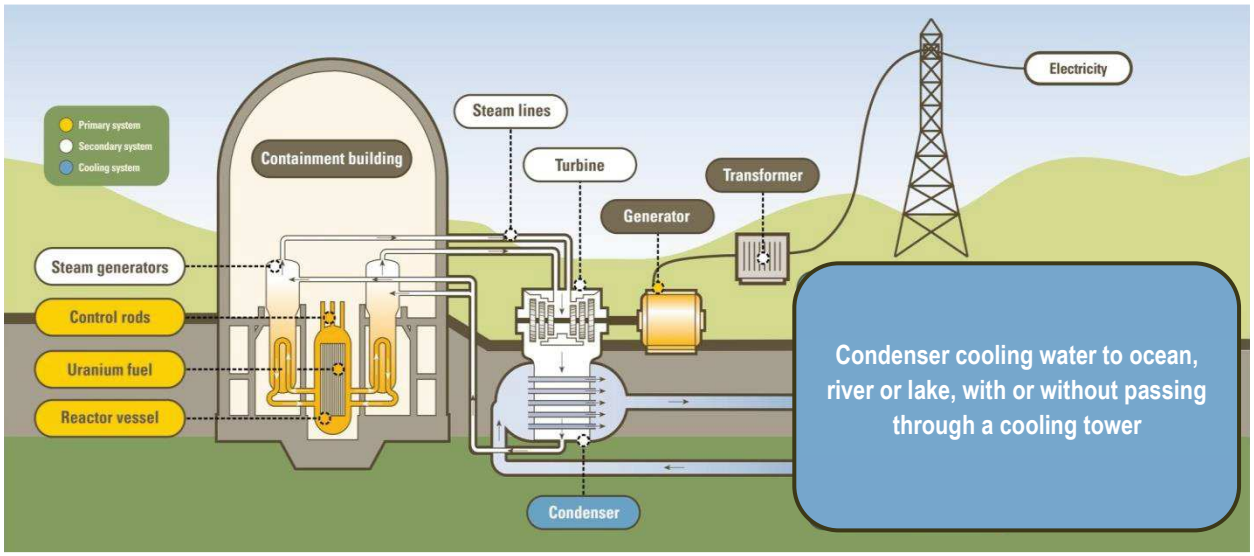
Energy Education Resources

Uranium to Electricity: How Nuclear Power Plants Work



In a nuclear-fueled power plant – much like a fossil-fueled power plant – water is turned into steam, which in turn drives turbine generators to produce electricity. At nuclear power plants, however, the source of heat comes from the splitting of uranium atoms – a process called fission.

There are two types of nuclear reactors in the U.S. – pressurized water reactors and boiling water reactors – that each generate steam in a slightly different way.

Here's how the process works.

1. Nuclear fuel is placed in the reactor core. Energy from the splitting of the nuclear fuel heats water.
2. In a pressurized water reactor, the heated water is circulated through tubes in steam generators, causing the water in the generators to turn into steam. In a boiling water reactor, water heated by fission actually boils and turns into steam.
3. The energy from the steam is used to drive a turbine connected to a generator.
4. The generator converts mechanical energy from the turbine into electrical energy.
5. After passing through the turbine, the steam is converted back into liquid water, cooled and then returned to a nearby body of water such as a lake.

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