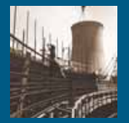
TVA's Nuclear Plants

TVA is the nation's largest public power provider, supplying electricity to large industries and 158 distributors that serve 8.3 million consumers in seven southeastern states. TVA also offers economic development services and manages the Tennessee River and its tributaries to provide multiple benefits, including flood control, navigation, water quality, and recreation. Although TVA is owned by the federal government, all of its programs and business operations are self-financed.

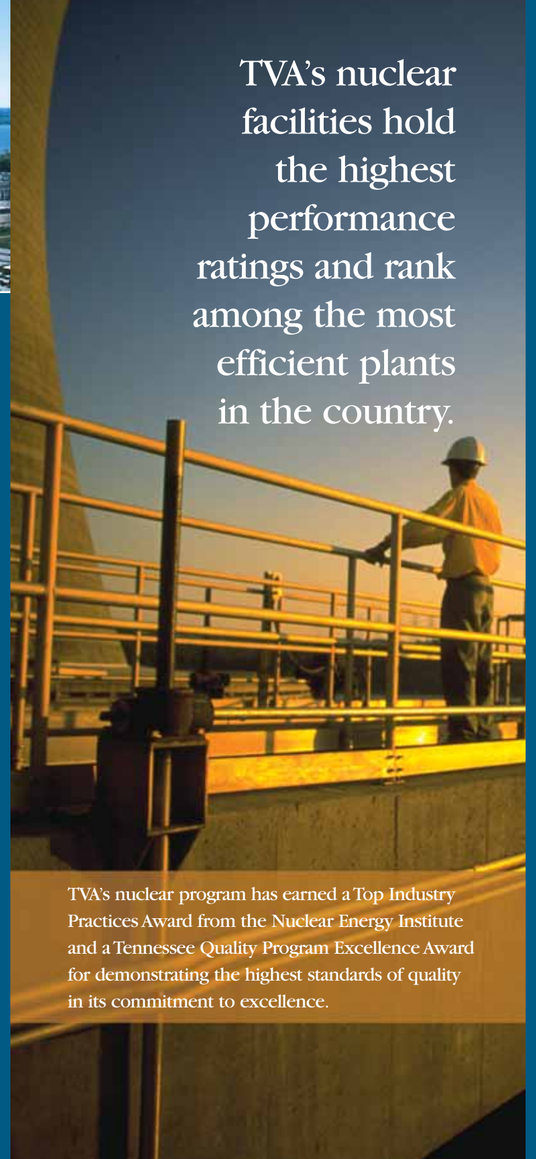
To provide affordable, reliable electric power for the Tennessee Valley, TVA relies on a flexible mix of energy sources—fossil, hydro, renewables, and nuclear power.

TVA began building nuclear power plants in the 1960s, responding to the growing prosperity of the Tennessee Valley and the rising demand for power. Today, TVA's three nuclear plants—



Watts Bar, in Spring City, Tennessee; Browns Ferry, in Athens, Alabama; and Sequoyah, in Soddy-Daisy, Tennessee — account for about 20 percent of the company's generating capacity. These plants are an integral part of TVA's diverse generating sources, providing enough power to serve more than three million homes in the Valley.

As part of its commitment to safety, TVA works closely with federal, state, and local agencies to ensure that emergency response plans are in place. These precautions are designed to protect the public and employees in the unlikely event of a nuclear incident at one of the power plants. In addition to working with emergency management agencies, TVA coordinates efforts with local, state, and federal law enforcement organizations to maintain a seamless security system.



TVA's nuclear facilities hold the highest performance ratings and rank among the most efficient plants in the country.

TVA's nuclear program has earned a Top Industry Practices Award from the Nuclear Energy Institute and a Tennessee Quality Program Excellence Award for demonstrating the highest standards of quality in its commitment to excellence.

Looking ahead

TVA Nuclear is committed to continuing to provide safe, reliable, and affordable electric power to the Tennessee Valley into the future. As nuclear performance across the industry improves, TVAN's challenge is to continue to ensure safe plant operations and lead the competition while responding to increasing competition and restructuring of the electric business.

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Tennessee Valley Authority

Nuclear Plants

Browns Ferry Nuclear Plant

Browns Ferry, TVA's first nuclear plant, is located on Wheeler Reservoir in North Alabama. It's named after the ferry that operated at the site until the middle of the 20th century.

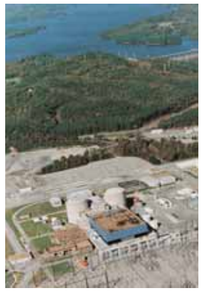
Major construction on Browns Ferry, which consists of three boiling water reactors, began in 1967. Unit 1 began commercial operation in 1974, Unit 2 in 1975, and Unit 3 in 1977. When it was completed, Browns Ferry was the largest nuclear plant in the world. Its approximate winter net dependable generating capacity (the amount of dependable power it can put into the TVA power system when demand is greatest) is 2,285 megawatts, enough electricity to meet the needs of about 1.3 million homes.

Sequoyah Nuclear Plant

Named after a Cherokee Indian who invented an alphabet that was the tribe's first written form of communication,

Sequoyah is located on Chickamauga Reservoir north of Chattanooga, Tennessee.

Sequoyah was the second TVA nuclear plant, beginning operations in 1981. The plant has an approximate winter net dependable generating capacity of 2,320 megawatts, which means it can produce enough electricity to supply 1.3 million homes a day.



Watts Bar Nuclear Plant

TVA's third nuclear plant, Watts Bar, is located at the northern end of Chickamauga Reservoir in east Tennessee. The plant was named for a bar at Watts Island that blocked navigation in the Tennessee River channel until it was flooded by Watts Bar Reservoir.

Watts Bar Unit 1 began full commercial operation in 1996 and has an approximate winter net dependable capacity of 1,167 megawatts, providing enough electricity to supply approximately 650,000 homes a day.

How nuclear power plants work

Power plants convert a source of energy into electricity. Most plants do that by heating water to create steam, which turns a turbine that drives the electric generator. Inside the generator, a large electromagnet spins within a coil of wire, producing electricity.

A fossil plant burns coal or oil to make heat. A nuclear plant uses slightly enriched uranium dioxide for fuel. The uranium dioxide is made into pellets and sealed in long metal tubes called fuel rods. The rods are bundled together in fuel assemblies that are placed in the reactor.

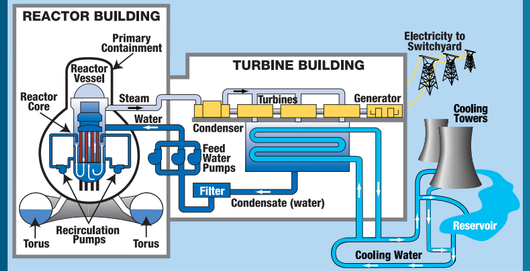
How reactors produce heat to generate electricity:

- As the nuclear plant starts up, uranium atoms in the fuel rods release particles called neutrons.
- When the neutrons strike the uranium atoms, the atoms split, producing heat and releasing more neutrons.
- Those neutrons strike other atoms, causing them to split. This process continues in a chain reaction, creating the heat needed to turn water into steam.

The two main types of nuclear reactors are boiling water reactors and pressurized water reactors.

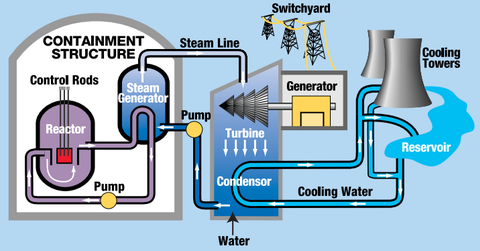
How a boiling water reactor, like those at Browns Ferry, operates:

- Water (dark blue) is pumped through the reactor and is heated by the fuel rods.
- The water boils, turning to steam (light blue).
- The force of the expanding steam drives the turbines, which spin the generator to produce electricity.
- After its energy is used up in the turbines, the steam is drawn into a condenser, where it is cooled back into water and reused in the reactor.



How a pressurized water reactor, like those at Sequoyah and Watts Bar, operates:

- Water (purple) is heated by the fuel rods but is kept under high pressure inside the reactor so that it doesn't boil.
- The hot water from the reactor passes through tubes inside a steam generator, where the heat is transferred to water flowing around the tubes.
- The water (blue) in this secondary loop boils and turns to steam (light blue).
- The steam turns the turbines that spin the generator to produce electricity.
- After its energy is used up in the turbines, the steam is drawn into a condenser, where it is cooled back into water and pumped back to the steam generator.



The availability of an ample supply of water for cooling is critical for the successful operation of nuclear and coal-fired plants. TVA manages the Tennessee River system to meet the cooling-water needs of its generating plants while balancing the public benefits of navigation, flood control, power supply, water quality, and recreation.

For information on each of these generating plants, go to **www.tva.com/sites.**