Operational Performance

TVA is the largest public-power company in the nation and ranks among the largest generators of power in the country. TVA plays a vital role as a public-power provider, dedicated to protecting the public interest in a rapidly changing industry.

In recognition of the vital role it plays and its status as a public-power entity, TVA is committed to excellence in operational performance and efficiency.

A commitment to operational excellence includes operating in an environmentally responsible manner. TVA is making appropriate investments in clean-air controls to protect the environment of the Tennessee Valley.

The TVA Power System – Highlights of Demand and Supply

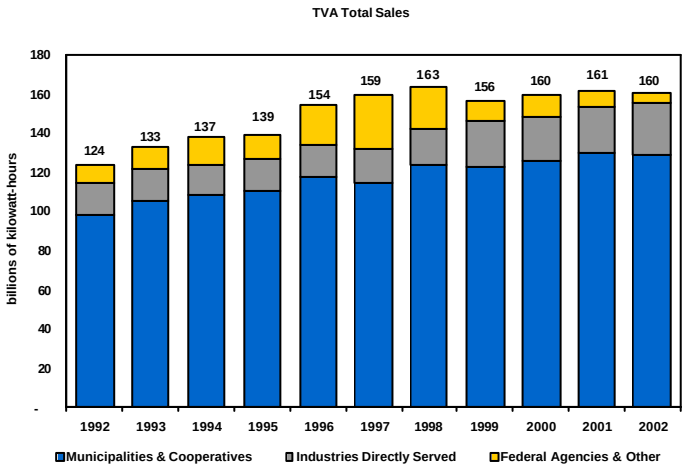
Demand	Supply
• **29,866 megawatts on January 24, 2003 – all-time record peak power demand.** • **29,052 megawatts on August 5, 2002 – second-highest summer peak power demand.** • **8.3 million Valley consumers** • **158 power distributors** • **62 directly served customers** • **11 exchange-power arrangements** • **Weather-adjusted demand growth of two percent per year over the last decade** • **Annual load factor of 63 percent**	• **31,517 MW of net winter dependable capacity** • **11 fossil plants (59 units)** • **3 nuclear plants (five units)** • **29 hydro plants (109 units)** • **6 combustion-turbine plants (72 units)** • **14 solar-energy arrays** • **3 wind turbines** • **2 methane-gas facilities** • **1 pumped-storage plant (four units)** • **17,000 miles of transmission lines** • **984 interchange and connection points**

Committed to Performance

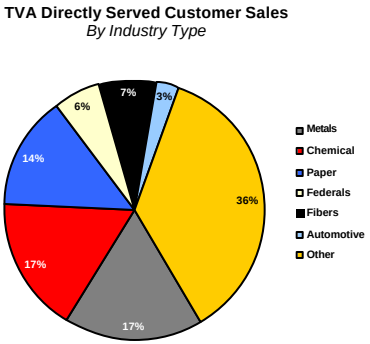
TVA operates one of the largest and most efficient power systems in North America, meeting the needs of the area it serves. The TVA system provides power directly to large federal installations and industries and 158 public-power distributors that, in turn, provide power to commercial and industrial customers and more than eight million people within a service territory of 80,000 square miles that spans parts of seven states.

Demand in the Valley

In 2002, TVA sold more than 160 billion kilowatt-hours of electricity. Most of TVA's sales growth in the last several years has come from municipal and cooperative distributors of TVA power, which has offset reduced demand from federal agencies and other customers. Demand across the Valley is expected to continue to grow steadily as the population of the region increases. By 2010, the population of the TVA service region is expected to surpass 9 million, growing at a rate slightly higher than the national average.



The economic diversity of the Tennessee Valley region plays a role in keeping power demand strong. A breakdown of TVA power sales to directly served industries, some of the largest power customers in the Valley, shows that TVA sells power to a variety of industrial customers.



TVA maintains a reliable and efficient system to meet this demand while selling power at the lowest feasible rates. Part of what helps deliver the generation reliability that TVA customers rely on is a diversified fuel mix. TVA uses a variety of generating sources to provide the power the Valley needs:

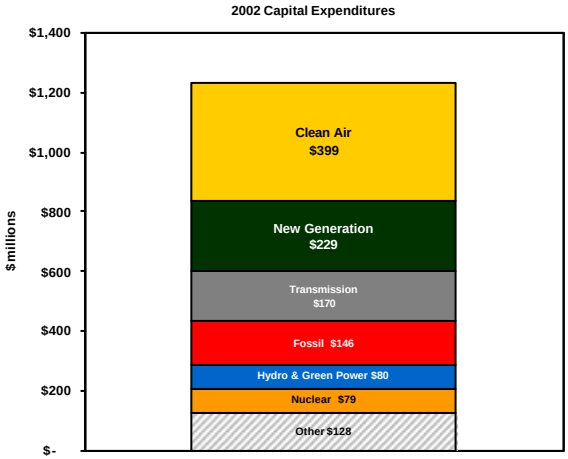
TVA System Capacity
net winter dependable (MW)

	Capacity	Percent of System Capacity
Fossil	15,463	49%
Nuclear	5,751	18%
Hydro	5,660	18%
Combustion Turbine	4,643	15%
System Capacity*	31,517	100%

**Includes 440 MW of capacity contracted by TVA from the two-unit Red Hills Generation Plant owned by Choctaw Generation, LP, and 405 MW of dependable capacity from the U.S. Army Corps of Engineers projects on the Cumberland River system. Hydro capacity represented includes pumped-storage. Power from methane gas, solar, and wind sources is not included in this table.*

TVA relies on a large and reliable transmission infrastructure to deliver this power to its distributors and directly served customers. The TVA transmission system includes 17,000 miles with 984 individual interchange and connection points on 240,000 right-of-way acres across TVA's 80,000-square-mile service area. TVA manages the nation's fifth-largest river system to meet requirements for navigation, flood control, and water quality, while optimizing hydro generation and providing cooling water for fossil and nuclear power plants. The combination of a diversified generating portfolio, control of the river system, and a large, integrated transmission system collectively help to make TVA's power system reliable.

TVA has built this power infrastructure over many years, investing capital when and where needed to maintain the capability to meet demand in the Valley. TVA is continuing to make the necessary investments in its power system to make sure that it meets the Valley's power needs tomorrow, while increasing TVA's investment in clean-air equipment. In 2002 alone, TVA invested almost $400 million in clean-air equipment and over $200 million in new generation.



Despite the challenges of the past year, such as continued recov ery from five-year drought conditions, TVA's power system was able to meet several challenges without any interruptions in meeting its firm load.

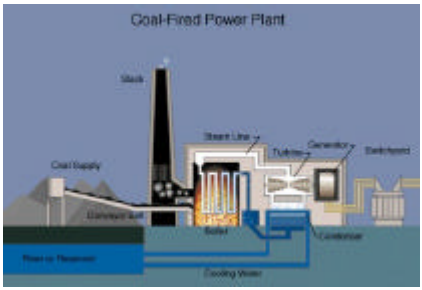
Power System Highlights

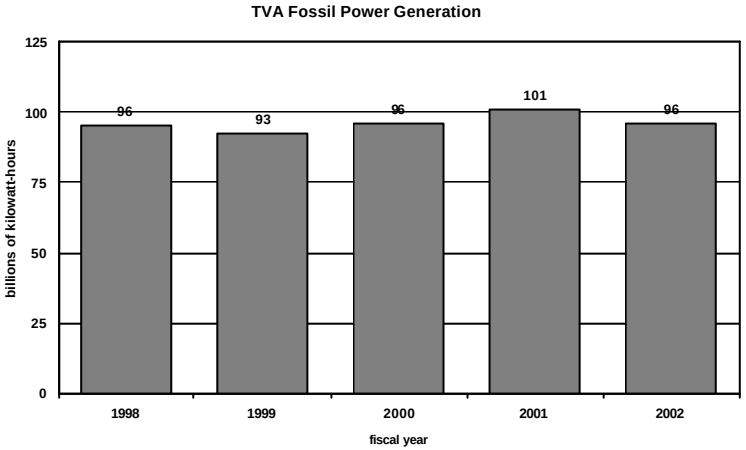
- TVA met an all-time record peak power demand of 29,866 megawatts on January 24, 2003, as temperatures dropped to an average of six degrees Fahrenheit across the Valley.
- In August, TVA met its second-highest record summer peak power demand across the Valley of 29,052 megawatts.
- TVA has added or acquired by contract access to more than 3,000 MW of generating capacity in the past five years, to help meet demand in the area it serves.
- TVA's Green Power Switch® program received the 2002 Federal Energy & Water Management Award, recognizing the program for its outstanding contribution to expanding renewable energy.

Fossil Power Highlights

The mainstay of TVA's power production portfolio is its fleet of 11 coal-fired fossil plants, which represent a combined 15,023 megawatts of dependable capacity. TVA's fossil system also includes 72 combustion-turbine units located at six different plant sites. These turbines are designed to start quickly to help meet the demand for electricity during peak operating periods. In 2002 alone, TVA's fossil units generated a collective 96 billion kilowatt-hours of electricity. This power represented 64 percent of TVA's total net generation for the year.

TVA fossil generation returned to more historically normal generation levels in 2002, after previously hitting the highest single-year fossil-system generation level on record the prior year. However, TVA's coal-fired plants continued to deliver record-breaking performance, producing more than 90 billion kilowatt-hours of electricity for the 10th year in a row.





Note: Includes generation from combustion-turbine units.

TVA fossil plants have set numerous continuous-run records and received several awards in 2002, for efficiency and reliability:

Efficiency –

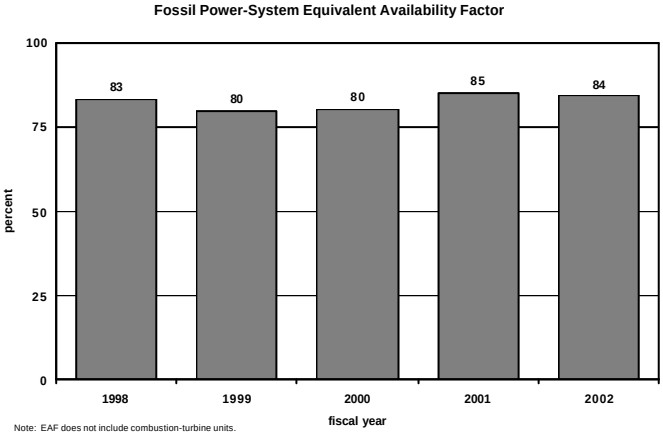
- Bull Run Fossil Plant was named the most energy-efficient coal-fired power plant for heat rate in the nation by *Electric Light and Power* magazine.
- Cumberland Fossil Plant was ranked in the top 10 in the nation for net generation by coal-fired plants by *Electric Light and Power* magazine.
- Paradise Fossil Plant was ranked in the top 20 in the nation in net generation by coal-fired plants by *Electric Light and Power* magazine.

Reliability –

- Gallatin Fossil Plant Unit 1 set a continuous-run unit record of 335 days in September, and Gallatin's Unit 2 set a 236-day unit record in October 2001.
- Kingston Fossil Plant Unit 1 set a unit record in September, running continuously for 326 days.
- Shawnee Fossil Plant Unit 10 set a 125-day unit record for continuous operation in September, and Shawnee's Unit 6 beat its 1970 record of 300 days, running nonstop for 313 days until being taken off-line in April.

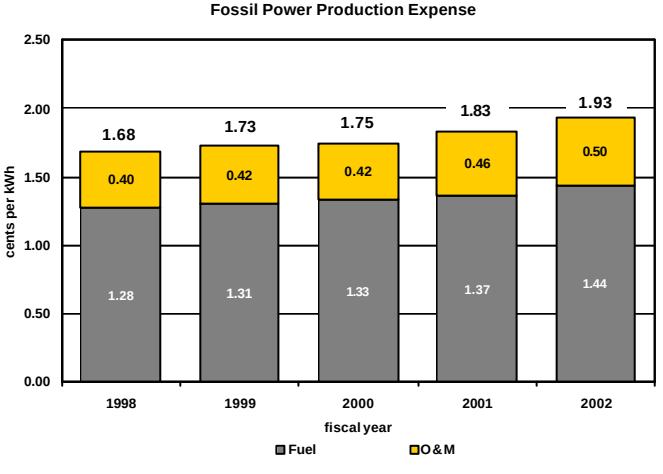
- John Sevier Fossil Plant Unit 2 set a unit record in September, when it was taken off-line for a planned outage, having run nonstop for 282 days.
- Cumberland Fossil Plant Unit 2 set a unit record in January for running 201 days nonstop.
- Allen Fossil Plant Unit 1 completed a 190-day record run in March.
- Widows Creek Fossil Plant Unit 3 was taken offline in June after running continuously for a unit record of 176 days.

TVA's fossil system had an average Equivalent Availability Factor (EAF) of 84 percent in 2002. EAF is a measure of available generation in a given period as a percent of potential total generation if the units were running continuously at maximum capacity. Fossil system-wide availability factor varies from year to year as a result of differences in planned and unplanned outages.



Note: EAF does not include combustion-turbine units.

TVA's fossil-system production expense on a per-kilowatt-hour basis increased slightly in 2002. The increase was due to higher fuel cost and maintenance expense

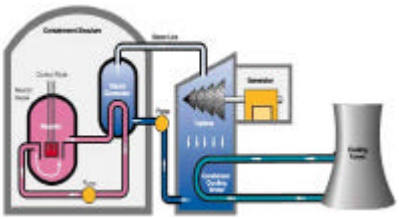


In 2002, TVA added four combustion-turbine units, totaling 340 megawatts both at its Lagoon Creek site near Brownsville, Tennessee, and at a new site in Kemper County, Mississippi. TVA has added 24 new combustion turbines to its power system over the past three years.

TVA Nuclear Power Highlights

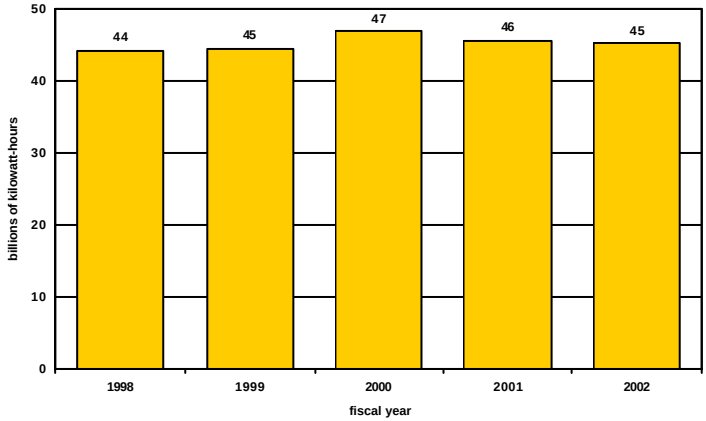
TVA's nuclear operations are critical to providing the power needed to meet Valley demand. In 2002, TVA's nuclear units generated 45 billion kilowatt-hours of electricity for the Tennessee Valley, which represented 30 percent of TVA's total net generation.

In the past year, *Electric Light and Power* magazine ranked Sequoyah Nuclear Plant and Browns Ferry Nuclear Plant in the top 10 and top 20 plants, respectively, for net generation by U.S. nuclear power plants. In December 2002, TVA's nuclear group received the Tennessee Quality Excellence Award for its business practices and achievements.



Pressurized Water Reactor

TVA Nuclear Generation

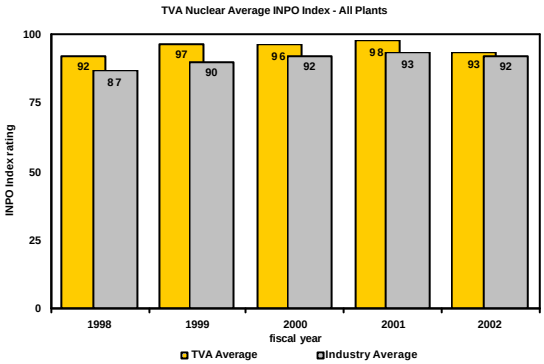


Operational Performance

All three of TVA's nuclear plants have received an excellent rating from the Institute of Nuclear Power Operations (INPO),* an industry organization that provides accreditation, evaluation, technical assistance, and specialized management training to commercial nuclear-power plants. This rating indicates overall excellence in plant operation and that the plants have met industry standards with no significant weaknesses.

TVA's nuclear plants had an average INPO Index score of 93 in 2002, which remained above the industry average of 92.* This index score is a common industry measure of safety, reliability, and plant performance.

Note: The INPO Index was modified in January 2001, which had some effect on TVA's ratings and on indicator trend comparisons.

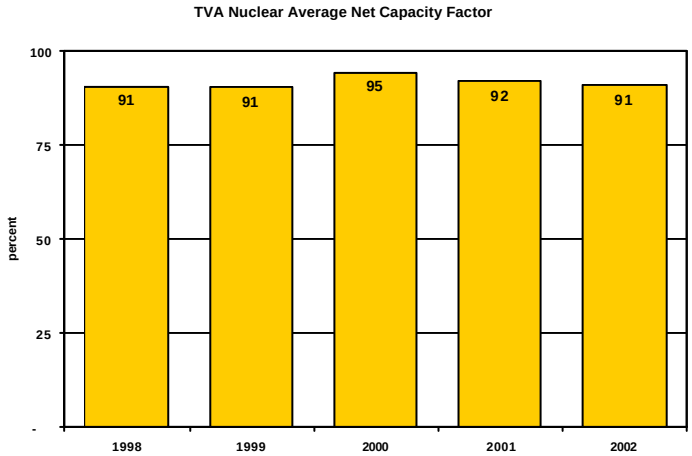


Note: Industry average for 2002 is through September 2002.

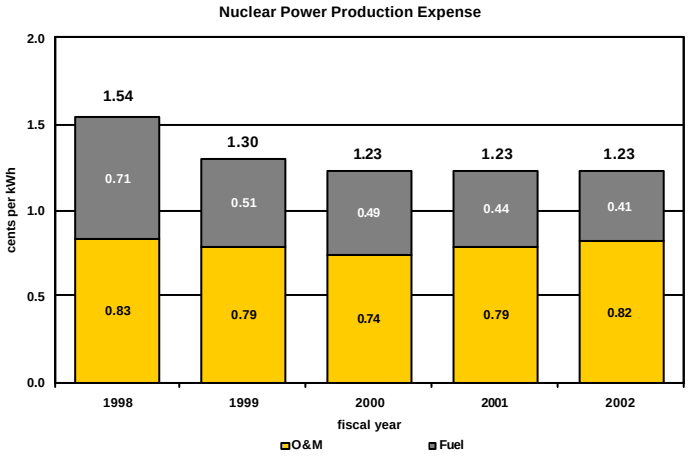
One of TVA's strategic objectives is to reduce the delivered cost of power relative to the market. In 2002, TVA began work to bring the Browns Ferry Nuclear Plant Unit 1 reactor back on-line as part of meeting this objective. TVA expects this unit to provide more than 1,200 additional megawatts of clean, safe, and low-cost power to the TVA system when it becomes operational in 2007. Browns Ferry Unit 1 is expected to have a low operating cost and should reduce TVA's delivered cost of power by 0.09 cents per kilowatt-hour in its first full year of operation.

One of the best ways to measure the efficiency of nuclear plants is with a measure called "capacity factor." Capacity factor is the ratio of the electricity produced by a generating unit over a period of time, compared to the energy that could have been produced at continuous full-power operation during the same period. TVA's average nuclear net capacity factor remained above 90 percent for the fifth straight year, with an average of 91 percent in 2002.

TVA's nuclear units are base-load plants, meaning they run continuously while in service. So, capacity factor for TVA's nuclear units shows what the plants produced versus what the units were capable of producing in the same time period. Fossil-unit production, by comparison, varies to meet load demand, so equivalent availability factor (EAF) is a more appropriate measure for these plants. EAF is a measure of what the units could have produced if needed versus what they are capable of producing in the same time period.



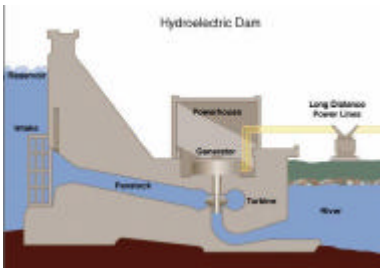
Another measure of efficiency is production operating cost. TVA's nuclear production operating cost, as measured in cents per kilowatt-hour produced, has been reduced by more than 20 percent since 1998.

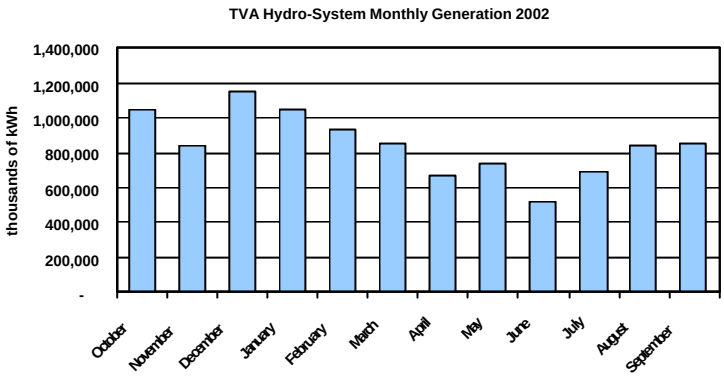


Hydro Power Highlights

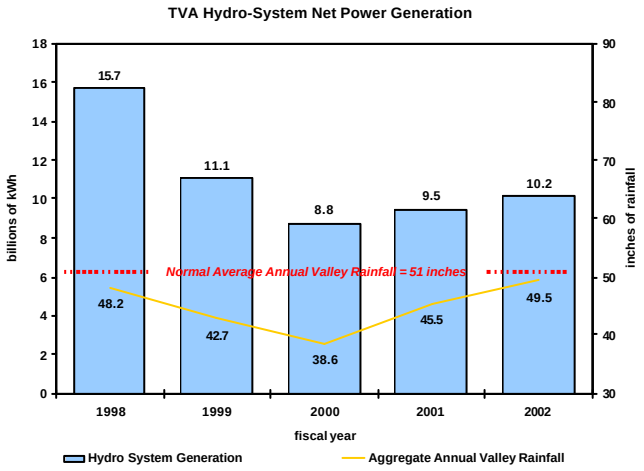
In 2002, TVA's integrated hydro-power system of dams and pumped-storage units generated more than 10 billion kilowatt-hours of electricity – almost seven percent of TVA's total net generation. While hydro power represents a smaller amount of total net generation than other sources, hydro power represents a very important element in TVA's total portfolio.

TVA's hydro facilities have very low operating costs and can be used as base-load, intermediate, or peaking units based on water availability and system needs. TVA's Raccoon Mountain pumped-storage facility allows TVA to store electricity in the form of potential energy by pumping water, using inexpensive off-peak electricity, to a mountain-top reservoir. This water can be used to generate electricity on-peak when power is more expensive or otherwise unavailable. In addition, hydro units can provide critical ancillary services such as load following, spinning reserves, black start, and voltage support (reactive power).

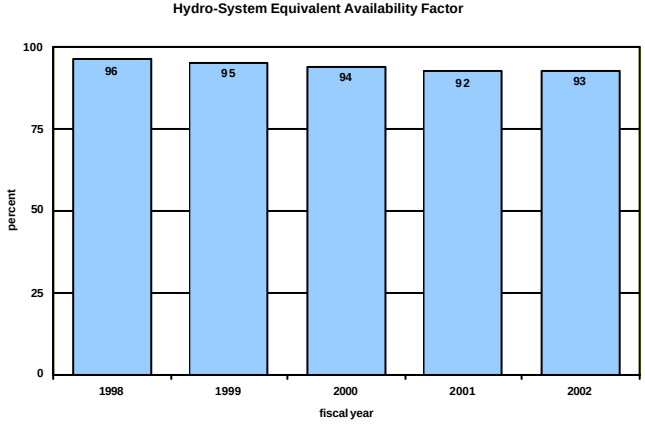




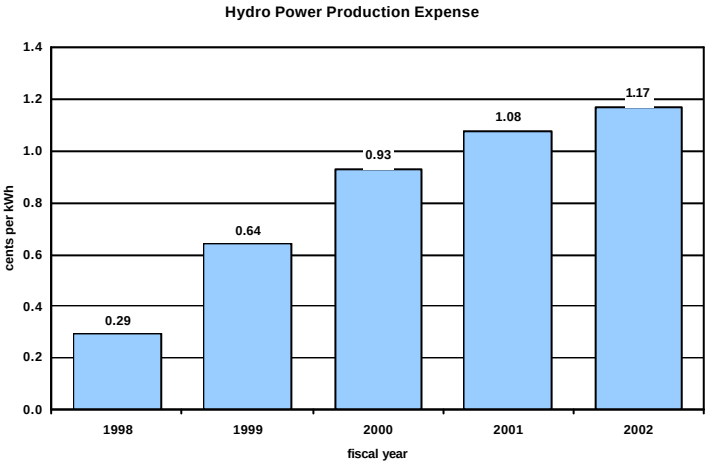
2002 marked the fifth year of drought conditions in the Valley. TVA's hydro power system net generation increased by seven percent in 2002, however, even as rainfall remained below normal. In addition to increasing hydro generation, TVA's integrated operation of its river and power system ensured that nuclear and coal units that relied on cooling water from the Tennessee River system could stay on-line while operating within regulatory limits despite low flows and high temperatures.



The major drivers of hydro-system equivalent-availability factor (EAF) are forced and planned maintenance outages. In fiscal year 2002, EAF was 93 percent. EAF will continue to fluctuate over the next few years due to planned outages for hydro automation and modernization efforts. The other major component of EAF is forced outage rate (FOR). TVA's forced outage rate performance was 32 percent better than the 1.5 percent achieved by a representative industry group during a recent benchmarking exercise.



Since hydro-system production costs are largely fixed, production expense on a per kilowatt-hour basis varies inversely with generation. Over the past few years, as extended drought conditions reduced water available for generation, hydro production expense per kilowatt-hour has increased. The large increases in hydro-production expense after 1998 are due to the reduction in appropriations in 1999 and the loss of appropriations beginning in fiscal year 2000, which increased the costs to the power system of TVA's river-system management activities. In 2002, increased maintenance and outage expense caused hydro power production expense per kilowatt-hour to increase even though output improved.



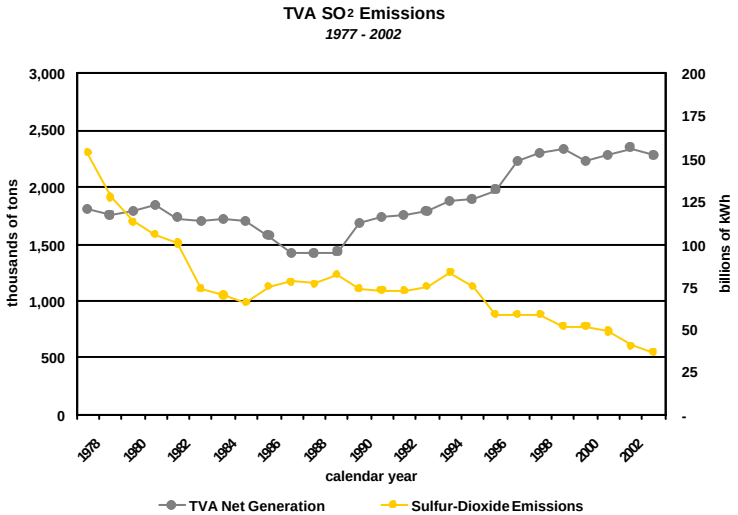
Investment in Tomorrow – Committed to the Environment

Environmental Investment – TVA is committed to operating its power system in an environmentally responsible manner and in compliance with all regulatory requirements. TVA creates some wastes, byproducts, and pollutants in the process of generating the power that the Tennessee Valley uses, but TVA is continuing to make investments to reduce the environmental impacts of power generation and will continue to do so in years to come. In fact, by 2010 TVA expects to have spent more than $5 billion on pollution-control equipment.

Clean-Air Facts – Since 1977, TVA has spent more than $3 billion on air-pollution-control systems. TVA has spent more than $1 billion in the past eight years alone and expects to spend another one-half billion dollars in 2003.

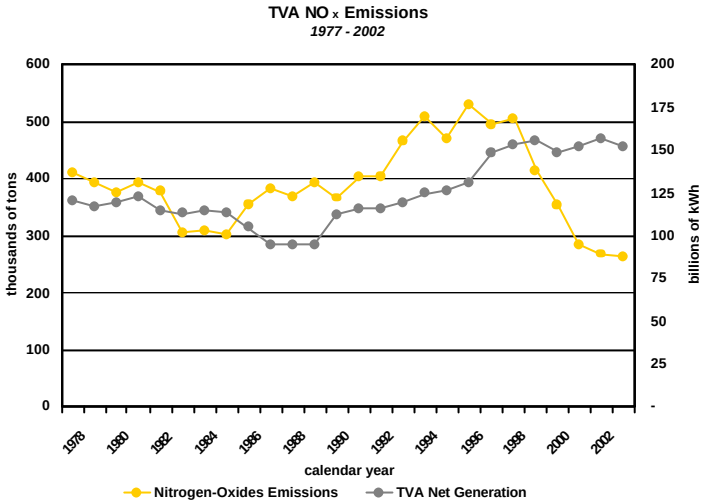
Clean-Air Expenditures millions of dollars								
Year	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Expenditure	**$139**	**$55**	**$37**	**$60**	**$92**	**$124**	**$200**	**$399**

This investment has led to a significant reduction in emissions of certain pollutants from TVA plants. Sulfur-dioxide (SO_2) emissions have been reduced by 76 percent from 1977 levels because of this investment, while nitrogen-oxides (NO_x) emissions during the summer ozone season have been reduced by more than 50 percent from 1995 levels.



TVA's continuing investment in air-pollution-control systems will ensure that it continues to do its part in reducing emissions and complies with environmental regulations. TVA plans to install another five scrubbers to further control SO_2 emissions from 12 of its coal-fired units.

Low NO_x burners or overfire-air modifications have been installed on 40 of TVA's 59 coal-fired units, and boiler optimization is being used on 19 units to further reduce NO_x emissions. TVA is in the process of installing Selective Catalytic Reduction (SCR) systems or similar controls on 25 units to help reduce emissions of NO_x from TVA plants. Four SCR systems are now installed and operable. NO_x emissions from TVA plants during the summer ozone season are projected to be 75 percent below 1995 levels by 2005 when the planned NO_x reduction equipment additions are completed.



In addition, TVA has been able to reduce, avoid, or sequester more than 120 million tons of carbon-dioxide (CO_2) emissions since 1995 by improving the efficiency and capacity of its hydro plants, co-firing biomass with coal at some coal-fired units, increasing the amount of power produced from nuclear sources, increasing forestry projects, and improving the efficiency of TVA's fossil system.

TVA is playing an active role in national research efforts addressing CO_2 sequestration. Other areas of emphasis are monitoring and removal of mercury from coal plant emissions and treating coal plant and mine runoff through the use of constructed wetlands. TVA reduces the amount of waste going to landfills through aggressive programs in by-product utilization and recycling. In 2002, 48 percent of TVA's flyash, bottom ash, and gypsum production was utilized which prevented 2.9 million tons of material out of landfills. In addition, over 1,000 tons of office waste and 15,000 tons of scrap metal were recycled.

TVA and Security

TVA has always taken security seriously. However, in light of the current environment, TVA is committed to doing even more to ensure that its facilities and processes are secure and that the continuity of its operations will continue uninterrupted. TVA has developed a color-coded system of levels of security, matching the color codes developed by the Department of Homeland Security. Each level has security measures of increasing intensity associated with it. TVA has also implemented an Agency Emergency Response Plan, to provide a Valley-wide response to emergency threats requiring integrated action, from predicted severe weather to terrorist activity. Some of the other measures that TVA has implemented include tighter restrictions on access to TVA facilities, an increased presence of TVA Police officers and contract security officers, and physical barriers around some facilities. TVA also has established agreements with state emergency management agencies to provide support from local law-enforcement agencies, highway patrol, Department of Transportation, and National Guard units.

TVA Police – TVA maintains its own federally commissioned, nationally accredited law enforcement organization that provides protection for TVA properties and employees as well as the 100 million annual users of TVA recreation facilities.

Secure Facilities – TVA has taken steps to protect its generation and transmission assets and supporting infrastructures. TVA's facilities are already secure, but as part of its commitment to assist with national security, TVA has been working vigilantly to ensure even greater security at its facilities. TVA's actions include anticipating emergency conditions, and TVA has emergency plans in place for critical functions and major operations. These operations include TVA's fossil, hydro, and nuclear plants and transmission system.

In the post-September 11th world, nuclear security, in particular, has become an important element of national security. In a Washington Post survey that covered 28 different sectors of homeland security, conducted in September of 2002, nuclear security was given a grade of A-/B+, the second-highest rating in the survey.

Cyber Security -- TVA has been working to ensure the security of its technology resources as well. TVA has deployed standard network and system protection mechanisms to protect TVA computing resources against cyber-attacks. TVA has instituted monitoring systems to detect cyber-attacks against critical TVA resources and has developed procedures to deal with cyber-attacks to minimize damage and quickly repair affected systems. TVA follows federal regulations and guidelines as well as industry best practices to protect TVA critical resources from cyber-attack.

Going Forward

TVA is committed to meeting the needs of the Valley through continued excellence in the operation of its power system. TVA plans to meet this goal by promoting success through initiatives like "Winning Performance" – a set of measures that TVA is using to help meet critical success factors. TVA will continue to seek ways to optimize the use of its existing assets. And, TVA will invest effectively in new generating capacity, transmission system improvements and clean air equipment – all of which are essential elements of TVA's core business and long-term success.