

4 T H Q U A R T E R

# 2002 Operational Report to Congress

J U L Y - S E P T E M B E R , 2 0 0 2

## *Highlights*

- The TVA transmission system ended the year with the best reliability performance ever achieved in TVA. TVA's peak load for the fourth quarter of Fiscal Year 2002 was 29,052 megawatts.
- As announced by the Institute of Nuclear Power Operations, Sequoyah and Browns Ferry nuclear plants earned excellent ratings in overall plant performance in their 2002 Plant Evaluations.
- Several TVA fossil plants received high rankings in the Top Plants Survey published in the August 2002 issue of Power Magazine. The report is based on operational data for 2001 for almost 300 coal-fired stations across the country:
  - Two TVA fossil plants – Bull Run and Cumberland – were among the 50 lowest-cost producers in the country.
  - Five TVA fossil plants – Bull Run, Kingston, Cumberland, Allen and John Sevier – ranked among the top 50 plants for heat rate, a measure of overall generation efficiency. Bull Run was ranked third in the Nation.
  - TVA's Cumberland Fossil Plant was ranked as having the 16th-lowest sulfur-dioxide emission rate in the Nation, reflecting TVA's success in significantly reducing emissions. In the 1980s, Cumberland was one of the nation's highest emitters of SO<sub>2</sub>.
- In July 2002, TVA launched a major strategic planning initiative to develop a plan that will allow TVA to address three key elements in a comprehensive manner: (1) TVA's mission of providing reliable, affordable electric power, supporting sustainable economic development, and serving as steward of the region's environment; (2) the need to pay down the TVA debt so that power rates stay competitive; and (3) the public policy goal of facilitating the development of efficient wholesale markets. The Tennessee Valley Public Power Association (TVPPA), an association of TVA's power distributors, has formed a Strategic Planning Working Group. TVA is working with that group to ensure input from power distributors during development of the TVA strategic plan.

**Sequoyah and Browns Ferry  
nuclear plants earned  
excellent ratings in overall  
plant performance.**



## POWER SYSTEM

The NRC approved Watts Bar's and Sequoyah's License Amendments to allow the production of tritium.

- The Nuclear Regulatory Commission (NRC) approved Watts Bar's and Sequoyah's License Amendments to allow the production of tritium to ensure the continued safety, security and reliability of the Nation's nuclear weapons stockpile.
- TVA and other federal, state and local agencies conducted a regularly scheduled Emergency Preparedness exercise for Sequoyah. The exercise involved about 1,000 TVA and State of Tennessee employees and emergency responders. Members of the Federal Emergency Management Agency and the NRC evaluated the exercise.
- On Friday, September 27, a fire occurred at Watts Bar Hydroelectric Plant. Injuries were limited to smoke inhalation for five employees who did not require hospitalization. The fire investigation team determined that the fire was accidental in origin. Generation and switchyard control cables, relays and the battery supply were damaged. In addition, heat, smoke and water damage occurred to the control room and adjacent areas. TVA is evaluating the situation and will prepare a plan to return the generating equipment and switchyard to service.
- To continue providing a reliable supply of power to customers, TVA built an additional 680 megawatts of new combustion turbine capacity to provide peaking power this summer. The site for 340 megawatts of this capacity is in Kemper County, Mississippi; the additional 340 megawatts are installed at TVA's Lagoon Creek site in Tennessee, where eight combustion turbines began operating in the summer of 2001. The Kemper Combustion Turbine facility is TVA's first power generating station in Mississippi.
- TVA is installing 18 Selective Catalytic Reduction systems (SCRs) at seven fossil plants to further reduce emissions of nitrogen oxide (NOx). By 2005, TVA emissions of NOx during the summer ozone season will be reduced by about 75 percent, compared to mid-1990 levels. Two SCRs at Paradise Fossil Plant in Kentucky and two at Allen Fossil Plant in Tennessee are currently operational. TVA's NOx emissions were reduced by more than 21,000 tons over the 2002 summer ozone period.
- Proposals for a scrubber to reduce sulfur dioxide emissions from Unit 3 at Paradise Fossil Plant were evaluated, and a recommendation to award the contract will be submitted to the TVA Board. This is one of five additional scrubbers TVA plans to build as part of its continuing efforts to improve air quality in the Tennessee Valley region. The scrubbers will cost about \$1.5 billion and collectively will reduce emissions by more than 200,000 tons per year, bringing TVA's total emissions down by 85 percent since 1977.
- Generating units at five TVA fossil plants recently set all-time continuous run records: Shawnee Unit 10, Widows Creek Unit 3, John Sevier Unit 2, Kingston Unit 1 and Gallatin Unit 1.

- Employees and retirees of Widows Creek Fossil Plant celebrated the plant's 50th anniversary in July. By the end of 2006, seven of TVA's 11 fossil plants will have generating units that have been in service for 50 years or more.
- TVA achieved a forced-outage rate for conventional hydro of about 1.5 percent—significantly less than the industry average of about 5 percent.
- TVA continued implementing the Nation's most extensive hydro automation program, with automation completed at the Kentucky, Watauga, Wilbur, South Holston and Wilson hydro projects.
- TVA continued to modernize its hydro plants, adding about 58 megawatts of capacity at two conventional hydro units, Hiwassee 1 and Guntersville 2. TVA also completed modernization of Unit 4 at Raccoon Mountain.
- Extremely warm river temperatures caused thermal compliance issues at fossil and nuclear plants during the quarter. However, TVA's integrated management of the river and power systems allowed TVA to meet water temperature limits through the hot and dry summer. Special water release operations were scheduled at many dams to maintain thermal compliance and minimize the need to "de-rate" or lower power plant output.
- Damage to the Ocoee 2 Hydro Plant flume was repaired and the power plant returned to service on August 22. Although the required repairs were more extensive than expected, the unit was returned to service three days ahead of schedule. On September 23, a different, 30-foot section of the Ocoee flume was damaged by another rock slide. Most of the damage occurred to the landward side of the flume box, but some rock was removed from inside the flume. (The flume was returned to service on October 12).
- On TVA's transmission system, seven customer projects were placed in service, and approximately 31 equivalent miles of new transmission line were constructed.
- Browns Ferry Unit 1 restart activities are progressing on schedule and within budget.
- Commissioning of the Distributed Superconducting Magnetic Energy Storage (D-SMES) Unit was completed at the Leake, Mississippi, 161-kV Substation. This is the first application of this technology for dynamic voltage support on the TVA system.
- Work continues at the Regenesys site in Columbus, Mississippi. The main process building is almost complete, and installation of equipment, process piping and electrical cable is under way. Operators for the plant were hired and began the Regenerative Fuel Cell training program that will run through March 2003, when mechanical construction of the plant is scheduled to be completed.

**On TVA's transmission system, seven customer projects were placed in service**

## CUSTOMER SERVICE & MARKETING

Memphis Light, Gas and  
Water Division (MLGW),  
TVA's largest power  
distributor, signed a  
new TVA power supply  
contract in July.

- Memphis Light, Gas and Water Division (MLGW), TVA's largest power distributor, signed a new TVA power supply contract in July. The new contract is another step toward TVA's commitment to providing distributors more contract flexibility. The changes include revising the MLGW contract cancellation notice period from 10 years to five years; incorporating September 30, 2007, as the end date for stranded cost recovery; and removing TVA's regulation of MLGW's retail rates. These changes are available to TVA's other power distributors. Negotiations with distributors continue for partial requirements options and long-term contract options.
- TVA's 13th and 14th Green Power Switch® solar facilities are in operation at the Florence, Alabama, Water Treatment Plant and the University of Mississippi Intramural Sports Complex in Oxford. Each facility is expected to produce about 50,000 kilowatt-hours of electricity per year – enough energy to supply three Tennessee Valley homes.
- Green Power Switch® earned a 2002 Federal Energy Award for its outstanding contribution to expanding renewable energy within the federal sector. This is the premier energy award presented to federal agencies and draws attention to increased federal energy efforts as mandated by the Energy Policy Act of 1992 and executive orders.
- The redesigned *energy right*® marketing program for residential and small commercial consumers that began June 1, 2002, continues to gain wide acceptance among TVA's power distributors. The program promotes the installation of energy-efficient electric heat pumps and water heaters and the construction of new homes, site-built and manufactured, that have energy-efficient electric heat pumps and water heaters and other energy conservation features. At the end of the fiscal year, 148 of 158 distributors of TVA power had signed the new contract, with several more anticipated. More than 40,000 consumers will participate in the program this year.
- A new partnership between TVA and TVPPA is enabling TVA and power-distributor engineers to meet their continuing-education training needs through TVA University (TVAU) courses. The new engineering classes have been added to the fall TVAU course schedule and are open to all TVPPA members. TVAU is also providing evaluation services to TVPPA's education and training organization.

## RIVER SYSTEM OPERATIONS & ENVIRONMENT

In FY 2002, TVA managed the river system to support the shipment of 49.6 million tons of commodities via barge.

- The Tennessee Valley averaged 13.2 inches of rainfall but only 1.6 inches of runoff (rain that reaches the reservoir system) during the quarter. Rainfall was 110 percent of normal while runoff was only 65 percent of normal. This wide disparity is due to continuing dry conditions across the Valley. Despite the drier-than-normal conditions, especially in July and August, all of TVA's major tributary storage projects were above minimum summer pool levels on July 31 except Watauga reservoir. Watauga levels remained above minimum levels until July 31, when they fell one-tenth of one foot below target.
- TVA met or exceeded targets for flood-storage allocation, minimum-flow attainment and dissolved oxygen.
- In FY 2002, TVA managed the river system to support the shipment of 49.6 million tons of commodities via barge, resulting in \$458 million in savings to shippers and approximately \$50 million in savings to rail users through more competitive railroad rates.
- Reservoir Operations Study water quality models for 22 reservoirs and nine tailwaters were calibrated. Seventeen of the reservoir models and six of the tailwater models were linked together to build a system model.
- TVA issued a newsletter giving highlights of the first, or "scoping," phase of the Reservoir Operations Study. TVA also issued a news release to notify the public of the availability of the scoping document and newsletter, both of which are available on the Web site [www.tva.com](http://www.tva.com).
- Also as part of the Reservoir Operations Study, data were collected on how members of the public use the Tennessee River and reservoir system and how they spend their recreation dollars. The data are being used to evaluate impacts of alternative reservoir operating policies on recreation opportunities and the Valley economy.
- Downstream whitewater recreation was supported below Apalachia, Wilbur, Tims Ford and Ocoee 2 and 3 dams.
- TVA participated in the final meeting of the Southern Appalachian Mountains Initiative (SAMI) Policy and Technical Committees. Final reports were publicly released at the final SAMI meeting in August.
- Phase 4 of the "Evaluation of Impacts of Ammonia on Wastewater" project at TVA's Paradise Fossil Plant was completed on schedule, and data were delivered to the Electric Power Research Institute (EPRI) for analysis. EPRI funds the study.
- Staff gave a presentation on TVA's Environmental Management System at the Environmental Innovations Summit in Washington, D.C. TVA is the only federal agency to have a comprehensive Environmental Management System covering all of its facilities.

**TVA continued to conduct  
air quality field research  
at the Look Rock  
monitoring site in the  
Great Smoky Mountains.**

- TVA continued to conduct air quality field research at the Look Rock monitoring site in the Great Smoky Mountains. Data being collected include fine particle mass, sulfate, and gaseous ammonia. A new instrument under development by TVA is measuring ammonia, which is primarily emitted from crop production, cattle feedlots, swine operations, and poultry farms. The data will support a better understanding of the characteristics of sulfate in fine particles and their relationship to decreased visibility and will help TVA and others develop regulatory strategies for visibility improvement.
- TVA developed estimates of maximum daily emissions (levels that will not be exceeded under foreseeable circumstances) for its fossil-fired power plants. The development of these estimates was required under the Comprehensive Environmental Response, Compensation, and Liability Act and the Emergency Planning and Community Right-to-Know Act.
- A patent was allowed for TVA's new Hybrid Bioreactor technology, which destroys both water and air contaminants in a single step, resulting in dramatic savings over conventional cleanup methods.
- TVA removed about 400 cedar trees along a 500-kv transmission line right-of-way on the Oak Ridge National Laboratory (ORNL) reservation and replaced them with 700 low-growing native shrubs on an adjoining area. This was part of a project for developing partnerships with landowners who have rights-of-way on their property. ORNL will establish warm-season grass in the right-of-way. This project focuses on working with landowners to develop vegetation plans. Expected benefits include reduced cost for vegetation control, improved aesthetics, less frequent returns by TVA to control vegetation, and enhancement of wildlife habitat.
- TVA's Public Power Institute produced a guide to Landscaping with Native Grasses in Utility Rights-of-Way. The brochure is available on the PPI Web site and provides information on using native grass species on transmission line rights-of-way in the Valley region.
- The U.S. Department of Energy hosted a meeting for representatives from TVA's Public Power Institute, American Electric Power, and Scientific Applications & Research Associates (SARA) to discuss development of SARA's "Direct Carbon Fuel Cell Technology." This technology converts carbon, such as coal or biomass, directly into electricity. DOE indicated strong interest in the project and may supply the bulk of the funding for technology development. TVA, American Electric Power, and SARA are working to form a consortium to develop, demonstrate and commercialize the technology.
- TVA conducted a dam safety emergency exercise for Blue Ridge Dam. All TVA organizations with dam safety responsibilities participated in the exercise, as did local and state emergency management agencies and local governments.

**Outstanding debt was reduced by \$120 million during the year for a cumulative total of almost \$2.5 billion since 1997.**

## **FINANCE**

- TVA made capital investments of \$1.3 billion during the year, including \$400 million in clean air facilities.
- Outstanding debt was reduced by \$120 million during the year for a cumulative total of almost \$2.5 billion since 1997.
- Net interest expense for fiscal year 2002 was \$1,429 million, a \$204 million reduction from fiscal year 2001. This represents one of the largest single-year declines in net interest expense since TVA became self-financing in 1959. Annual net interest expense has now declined \$574 million since its peak of \$2,003 million in fiscal year 1997.
- Standard and Poor's, a credit rating service, issued a credit report affirming its "AAA" rating on TVA bonds. This "AAA" rating denotes that TVA's bonds are considered to be investment grade; this is the highest rating possible.
- The Owner Controlled Insurance Program reported savings of \$2.8 million for the fourth quarter and a total of \$12 million for the fiscal year. This program consolidates individual contractors' insurance policies into one policy provided by TVA. The savings realized from this program since its inception in 1992 total \$83 million.
- Two new financial workshops, Getting Started: The Basics of Investing and Getting Ready for Retirement, were offered to all TVA employees in an effort to help employees gain a better understanding of personal investing so they have a higher standard of living during retirement.

## **SECURITY**

- In response to the return to the "Yellow" threat level, TVA reopened visitor centers at Wilson Hydro, Raccoon Mountain Pumped-Storage and Fontana Hydro plants. The visitor center at Kentucky Hydro Plant has closed for the season.
- TVA participated in a meeting in Arlington, Virginia, on "Homeland Defense: Protecting America's Water and Infrastructure." TVA's exhibit emphasized TVA's expertise in the areas of vulnerability assessments for source water, treatment plants, and distribution systems.

## **CORPORATE**

- TVA negotiated an agreement to sublease about 135,000 square feet of office space in Nashville to Bridgestone/Firestone. This arrangement supports TVA's economic development goal of keeping existing businesses in the Tennessee Valley and enabled TVA to reduce its total office space.

**TVA's strategic facilities  
plan received two  
prestigious awards  
during FY2002.**

- In addition to the Nashville sublease, TVA reduced office space by more than 90,000 square feet in FY 2002, resulting in one-time sales proceeds of \$491,000 and annual sublease revenue of \$2.4 million.
- TVA's strategic facilities plan received two prestigious awards during FY2002. Terrell Burkhart, Vice President of Facilities Management, received one of seven Corporate Real Estate Leadership Awards from Site Selector magazine, and TVA received honorable mention in the General Services Administration Achievement Award for Real Property Innovation competition.
- For the second year, TVA provided Web hosting and Web Name services for four regional drives of the Combined Federal Campaign: Chattanooga, Knoxville, Nashville, and Muscle Shoals. The drives include all federal agencies in each area.
- TVA's contract management strategy avoided \$63 million in costs for the fiscal year. TVA also redeployed more than \$12 million of surplus materials during the year.
- TVA Procurement is helping TVA distributors and Valley municipalities achieve savings through a variety of programs. Savings were \$4.5 million for the fiscal year.

## **STATE NEWS**

### **Alabama**

- TVA is partnering with the Guntersville Temporary Residential Intensive Prevention Program (TRIPP) to clean up a large dump site on Georgia Mountain. TRIPP is used as an alternative to boot camp for teens on probation. The teens and parents are taught how to manage anger, and the teens are taught respect for authority and how to negotiate. The program provides a worthwhile community service, and TVA public lands benefit in the process.

### **Georgia**

- The TVA Center Point Substation 230-kV transformer yard in Dalton, Georgia, was placed in service. The completion of this substation is a major milestone in the North Georgia power supply improvement project.
- Hydro Resource Solutions has licensed its patented Water View® technology for installation at the U.S. Army Corps of Engineers' J. Strom Thurmond Hydropower Plant on the Savannah River near Augusta, Georgia. This technology will continuously monitor and quantify the effects of various operating conditions on maintenance and environmental costs. Hydro Resource Solutions is a limited liability company jointly owned and operated by TVA and Voith Siemens Hydro Power Generation, Inc.

### **North Carolina**

- The Lemmons Branch Boat Ramp on Fontana Reservoir was dedicated in August. The facility is a result of a cooperative agreement by the U.S. Forest Service, the North Carolina Wildlife Resources Commission and TVA.

**Two recipients of TVA Minority  
Business Development  
loans have received the  
Governor's Manufacturing  
Excellence Award.**

## **Tennessee**

- A public scoping meeting was held in Loudon, Tennessee, for the Rarity Pointe proposal on Tellico Reservoir. About 400 attendees heard a presentation about the project by the applicant. TVA staff discussed the National Environmental Policy Act process and was available to help document comments and answer questions.
- Two recipients of TVA Minority Business Development loans have received the Governor's Manufacturing Excellence Award: Ponce Metals, a steel service center company in Loudon County, and DCS Electronics, a specialty manufacturer of industrial controls systems in Maryville. The companies were two of only seven companies statewide to receive the award. Companies were nominated by local chambers of commerce or government leaders and judged according to the effectiveness of productivity improvement techniques and practices in their Tennessee operations.
- TVA partnered with the City of Knoxville to organize a sturgeon release on the waterfront park at the mouth of First Creek. Partners included Friends of First Creek, Ijams Nature Center, Keep Knox Beautiful, and the University of Tennessee Water Resources Center.
- TVA participated in a cooperative brook-trout restoration project with Trout Unlimited, the U.S. Forest Service and the Tennessee Wildlife Resources Agency in the Upper Tellico River Watershed. Brook trout are a key water quality indicator in the headwater tributaries of mountainous watersheds above 2,000 feet and often are the only fish species present.
- TVA participated in the seventh annual South Holston River and 10th annual South Holston Lake cleanups. More than 50 tons of trash and debris were removed by 900 volunteers. Bags, gloves and controlled water releases were provided by TVA.

## **Virginia**

- TVA met with officials from the Scott County, Virginia, Board of Supervisors and interested county residents about access sites on the North Fork Holston River. This meeting resulted from an inquiry from Scott County residents about the feasibility of a fish ladder near John Sevier Fossil plant. While the group agreed that a fish ladder is not an appropriate solution, the Virginia departments of Transportation and Games & Inland Fisheries are working with Scott County to locate additional access sites.