

Valley facts

*a guide to the
Tennessee Valley Authority*





All About the Tennessee Valley Authority



The Tennessee Valley Authority is the nation's largest public power provider, generating electricity that serves about 8.5 million people through local distributors. This unique federal corporation provides affordable, reliable electricity for consumers in the seven-state Tennessee Valley region. But TVA does much more than generate power. It also works to support economic development in the Valley and serves as an environmental steward of the nation's fifth-largest river system.



What TVA Does

Supplies affordable, reliable power

Three hundred sixty-five days a year, TVA is on the job. It generates electricity at 29 hydroelectric dams, 11 coal-fired plants, six combustion turbine sites, three nuclear plants, a pumped-storage hydropower plant, and 17 green power sites that employ wind turbines, methane gas, and solar panels. That energy travels through 17,000 miles of TVA transmission lines and a network of 158 local distributors to reach the homes and businesses of about 8.5 million people. In addition, research and development activities at TVA showcase technologies that will shape the future of power production and delivery.



Learn more online at www.tva.com/power.

Supports a thriving river system

TVA manages the Tennessee River system in a comprehensive way to ensure that various goals are appropriately supported. TVA dams prevent millions of dollars in flood damage annually and generate clean, efficient electric power. The river highway formed by TVA's dams and locks—652 navigable miles on the Tennessee River alone—helps speed almost 50 million tons of goods to market each year. Careful stewardship protects invaluable wildlife habitat and a vast supply of drinking water that serves more than four million people. TVA also manages about 100 public recreation areas that offer opportunities



for boating, fishing, hiking, and camping.

TVA holds all these uses of the river in a delicate balance. It has managed the river's resources since 1933, and its years of stewardship experience add up to one clear result: maximum benefits for everyone in the Tennessee Valley.

Learn more online at www.tva.com/river.

Stimulates economic growth

For more than 70 years, TVA has been working to help generate prosperity in the Tennessee Valley. In partnership with public and private organizations, TVA has helped attract a diverse set of major industries that have fostered a highly talented workforce in the region. Through its economic development programs, TVA offers an abundance of services and financial resources, such as capital investment loans for new and expanding businesses, site-selection services, small- and minority-business support, community development, economic research, and technical services, including engineering and architectural design. All of this direct support to the Valley economy has helped companies add or retain hundreds of thousands of jobs. The fact is that economic development is at the core of TVA's reason for being—to improve the quality of life in the Tennessee Valley.



Learn more online at www.TVAed.com.



The Business of Public Power

TVA is different from utilities that have shareholders, people who expect a financial return. Instead, TVA has stakeholders—the Tennessee Valley residents who have a vital stake in the resources we all share. That's what it means to be a public power company. And no tax dollars support TVA's programs; they're entirely financed from power operations. In fact, TVA pays more than a quarter of a billion dollars each year in lieu of taxes to state and local governments in the Valley. These payments help fund schools, roads, and other public services.

Providing power in the public interest is what drives TVA's bottom line. What is the company doing to make sure that it continues to bring its unique mix of benefits to the Tennessee Valley?

STRATEGIC OBJECTIVES

- **Improving life in the Tennessee Valley through integrated management of the river system and environmental stewardship.** *TVA continues to balance the competing demands on the river system and carefully manage the environmental and safety impacts of all its operations.*
- **Meeting customers' needs with affordable, reliable electric power.** *TVA's power system has maintained 99.999 percent reliability over the past four years.*
- **Demonstrating leadership in sustainable economic development in the Valley.** *In 2003, TVA and its partners attracted or retained some 47,000 jobs in the Valley, leveraging \$1.6 billion in projects.*

- **Continuing the trend of debt reduction.** *In the past seven years, TVA has reduced the balance of its statutory debt by \$2.8 billion.*
- **Reducing TVA's delivered cost of power relative to the market.** *TVA is improving production processes and cutting operating costs. It's also working closely with local distributors and directly served customers to ensure that TVA continues to be the power supplier of choice.*
- **Strengthening working relationships with all of TVA's stakeholders.** *TVA maintains an ongoing dialogue with stakeholders on important issues.*

Learn more about TVA's corporate objectives and strategic plan online at www.tva.com/abouttva.

Initiatives

TVA collaborates with partners on the following programs to help improve the quality of life in the Valley:

- **energy right®:** Facilitated through distributors of TVA power, this program helps everyone use electricity wisely at home and at work. Learn more at www.energyright.com.
- **Green Power Switch®:** TVA and local power distributors have created a program that produces electricity from renewable energy sources and adds it to the Valley's power mix. Learn how at www.tva.com/greenpowerswitch.
- **Geothermal Heat Pumps:** TVA and local power distributors help schools and businesses across the Valley with technical assistance, feasibility studies, and financial incentives for innovative geothermal heat pump systems. Geothermal systems take advantage of constant ground temperatures to lower heating and cooling bills. Learn more at www.tva.com/products/business/geothermal.htm.



Plant and Reservoir Profiles

TVA's power system derives flexibility and reliability from its diverse generation mix. Coal-fired plants and combustion turbines provide about 60 percent of total generation, nuclear plants about 29 percent, and hydro plants 11 percent. Green power also adds to the mix.

Coal-Fired Plants

- TVA's coal-fired plants generated 91 billion kilowatt-hours of electricity in 2003, the 11th straight year of coal-fired generation greater than 90 billion kilowatt-hours.
- TVA has spent more than \$4 billion on emission control equipment at its coal-fired plants since 1970. Almost \$6 billion will have been spent when the new nitrogen oxide emission controls are operating and five additional scrubbers are installed at four plants.

Combustion Turbines

Combustion turbines are designed to start quickly to help to meet the demand for electricity during peak operating periods.

- Lagoon Creek Combustion Turbine Plant, completed in 2001 in West Tennessee, was the first TVA facility that generated power using combustion turbines alone. In 2002 TVA completed the Kemper County Combustion Turbine Plant, TVA's first generating plant in Mississippi. Combustion turbines are also located at four of TVA's coal-fired power plants.

Nuclear Plants

- Since 1998, TVA Nuclear has achieved an annual average production of nearly 45 million megawatt-hours of electricity at an average capacity factor of 91 percent.
- In February 2003, TVAN received the prestigious Tennessee Quality Excellence Award, presented to organizations that demonstrate excellence through their practices and achievements and serve as world-class role models for others.
- TVA's three nuclear plants ranked among the most efficient generators in the country for 2002 and the three-year period of

2000 to 2002, according to *Nucleonics Week* magazine.

TVA is the only utility on the list that has three plants among the 15 most efficient generators for the period.

Hydro Plants

TVA hydro plants not only contribute to power generation but also create reservoirs that provide navigation, flood control, and recreation opportunities.

- Fontana Dam, located in the mountains of western North Carolina, is the highest dam east of the Rocky Mountains. The Appalachian Trail, which extends 2,000 miles from Georgia to Maine, crosses the top of Fontana Dam.
- Raccoon Mountain Pumped-Storage Plant near Chattanooga, Tennessee, has a generating capacity of 1,532,000 kilowatts of electricity, making it TVA's most powerful hydro facility. Water is pumped to a mountaintop reservoir and then released to generate electricity when more power is needed.

Green Power

- TVA's Green Power Switch program gives Valley residents the opportunity to choose renewable energy to supply their needs. TVA has built a wind power site on Buffalo Mountain in East Tennessee and 15 solar sites across the Valley. Methane from a wastewater treatment plant is also burned to provide electricity for the program.

Power Transmission

- TVA's dependable transmission system has achieved 99.999 percent reliability for four years running. TVA supports regional solutions to industry-wide transmission issues and is working on agreements with nearby utilities and transmission organizations to coordinate electricity flow, strengthen grid reliability, and minimize the risk of future disturbances on the interconnected grid.

Learn more about all of TVA's power plants and reservoirs at www.tva.com/sites.

Where TVA Is



LEGEND

- State Line
- Water
- Power Service Area
- TVA Watershed
- TVA Hydroelectric Dam
- TVA Non-Power Dam
- TVA Coal-Fired Plant
- TVA Nuclear Plant
- TVA Combustion Turbine Plant
- TVA Pumped-Storage Plant
- TVA Customer Service Office
- TVA Economic Development Office
- Green Power Switch® Solar Site
- Green Power Switch® Wind Site
- Green Power Switch® Methane Site

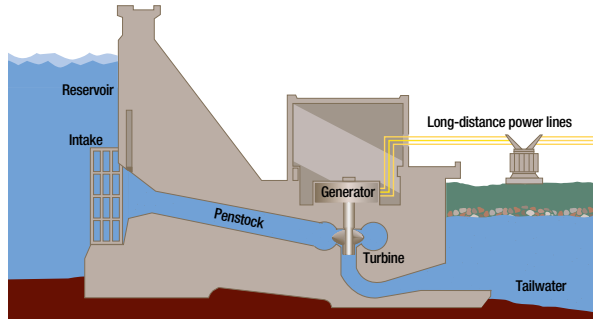
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How TVA Power Plants Work

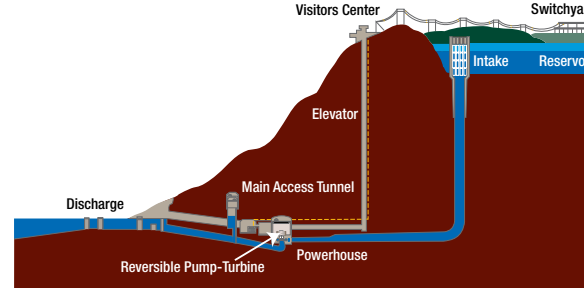


Hydroelectric Dam



Water from the reservoir rushes through the penstock into the powerhouse. The water spins the turbine, which drives the generator. Inside the generator is a large electromagnet that spins within a coil of wire, producing electricity.

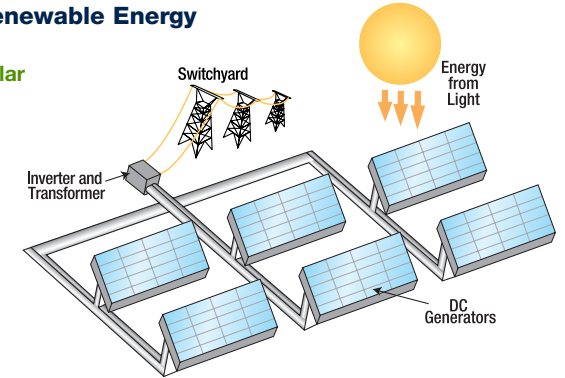
Pumped Storage



During periods of low power demand, the pump-turbine pumps water up into the mountaintop reservoir. During periods of high demand, water from the reservoir flows down through a tunnel drilled into the mountain, driving the generators in the underground power plant.

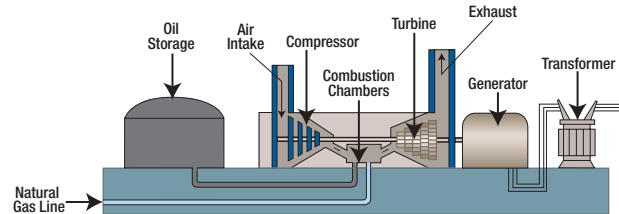
Renewable Energy

Solar



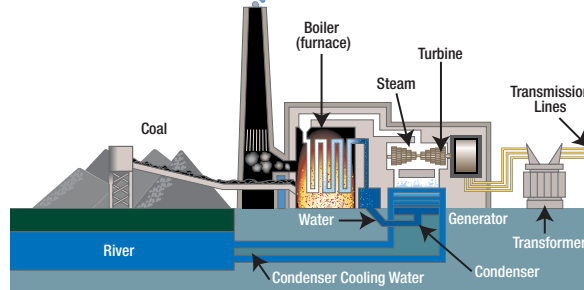
Photovoltaic (PV) systems use semiconductor cells that convert sunlight directly into electricity. Direct current from the PV cells, which are arrayed in flat panels, flows to inverters that change it to alternating current.

Combustion Turbine



The turbine burns either natural gas or oil. Fuel is mixed with compressed air in the combustion chamber and burned. High-pressure combustion gases spin the turbine, which drives the generator.

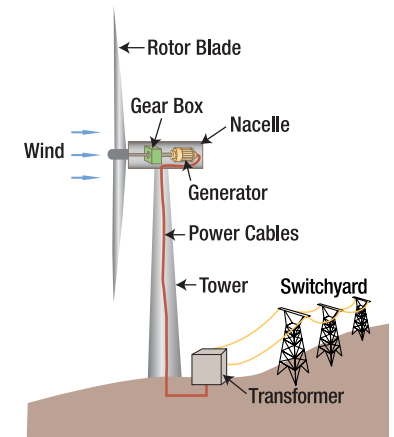
Coal-Fired



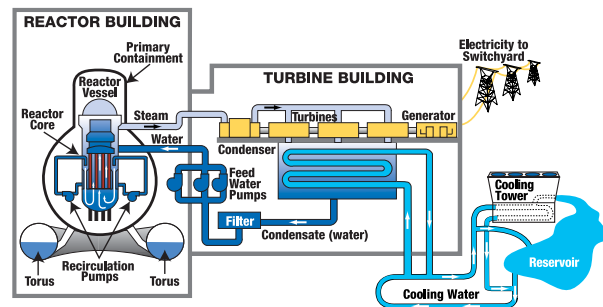
Coal burned in the boiler heats water to produce steam. The steam spins the turbine, which drives the generator.

Wind

A turbine and gear box are mounted in a casing called a nacelle, and rotor blades are attached to the turbine. The turbine localizes the energy of the turning rotor blades in a single rotating shaft that generates electricity.

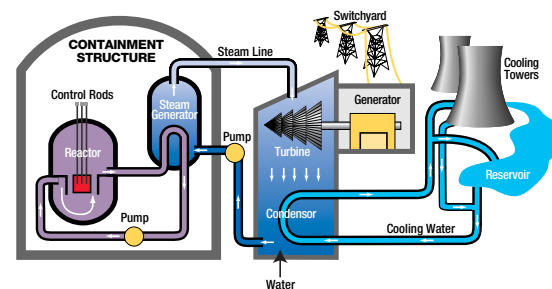


Nuclear—Boiling Water Reactor



Water is heated through the controlled splitting of uranium atoms in the reactor core and turns to steam. Pumps force the water through the reactor at top speed, maximizing steam production. Steam drives the turbines that turn the generator to make electricity. Cooling water drawn from the river condenses the steam back into water. The river water is either discharged directly back to the river or cooled in the cooling towers and reused in the plant.

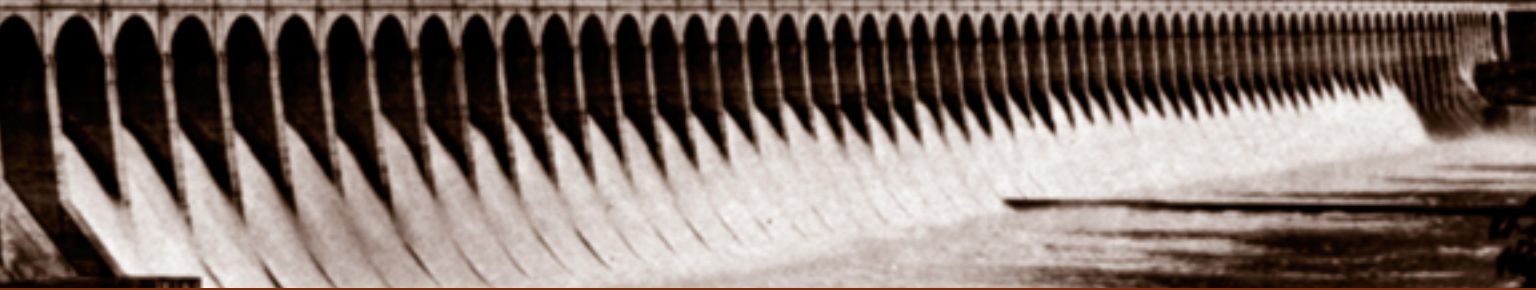
Nuclear—Pressurized Water Reactor



Water is heated through the splitting of uranium atoms in the reactor core. The water, held under high pressure to keep it from boiling, produces steam by transferring heat to a secondary source of water. The steam is used to generate electricity. Cooling water from the river condenses the steam back into water. The river water is either discharged directly back to the river or cooled in the cooling towers and reused in the plant.

Green Power Switch Fast Facts

- For three years in a row, TVA's Green Power Switch program has earned a ranking in the top 10 green pricing programs from the National Renewable Energy Laboratory.
- TVA's wind power site near Oak Ridge, Tennessee, is undergoing an expansion that will increase the number of wind turbines from 3 to 18. The expanded facility will provide enough power for 3,525 homes.
- TVA has 15 solar photovoltaic sites located throughout the Tennessee Valley. Daily generation figures for each site are available at www.greenpowerswitch.com.



The History of TVA

It all began in 1933, when Congress signed the TVA Act. The legislation created a new kind of federal agency, one “clothed with the power of government but possessed of the flexibility and initiative of a private enterprise . . . charged with the broadest duty of planning for the proper use, conservation, and development of the natural resources of the Tennessee River.”



TVA completed Norris, its first dam, in 1936. By the end of World War II, the agency had built 16 more. Electric power wasn't the only benefit of these dams. They were built mainly to provide a channel for



commercial navigation and to prevent the flooding that had ravaged the Tennessee Valley. Those benefits drew industry to the region, creating desperately needed jobs and building a strong agricultural base. And the newly navigable river linked the Valley to the

inland waterway system, opening an avenue for importing and exporting goods and increasing the Valley's economic viability.

As the century progressed, so did TVA. In 1959 the agency's power program became self-financed; it was no longer tax-supported, but began to pay its own way. To meet the Valley's growing energy needs, TVA expanded its power production facilities, adding fossil fuel and nuclear energy plants in the 1950s, '60s, and '70s. Today Valley residents pay electricity rates that are among the lowest in the nation, and TVA serves as a global example of sustainable resource management and economic development.



Learn more online at www.tva.com/abouttva.

Learn More About TVA

Want to know more about the nation's largest public provider of electric power? Go to www.tva.com.

Other important sources of information:

- Get up-to-the-hour reservoir-level information and water-release schedules at <http://lakeinfo.tva.com>, or call one of these numbers:

Knoxville, Tennessee: 865-632-2264

Chattanooga, Tennessee: 423-751-2264

Muscle Shoals, Alabama: 256-386-2264

Elsewhere in the Tennessee Valley: 800-238-2264 (toll-free)

TDD (hearing impaired): 800-438-2264

- Find out about employment opportunities at www.tva.com/employment, or call 888-275-8094.
- Read more about TVA economic development at www.TVAed.com.
- Learn about shoreline property use and current land-use actions at www.tva.com/river/landandshore.
- Locate TVA reservoirs and power plants at www.tva.com/sites.
- Shop for topographic maps, aerial photography, and navigation charts at <http://maps.tva.com>, or call 800-MAPS-TVA (800-627-7882).
- Browse our catalog of surplus materials at www.tva.com/surplus, or call 615-374-7400.
- TVA Watershed Teams work to improve water quality and reservoir access across the Valley. Contact your team at www.tva.com/river/landandshore/landuse_contacts.htm.
- Get information on investing in TVA power bonds at www.tva.com/finance.

www.tva.com