

Diablo Canyon Power Plant

How electricity is generated

Since 1985, Diablo Canyon Power Plant has safely generated more than 18,000 gigawatt-hours of electricity annually, enough to power nearly 3 million Northern and Central California homes. Like other large utility-scale power plants, Diablo Canyon creates electricity by producing steam that spins a turbine that rotates generators that produce electrical current. What makes nuclear power plants unique is their fuel source. Unlike how a fossil fuel plant burns coal, oil, or natural gas to heat water, a nuclear plant cleanly produces steam without creating greenhouse gasses. Here's how it works:

Uranium Pellets and Control Rods

Uranium is abundant in nature and found in rocks all over the world. It is mined, ground into a powder for easy transportation and then treated, purified and shaped into half-inch, ceramic pellets.



actual size

Roughly 14 million of these small pellets are then placed end-to-end inside long metal tubes called fuel rods. The fuel rods are grouped in bundles and arranged so that control rods – used to slow or stop the fission process – can be inserted into them. Nearly 200 assemblies are placed inside the reactor core, where the fission process takes place.

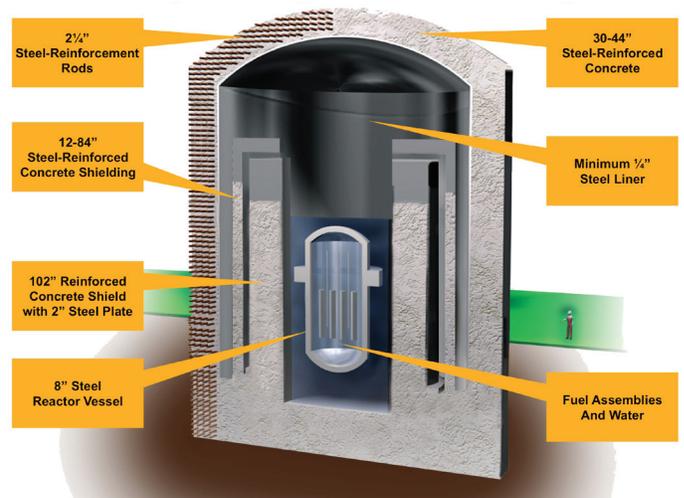
The Fission Process

When uranium atoms absorb an extra neutron, the atom splits into lighter atoms and more neutrons are released. These neutrons are then absorbed by other uranium atoms, creating a self-sustaining chain reaction. This process, called fission, generates heat energy. The heat energy creates steam that powers electricity-producing generators within Diablo Canyon.

Pressurized Water Reactor: Generating Steam to Spin a Turbine

Within Diablo Canyon are three independent water systems that are used to generate steam safely and efficiently. The energy created from

the fission process heats water within the primary system found in the reactor vessel. A pressurizer in the primary system keeps the water at a high pressure to prevent boiling, allowing the water to reach over 600 degrees Fahrenheit. This super-heated water then flows through tubes in the steam generator and heats a secondary, separate supply of water, which makes steam. The pressure from the steam spins a turbine, which drives a generator that produces



electricity. Finally, the third loop carries ocean water that is used to condense the steam in the turbine back into water. The ocean water is then returned to the ocean, while the condensed steam is pumped back into the steam generators to be reheated into steam, continuing the process.

Overlapping Safety Measures

Diablo Canyon was built with redundant safety systems that protect the plant from earthquakes, hurricanes, tornadoes, floods and even impact from an aircraft. Surrounding the nuclear reactors are large, steel-reinforced concrete containment domes. Standing 215-feet high, the containment domes are made of nearly four-foot thick concrete reinforced with six layers of thick steel rebar and an additional steel liner. Inside the containment dome sits the reactor vessel, constructed of eight-inch thick steel surrounded by multiple layers of reinforced concrete shielding.

About PG&E

Pacific Gas and Electric Company, a subsidiary of PG&E Corporation (NYSE: PCG), is one of the largest combined natural gas and electric utilities in the United States. Based in San Francisco, with 20,000 employees, the company delivers some of the nation's cleanest energy to 15 million people in northern and central California. For more information, visit www.pge.com/about



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