

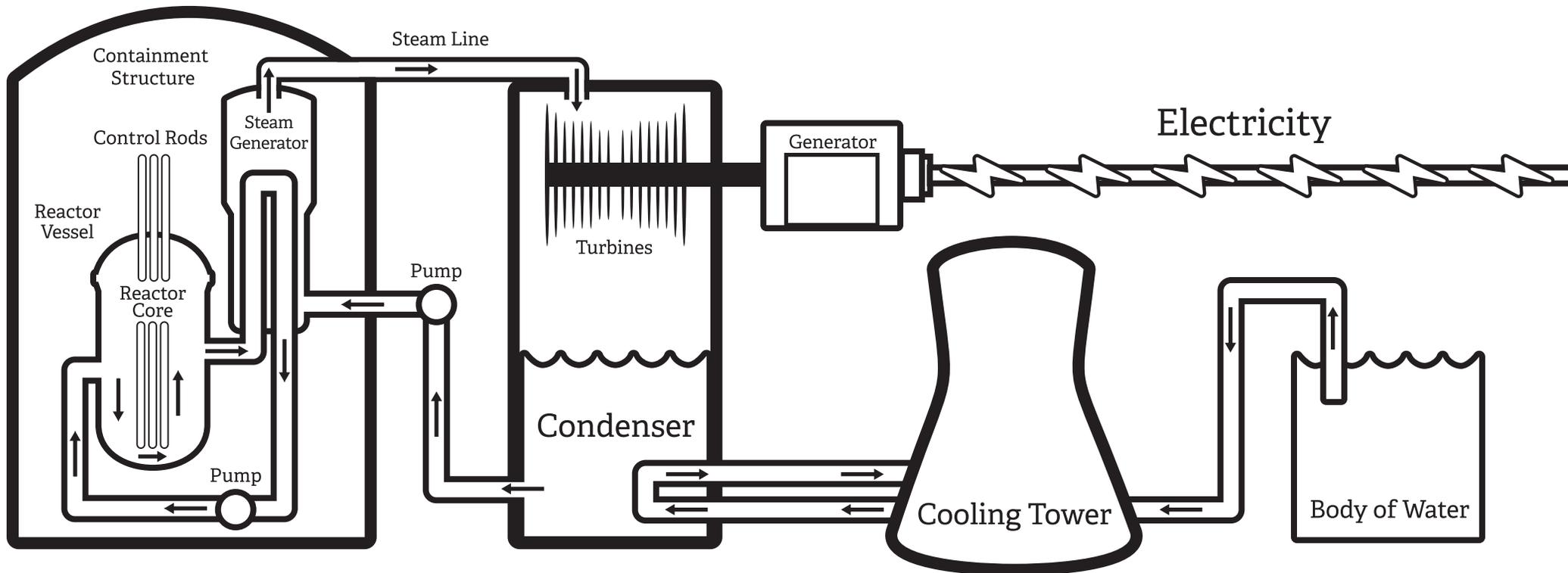
Pressurized Water Reactor

Nuclear power plants generate steam with the use of ceramic pellets made from uranium in the **reactor core** through a process called fission (splitting of atoms). Operation of the reactor is controlled by moving the **control rods** up or down from within the **reactor core** as well as by other plant parameters.

A pressurized water reactor uses three separate water systems. To begin, water is pumped under high pressure through the **reactor core** where nuclear fission heats the water to a temperature of about 630 degrees Fahrenheit. Because the water in the reactor is kept under high pressure, it does not boil into steam. Do you know at what temperature water normally boils? This hot water travels from the **reactor vessel** to the four **steam generators** – located inside the protective **containment structure** – before it is pumped back into the **reactor core**.

In the **steam generator**, cooler water in a separate system surrounds the tubes filled with hot water from the **reactor core**, which heats the cooler water until it boils into steam. This water does not mix with the reactor water. The hot steam passes to the **turbines** where it makes large blades spin much like a windmill when wind hits its blades. The **turbine** then spins an electric **generator**, producing **electricity**. After the steam is used from the turbines, it falls down into the **condenser** where it becomes liquid water again to continue the cycle.

The **condensers** cool by circulating water from a natural draft **cooling tower** using water from a **body of water**. This third, separate water system never comes in contact with the steam within the power plant or water in the reactor cycle.



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Use
the diagram of the
reactor to color the areas you
think would be hot and cool, or
just have fun and use your
favorite colors.

