

## How the Palo Verde Nuclear Generating Station Works

In most power plants, steam is used to make electricity. In fossil-fueled electric plants, the heat to make the steam is produced by burning coal, oil, or natural gas. At Palo Verde, heat is produced by splitting uranium atoms, a process known as fission.

Once the heat is produced, the generating process for nuclear power plants is essentially the same as that of fossil-fueled plants. Heat turns the water into steam. The steam drives a turbine that turns a generator that produces electricity.

The atom splitting process takes place inside a nuclear reactor, which contains the nuclear fuel. A tiny particle called a neutron strikes the center of a uranium atom and splits it. This process creates heat and releases more neutrons which collide with and split other uranium atoms to produce more heat. The process continues as a carefully controlled chain reaction.

Palo Verde uses a Pressurized Water Reactor (PWR), which has two separate closed-loop systems the primary system and the secondary system. In the primary system, water is pumped through the reactor and heated by the nuclear fuel. Since the reactor vessel is pressurized, the water does not boil. The heated water is pumped through a steam generator and back to the reactor. The steam generator acts like a boiler in a fossil-fueled plant, taking heat from the reactor water to boil water in the secondary system to create steam. This steam is used to spin the turbine-generator, which produces electricity. The steam is then condensed back into water and returned to the steam generator to be used over and over again. This is all done without creating airborne pollution like carbon dioxide or greenhouse gases.

