Wind and Water Energy

Mr. Skirbst

Wind and Water Energy

- Production of electricity by using the flow of air or water

Wind Energy

- Flow of air resulting from the uneven heating of earth's atmosphere

Windmills

- Until mid 1800's: used to pump water out of ground

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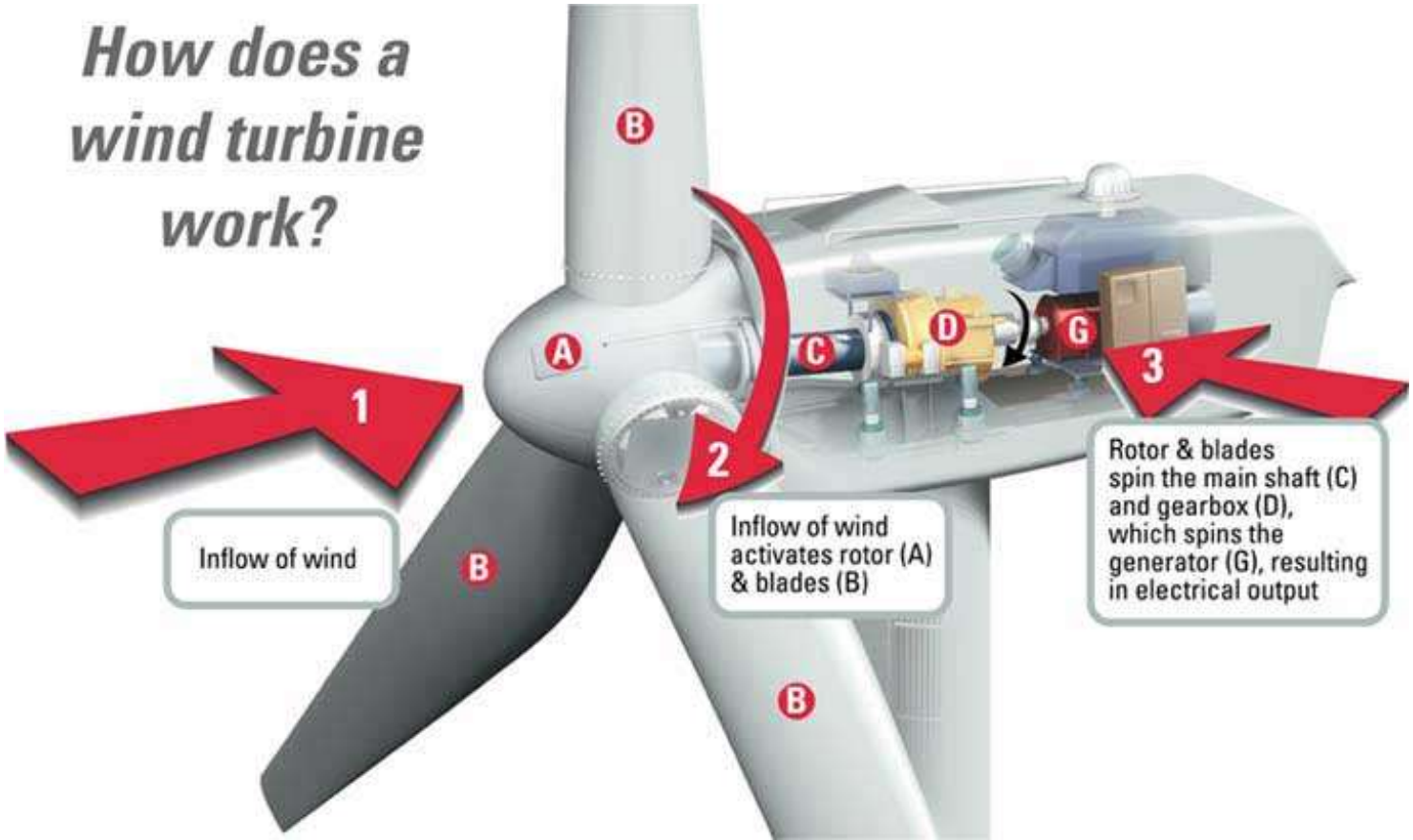
- Late 1800's to mid 1900's: used to generate electricity locally
- 21st century: used to generate / provide electricity to the grid

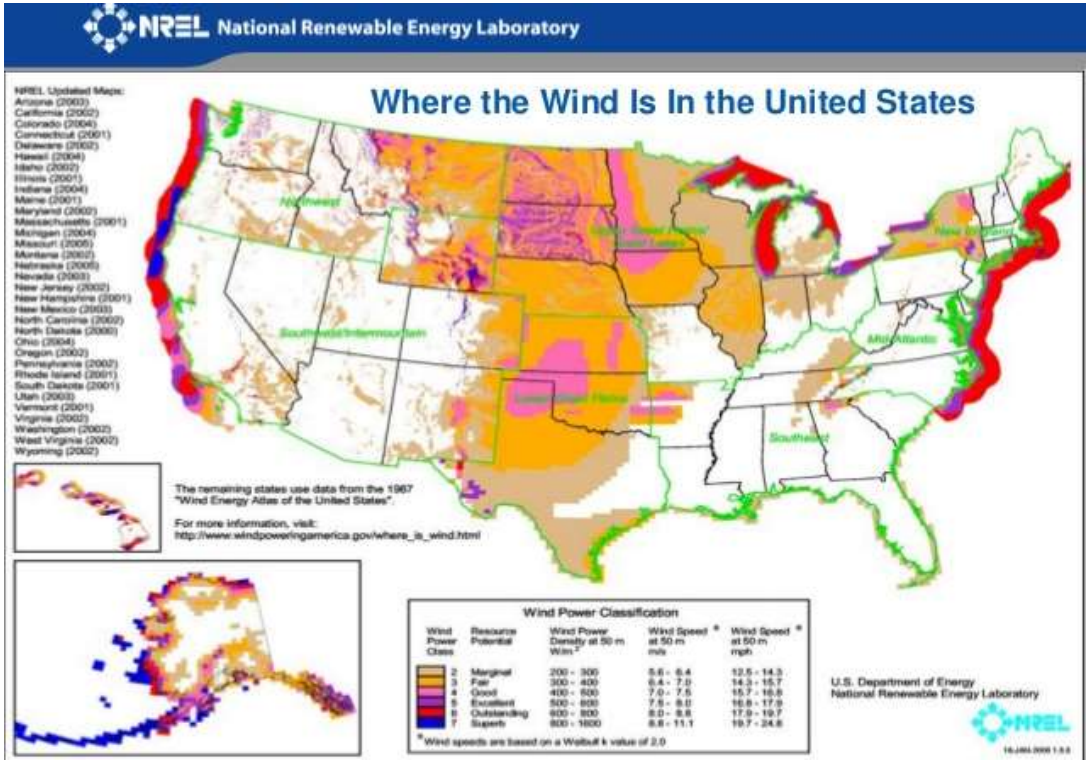
Windmills

- Convert mechanical to electrical energy using generators



Windmill Limitations

- Wind is neither in constant supply nor at a constant velocity



Windmill Limitations

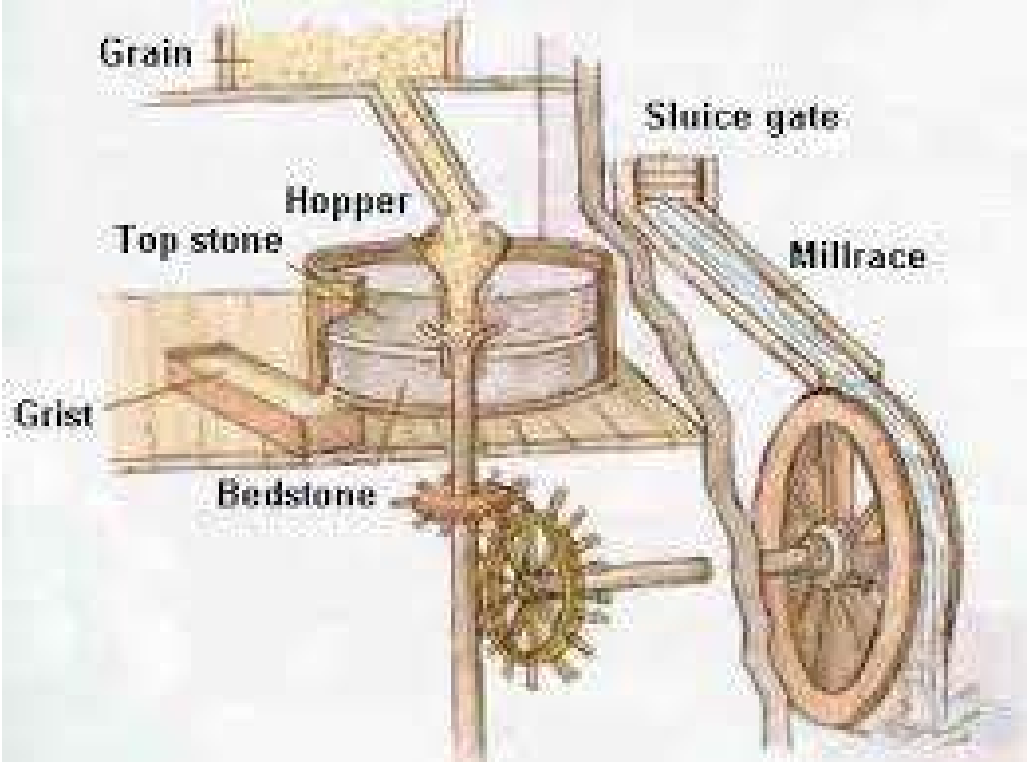
- Wind is neither in constant supply nor at a constant velocity
- Variabilities present energy challenges

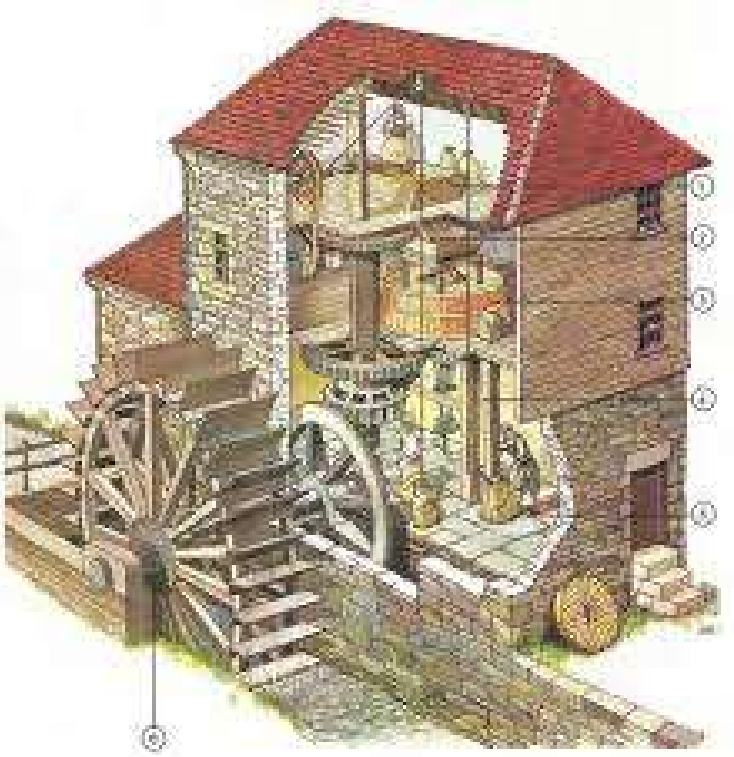
Water Energy

- Flow of water resulting from the pull of gravity

Water Mills

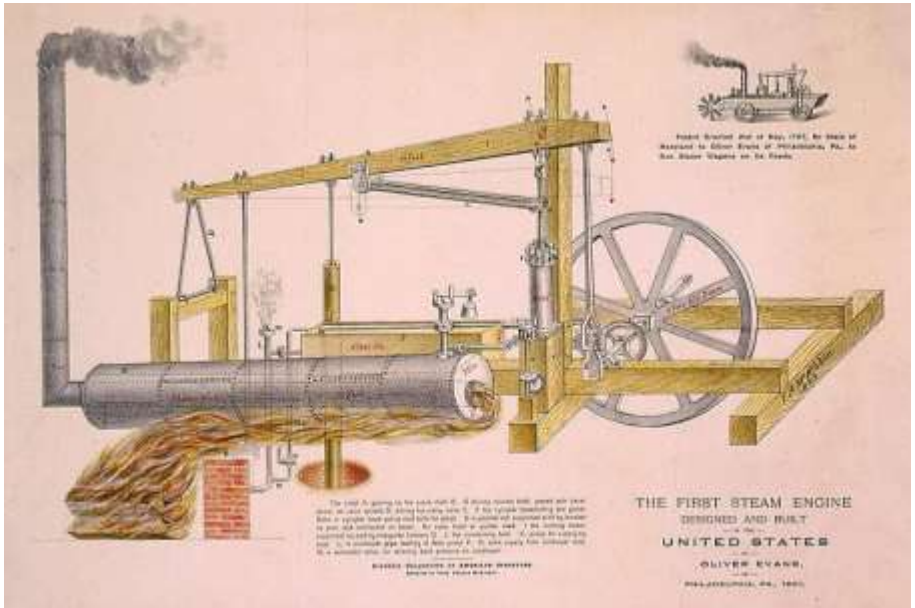
- Until 1800's: used to grind grain (with millstones) or power saws





Water Mills

- Until 1800's: used to grind grain (with millstones) or power saws
- Late 1800's: replaced by steam



Water Mills

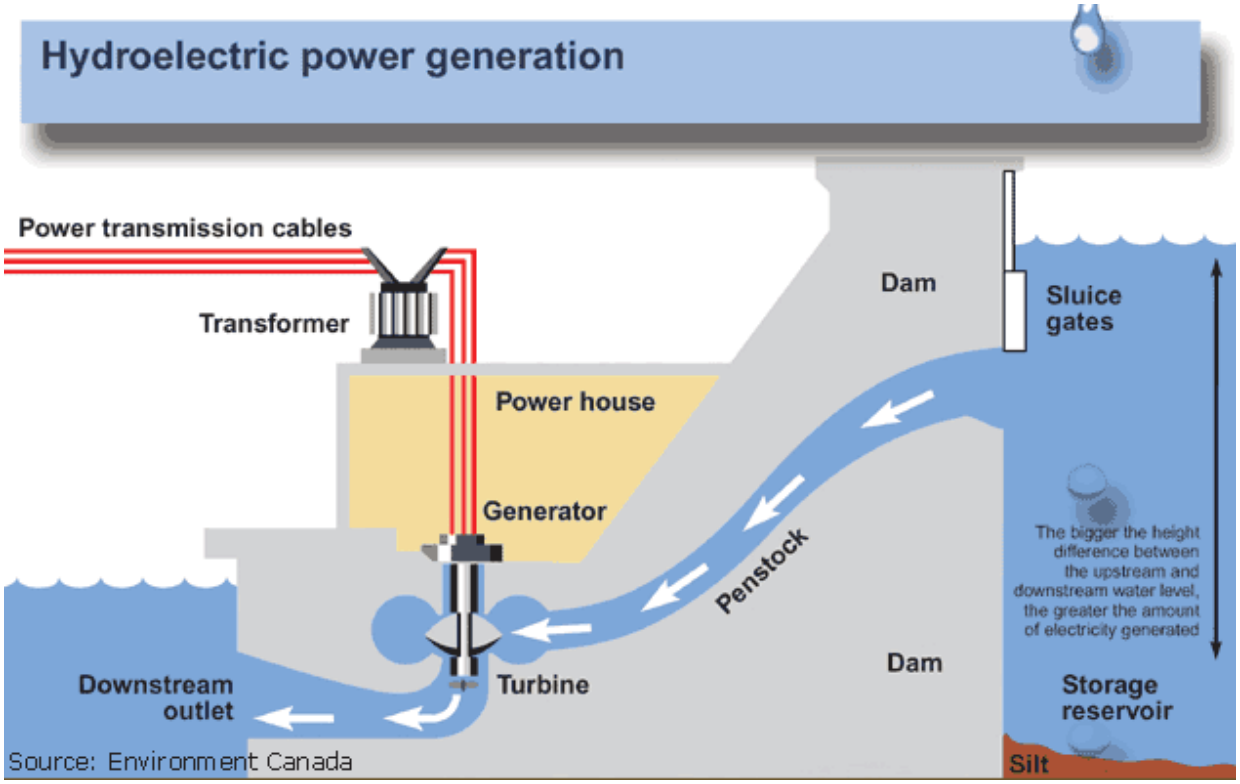
- Until 1800's: used to grind grain (with millstones) or power saws
- Late 1800's: replaced by steam
- Late 1800's: Edison's lightbulb causes demand for electricity

Hydroelectric Power

- Use of falling/running water to generate electricity

Hydroelectric Power

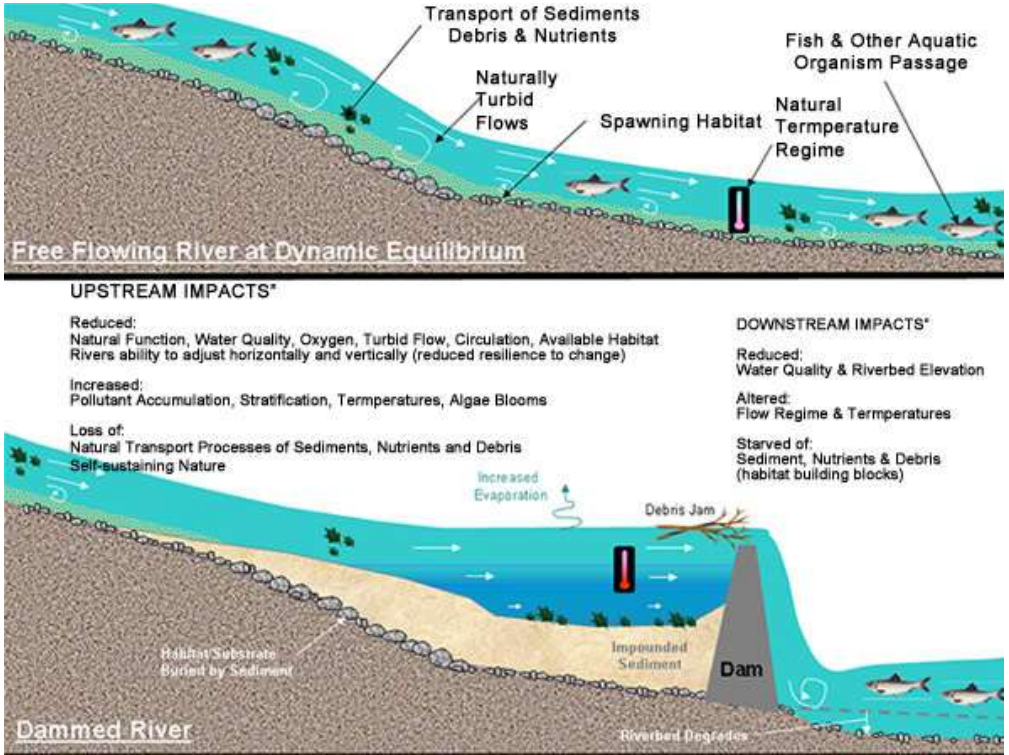
- Use turbine turned by water to turn a generator



Water Energy Limitations

Environmental impacts:

- Sedimentation



Water Energy Limitations

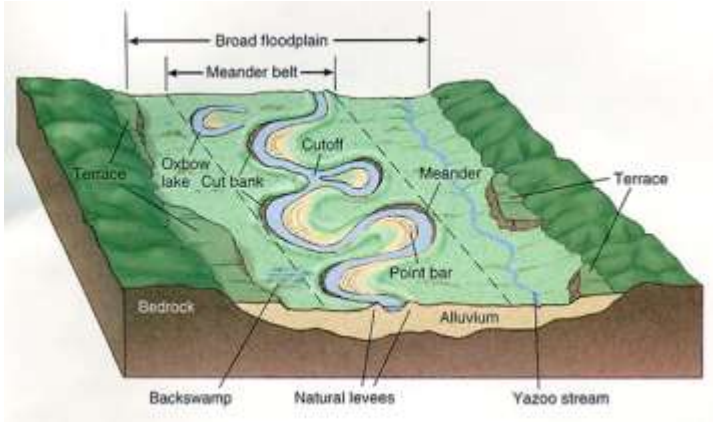
Environmental impacts:

- Sedimentation
- Flooding valleys

Water Energy Limitations

Environmental impacts:

- Sedimentation
- Flooding valleys
- Controlling floods



Water Energy Limitations

Environmental impacts:

- Sedimentation
- Flooding valleys
- Controlling floods
- Preventing spawning

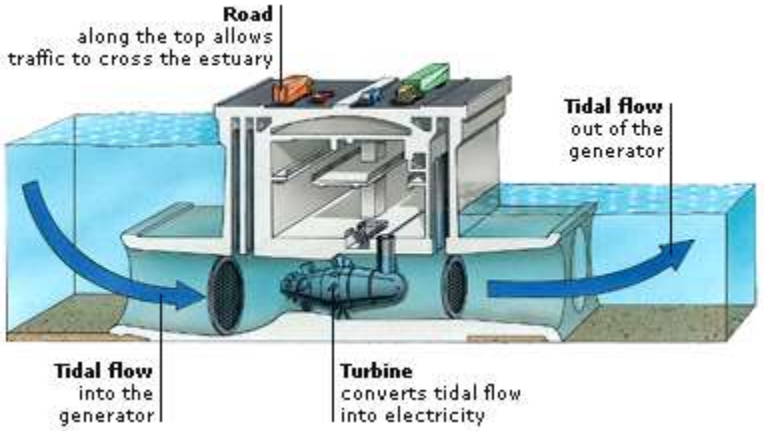
Other Energy Sources

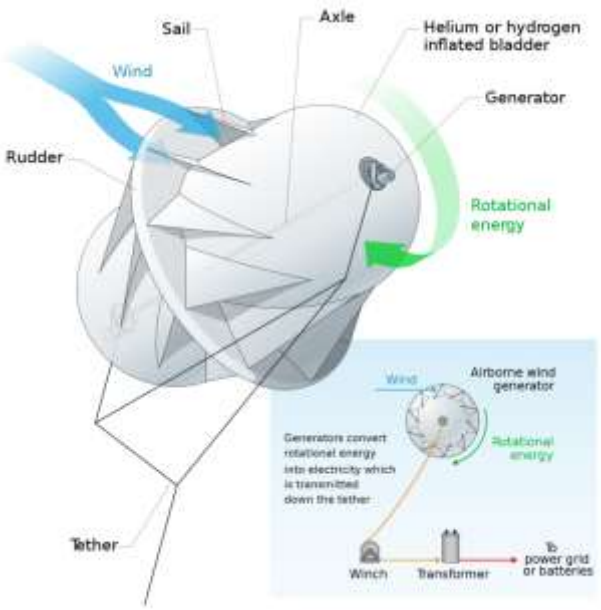
Tidal power

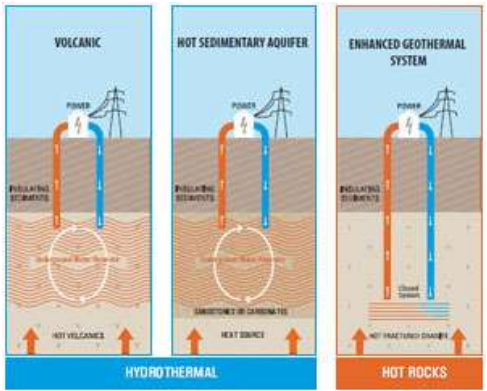
Airborne turbine

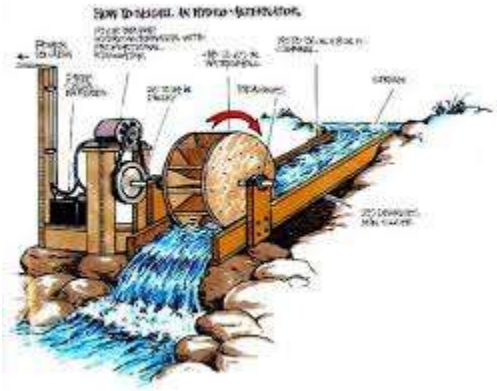
Micro-generators

Geothermal

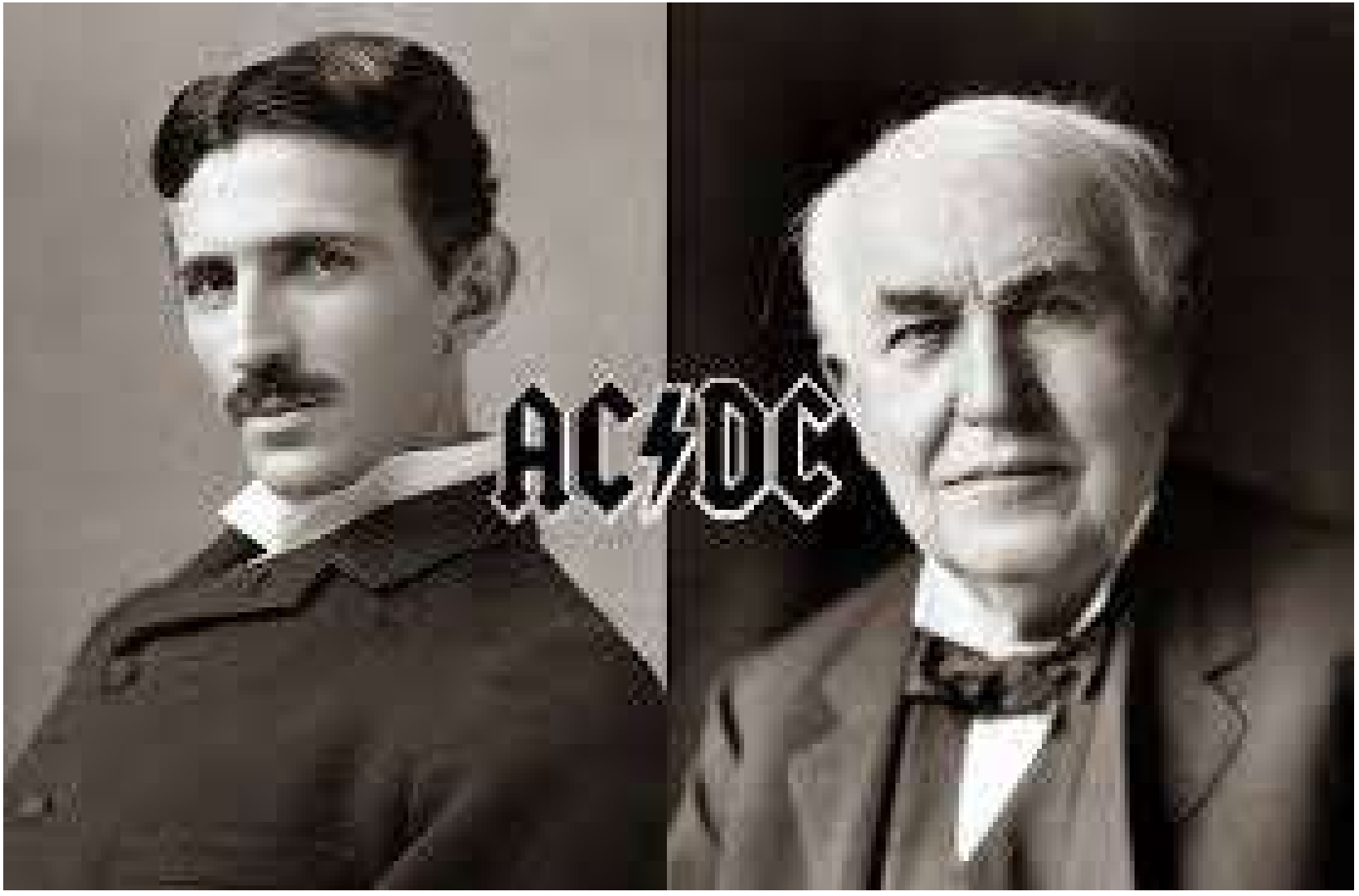








Power Transmission



Power Transmission

DC – Direct Current (like batteries)

Power Transmission

DC – Direct Current (like batteries)

AC – Alternating Current (houses)

Power Transmission