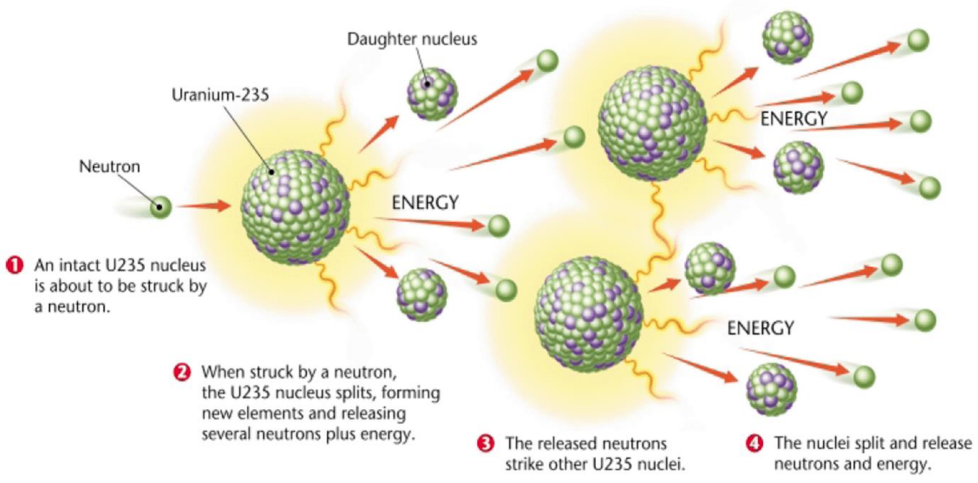
DO NOW

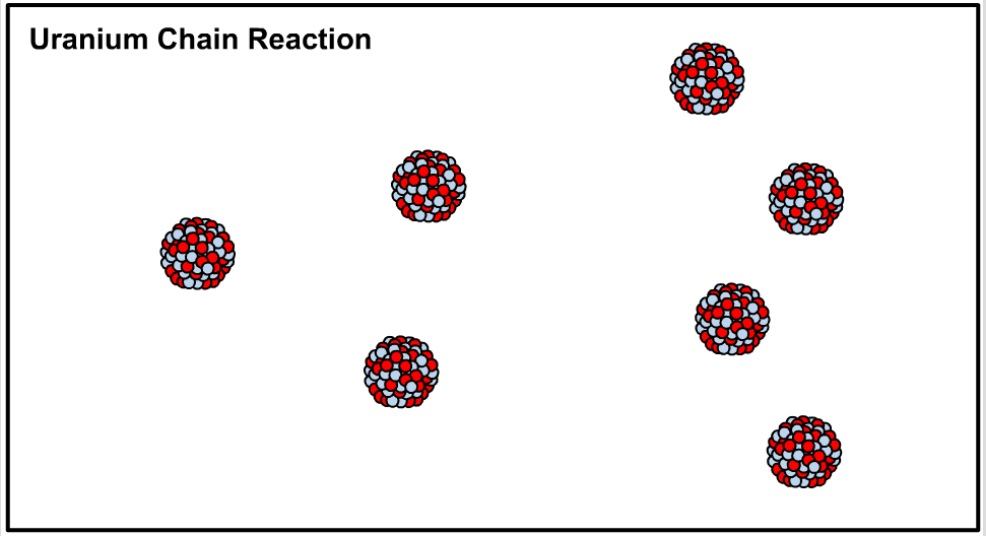
Look over Unit 5 Vocab

RECAP

- Fossil Fuels
  - Supply us with cheap and reliable energy for electricity, cooking, transportation, heating, etc.
  - Nonrenewable
  - Create air pollution
- Climate Change
  - Greenhouse effect and greenhouse gases
  - Burning fossil fuels is major cause of climate change

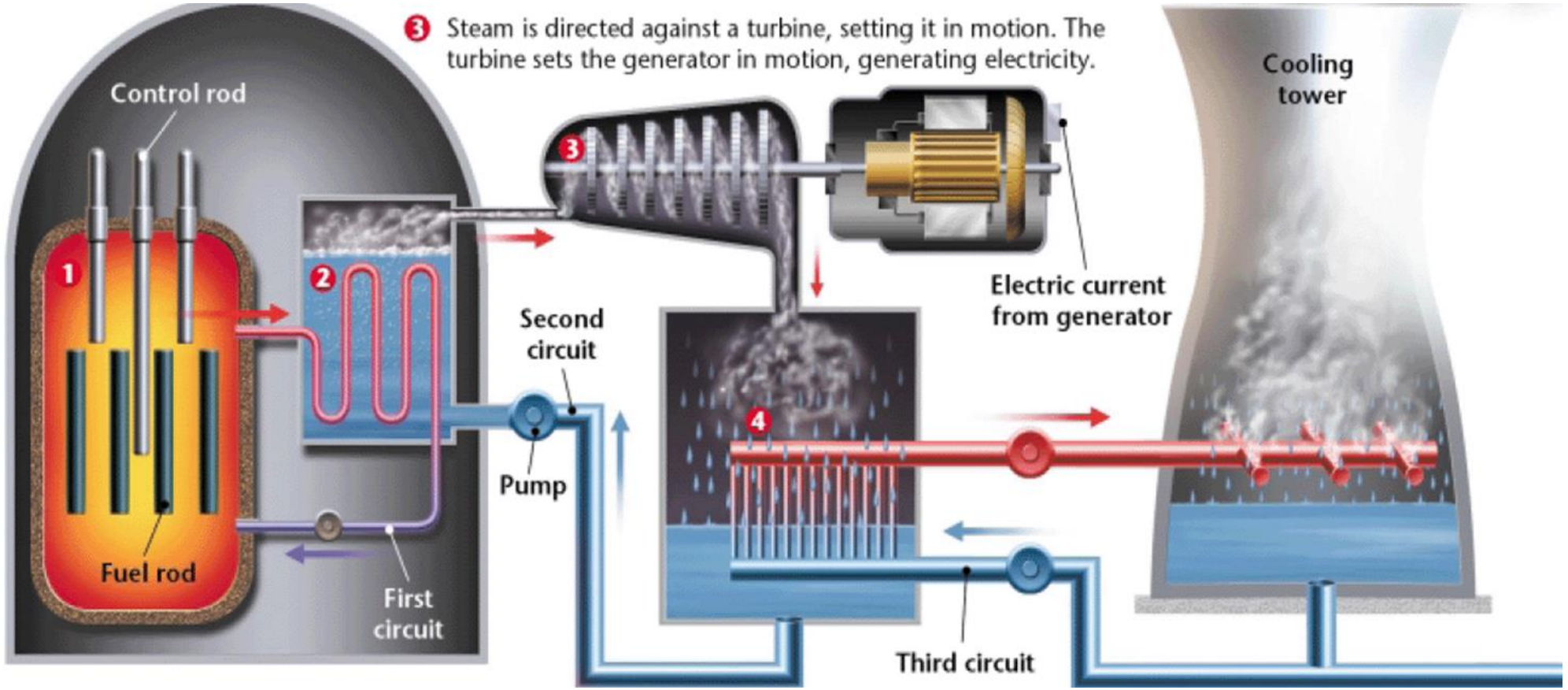
NUCLEAR ENERGY

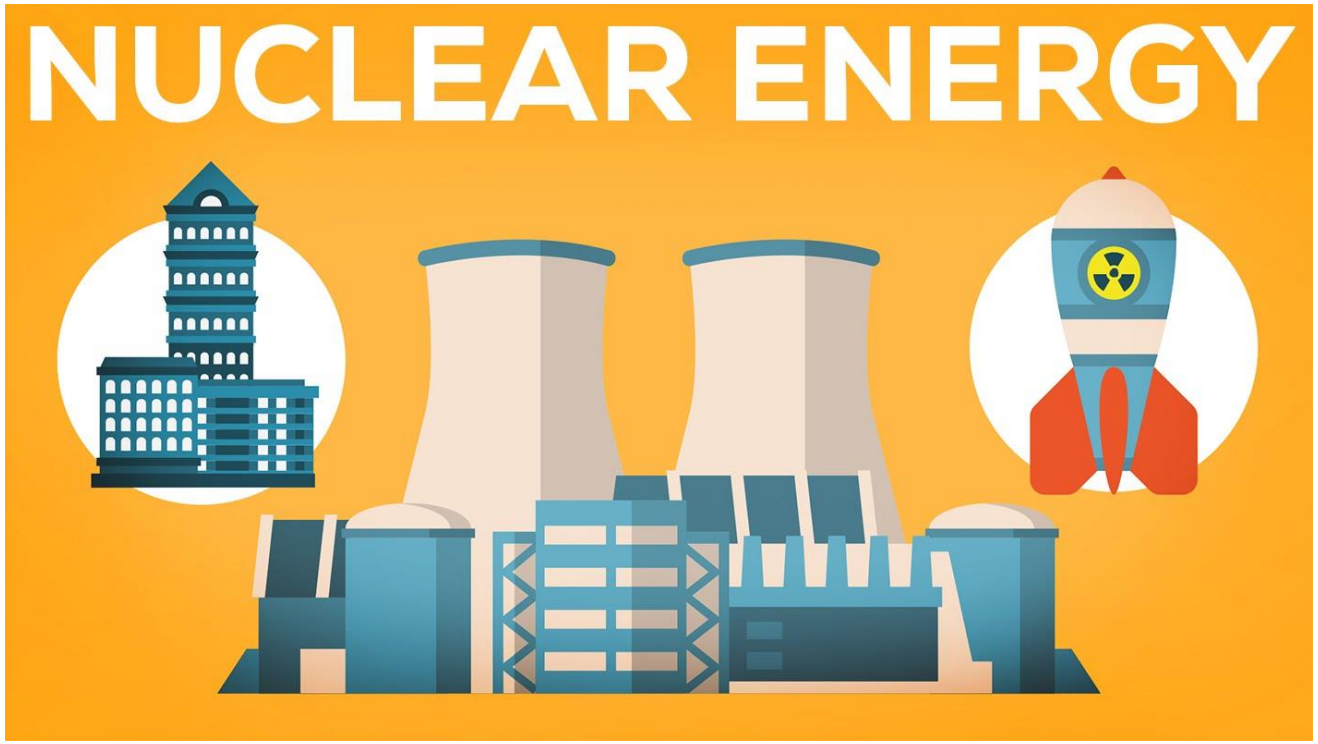




FISSION: SPLITTING ATOMS

- Nuclear power plants get their power from *nuclear energy*.
- Nuclear energy is the energy released by a fission or fusion reaction. It represents the binding energy of the atomic nucleus.
- In nuclear power plants, atoms of the element uranium are used as the fuel.


3 Steam is directed against a turbine, setting it in motion. The turbine sets the generator in motion, generating electricity.
Control rod
Cooling tower
Electric current from generator
Second circuit
Pump
Fuel rod
First circuit
Third circuit



THE ADVANTAGES OF NUCLEAR ENERGY

- Nuclear power plants do not produce air-polluting gases.
- Uranium is a very compact fuel. A single uranium pellet can generate as much energy as almost 1,800 pounds of coal
- Countries with limited fossil-fuel resources rely heavily on nuclear plants to supply electricity.

WHY AREN'T WE USING MORE NUCLEAR ENERGY?

1. Nonrenewable
2. Building and maintaining a safe reactor is very expensive.
3. It is difficult to find a safe place to store nuclear waste.
   - The fission products produced can remain dangerously radioactive for thousands of years.
   - Scientists are researching a process called transmutation, that would recycle the radioactive elements in nuclear fuel.
4. In a poorly designed nuclear plant, the fission process can potentially get out of control.
   - The Chernobyl reactor was destroyed in 1986 when an unauthorized test caused explosions and blasted radioactive materials into the air.
   - Hundreds of people in the Ukraine died from radioactive exposure from this explosion.