describe what goes on in each zone and explain the energy conversion that takes place there.



	What goes on	Energy conversion
Zone A	Wind turns the blades of the turbine.	The wind's Kinetic energy is converted into mechanical energy.
Zone B	The blades drive the generator.	The mechanical energy is converted into electrical energy.

Hydroelectric Power Station



	What goes on	Energy conversion
Zone A	The water in the reservoir flows through the conduit (pressure pipeline)	The water's potential energy is converted into kinetic energy.
Zone B	The water turns the turbine.	The water's kinetic energy is converted into mechanical energy.
Zone C	The turbine drives the generator.	The mechanical energy is converted into electrical energy.