1996 ANNUAL REPORT

The POWER *to* LEAD

TENNESSEE

VALLEY

AUTHORITY

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FINANCIAL HIGHLIGHTS—POWER PROGRAM

For the years ended September 30 (millions of dollars)

	1996	1995	Percent Change
Operating revenues	$ 5,693	$ 5,375	6%
Operating expenses	(3,656)	(3,448)	6%
Operating income	2,037	1,927	6%
Other expense, net	(10)	(91)	(89%)
Interest expense	(1,966)	(1,826)	8%
Net income	**$ 61**	$ 10	510%
Total assets	**$34,029**	$33,293	2%
Capitalization			
Long-term debt	$ 25,570	$23,889	7%
Proprietary capital	4,028	4,030	–
Total capitalization	**$29,598**	$27,919	6%

POWER SYSTEM STATISTICS

For the years ended September 30 (millions of kilowatt-hours)

	1996	1995	Percent Change
System input			
System generation			
Hydro, including pumped storage	16,107	13,515	19%
Fossil	97,046	94,347	3%
Nuclear	35,426	23,355	52%
Combustion turbine	217	393	(45%)
Total net generation	148,796	131,610	13%
Purchased	4,929	3,793	30%
Net interchange and wheeling	(7,849)	3,604	(318%)
Total system input	**145,876**	139,007	5%
System output			
Sales			
Municipalities and cooperatives	117,035	110,245	6%
Industries directly served	16,599	16,684	(1%)
Federal agencies	6,966	7,226	(4%)
Total sales	140,600	134,155	5%
Other	1,172	1,378	(15%)
Losses	4,104	3,474	18%
Total system output	**145,876**	139,007	5%
Net winter dependable capacity (megawatts)	**28,123**	25,831	9%
Percent of average gross generation to net winter dependable capacity	**64.39**	64.39	–
System peak load (megawatts)—summer	**25,376**	25,496	–
System peak load (megawatts)—winter	**25,995**	24,676	5%
Annual load factor	**63.89**	62.22	3%
Percent net winter dependable capacity by fuel source			
Fossil	53%	58%	(9%)
Nuclear	20%	13%	54%
Hydro	19%	20%	(5%)
Combustion turbine	8%	9%	(11%)

CRAVEN CROWELL, *Chairman*
Crowell was appointed to the Board of Directors by President Bill Clinton and confirmed by the U.S. Senate in 1993. President Clinton named him as TVA's 11th Chairman. Crowell, who has 12 years of service at TVA, is a member of the Economic Club of New York, the board of the Electric Power Research Institute, and the board and Executive Committee of the Nuclear Energy Institute.

JOHNNY H. HAYES, *Director*
Hayes was appointed to the Board of Directors in 1993 by President Bill Clinton. Before joining the TVA Board, he served two appointments in the cabinet of Tennessee Governor Ned McWherter including Commissioner of Economic and Community Development. Before entering public service, Hayes was president of Newman, Hayes & Dixon, an independent insurance agency he founded in 1964 in Hendersonville, Tennessee. He is co-chairperson of the Knoxville/TVA Community Relations Council.

WILLIAM H. KENNOY, *Director*
Kennoy was appointed to the Board of Directors in 1991 by President George Bush. A professional engineer, he was president of Kennoy Engineers, Inc., an environmental engineering firm in Lexington, Kentucky, from 1971-1991. He serves on the Intermodal Advisory Panel of the Kentucky Transportation Cabinet, Clean Coal Technology Tactic Team, and The Partnership for Kentucky School Reform.

The Power to Lead

DEREGULATION OF THE ELECTRIC-UTILITY INDUSTRY IS NO LONGER AN ABSTRACT IDEA. IT'S HAPPENING RIGHT NOW. ANYONE WHO HAS WATCHED DEREGULATION RESHAPE THE AIRLINE AND TELEPHONE INDUSTRIES KNOWS THERE WILL BE WINNERS AND LOSERS. IN THE COMING YEARS, TVA WILL BE A WINNER IN THE ENERGY business because we are taking the right steps today.

We have increased productivity, cut costs, and upgraded our generating capacity. At the same time, we have developed and are now implementing a long-term strategic plan to meet the challenges and take advantage of the opportunities that await us in a deregulated marketplace.

Today, TVA is the largest electric utility in the nation and one of the most efficient. No tax dollars support the TVA power system. Since 1959, the power system has paid its own way, with sales this year amounting to $5.7 billion. TVA is also paying back the federal government for its initial investment in power plants built before 1959. And TVA makes tax-equivalent payments of 5 percent of our sales—or a little more than a quarter-billion dollars annually—to state and local governments in nine states.

During the past nine years, while the cost of living has risen more than 35 percent, the price of TVA power has remained stable. We accomplished this by cutting operating costs by nearly $800 million, reducing our workforce from 34,000 to 16,000, and tripling employee productivity. On behalf of Directors Hayes and Kennoy, I would like to thank the men and women of TVA who have made these achievements possible. They have become more efficient, they are doing more with less, and they are finding new and better ways to serve our customers during the coming era of deregulation.

According to *Electric Light & Power* magazine data, TVA is the second lowest-cost power producer among the nation's 50 largest electric utilities. The magazine also rated TVA's Bull Run plant the top steam plant in the nation, based on heat rate, while our John Sevier and Gallatin plants also placed among the Top 25.

During the past four years, we have increased capacity factors at our fossil plants nearly 20 percent. On December 24, 1995, all 59 TVA fossil units and four available nuclear units operated at the same time. On January 22, 1996, 112 of our 113 hydro generators were available for operation on the same day. And in June, all five of our nuclear units were at full power, setting a record for nuclear generation at TVA.

In a first for a utility in the United States, we brought two nuclear units online within three months of one another, thus ending our nuclear construction program and making it possible for us to cut capital expenses in half. As a result, for the first time in 35 years, TVA will not increase its debt in the coming year.

In our efforts to aggressively manage the debt, we have successfully broadened our investor base by selling bonds to global, regional, and retail investors; and we are preparing a five-year financial plan to help reduce our debt.

As part of our long-term strategic plan, we expanded our marketing and advertising efforts, and we created a new Customer Service & Marketing Group. This organization will usher in a new era of customer relations, economic development, technology advancements, and energy marketing. In the months ahead, we will seek new business opportunities, provide our customers with more flexible contracts, and offer more choices in energy services.

In anticipation of these new business initiatives, TVA was a catalyst in the formation of the Public Power Alliance (PPA). This business partnership will help members launch new businesses, provide new services, and hone their competitive edge. The PPA will also serve as an advocate for public power's longstanding mission of public service.

TVA is an enthusiastic supporter of our industry's move toward deregulation. At the same time, we remain solidly committed to power supply reliability, universal access, environmental responsibility, and economic development. This commitment to service has led us to call for a new regulatory system that promotes free-market competition while protecting the common good. The electric-utility industry is too vital to the nation to be regulation-free. And the reality is that re-regulation, not deregulation, will shape the new, competitive market.

We expect many changes in the coming years. One of them will be the increasing globalization of the utility industry. Looking toward international markets, TVA recently co-hosted a series of meetings in China between about 65 Tennessee Valley business leaders and the Chinese government. The goals of the meetings were to open doors for international trade, help China develop its electricity resources, and bring economic development to the Tennessee Valley.

These meetings were immensely successful, and we look forward to strengthening the business relationships that were established between China and the Tennessee Valley.

Innovation is the foundation of TVA's success and has made TVA a yardstick for the electric-utility industry. We stand on the threshold of a new century, ready to fulfill our vision of being recognized as the world leader in providing energy and related services, independently and in alliances with others, for society's global needs.

Chairman

TVA VISION

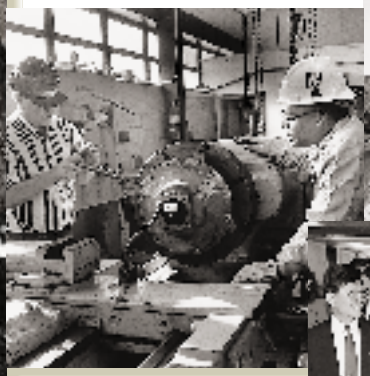
TO BE THE RECOGNIZED WORLD LEADER IN PROVIDING ENERGY AND RELATED SERVICES, INDEPENDENTLY AND IN ALLIANCE WITH OTHERS, FOR SOCIETY'S GLOBAL NEEDS.

The Tennessee Valley Authority is a federal corporation, the nation's largest electric-power producer, a regional economic development agency, and a national center for environmental research.

TVA's power-service area covers 80,000 square miles (200,000 square kilometers) in the southeastern United States, including most of Tennessee and parts of Mississippi, Kentucky, Alabama, Georgia, North Carolina, and Virginia. TVA also manages the Tennessee River, the nation's fifth-largest river system.

TVA operates 11 coal-fired plants, three nuclear plants, 29 hydroelectric dams, and a pumped storage plant. Together, they provide 28,123 megawatts of net winter dependable generating capacity. TVA provides power to 160 municipal and cooperative power distributors, and directly serves about 67 federal and industrial customers in the Valley through a network of 17,000 miles (27,000 kilometers) of transmission lines. TVA supplies the energy needs of nearly 8 million people.

As of September 30, 1996, TVA had 16,021 employees.



The Year in Brief

IN FISCAL YEAR 1996, TVA POSITIONED ITSELF TO BE A LEADER IN THE DEREGULATED ELECTRIC-UTILITY MARKETPLACE. WE ARE KEEPING FUEL COSTS LOW AND AVAILABILITY HIGH, LOWERING THE COST OF DOING BUSINESS, AND HONING TVA'S CUSTOMER FOCUS. TVA HAS SEIZED CONTROL OF ITS FUTURE, CREATING a strategic direction that emphasizes new marketing and business opportunities, vigilant debt management, and valuable partnerships and alliances.

Here's how 1996 unfolded:

Customer Focus

- **TVA Announces 10th Year of Stable Prices**

Citing employees' cost-cutting efforts, increased productivity, and higher-than-projected power sales, TVA announced it will hold its prices stable in 1997 for the 10th consecutive year.

- **TVA Announces Creation of Customer Service & Marketing Group**

By seeking new business opportunities, the Customer Service & Marketing Group will help TVA become a strong competitor in the deregulated energy marketplace.

- **Distributors, TVA Bring Lignite Plant to Mississippi**

With the cooperation of Mississippi distributors of TVA power, TVA agreed to purchase power from a lignite-burning electric power plant in Choctaw County. The facility should generate 1,000 jobs and $7 million in taxes.

Operational Excellence

- **Browns Ferry Nuclear Plant Loads Unit 3 Fuel**

The unit came back online two weeks ahead of schedule.

- **Watts Bar Receives Full-Power Operating License**

The unit added 1,138 megawatts to the system—enough electricity to supply about 250,000 homes.

- **Dependable Capacity Increased 9 Percent**

With the addition of the two nuclear generating units, TVA's net winter dependable capacity increased about 2,200 megawatts.

- **TVA Meets Peak**

TVA met an all-time system peak demand of 25,995 megawatts on February 5, 1996.

- **Generating Units: All Together, Now**

On December 24, all 59 fossil units and four available nuclear units were operating at the same time. On June 16, 1996, all five of TVA's nuclear generating units were

operating at 100-percent power.

▪ Nuclear Plant Refuels Faster

Employees at the Browns Ferry Nuclear Plant completed a refueling outage in a record-setting 31 days, 24 days fewer than the industry average.

▪ Sequoyah 2 Sets Record

Sequoyah Nuclear Plant Unit 2 completed a maintenance and refueling outage in a site record of 50 days, 17 hours. During the outage, TVA replaced the condenser in 36 days, believed to be a new world record for nuclear plants.

▪ Substation Dedicated in Limestone County, Alabama

The $37-million facility will ensure reliable power and promote economic growth in northern Alabama.

Debt Management

▪ Chairman Announces No Debt Increase in 1997

"Capping our debt is an important step as we prepare for the opportunities and challenges of a deregulated utility industry," says TVA Chairman Craven Crowell.

▪ TVA Won't Borrow More for Capital Expenditures

Crowell also announced that the next year would be the first time in 35 years that TVA would not borrow additional money for capital expenditures.

▪ TVA Bond Interest Rate Lower Than U.S. Treasury

The $600-million issue had an interest rate of 5.98 percent—compared to the U.S. Treasury rate of 6.10 percent.

▪ Second QIDS Issue Succeeds

The second issue of TVA's retail offering—Quarterly Income Debt Securities—sold $500 million to small investors, half of them new accounts.

▪ TVA Issues Deutsche Mark Bond

TVA launched a 1.5 billion Deutsche mark bond issue in Europe at the same time the European Investment Bank launched a 1 billion issue in U.S. dollars in the United States. Each corporation saved money by swapping proceeds with the other.

Strategy for the Future

▪ Energy Vision 2020: Final Plan Unveiled

The TVA Board announced the final version of the Integrated Resource Plan—Energy Vision 2020. The plan will guide TVA's energy strategies for the next 25 years.

▪ TVA Signs First Option Purchase Agreement

TVA, the first in the utility industry to request proposals for option purchase agreements (OPAs), signed an OPA to buy power from a proposed $400-million gas-fired generating plant in Batesville, Mississippi. OPAs offer competitive prices, limited capital expenditures, and flexibility in power planning.

▪ Chief Officers' Assignment: Prepare for Competition

Based on recommendations of strategic planning teams, TVA's four Chief Officers developed plans—in Marketing & Development, Transmission, Nuclear, and Finance—to allow TVA's established businesses to compete and new businesses to grow.

▪ TVA, Three Others Form Public Power Alliance

The alliance of TVA, Municipal Electric Authority of Georgia, Municipal Energy Agency of Mississippi, and Old Dominion Electric Cooperative will allow them to provide better, lower-cost services to their customers.

▪ Chairman Encourages Public/Private Alliances

In a speech to the Morgan Stanley Global Electricity Conference, Chairman Crowell called for more and better alliances between public and private businesses in the energy sector—in the U.S. and internationally.

▪ TVA and Tennessee Sign Agreements with China

TVA reached agreements with China's Ministry of Water Resources, its Ministry of Electric Power, and Lishui Hydro & Power Corp. that could lead to helping China develop its Han and Li rivers and improve its coal-fired plants.

▪ TVA Chairman Supports Idea of Regional Regulation

"Comprehensive federal regulation is needed," Crowell told the Transmission & Distribution World Deregulation Conference. "Perhaps it could take the form of six, independent regional bodies."

▪ TVA Tops in Producing Electricity

According to *Electric Light & Power* magazine, TVA is the largest producer of electricity, and the second lowest-cost power producer among the nation's 50 largest utilities. ■

From the New Deal to a New Century: A Short History of TVA

PRESIDENT FRANKLIN ROOSEVELT NEEDED INNOVATIVE SOLUTIONS IF THE NEW DEAL WAS TO LIFT THE NATION OUT OF THE DEPTHS OF THE GREAT DEPRESSION. AND TVA WAS ONE OF HIS MOST INNOVATIVE IDEAS. THE PRESIDENT ENVISIONED TVA AS A TOTALLY DIFFERENT KIND OF AGENCY. HE ASKED CONGRESS TO CREATE "a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise." On May 18, 1933, Congress obliged.

Right from the start, TVA established a unique problem-solving approach to fulfilling its mission—integrated resource management. Each issue TVA faced—whether it was power production, navigation, flood control, malaria prevention, reforestation, or erosion control—was studied in its broadest context. TVA weighed each issue in relation to the others.

From this beginning, TVA has held fast to its strategy of integrated solutions, though the issues have changed to meet an ever-changing environment.

1930s Even by Depression standards, the Tennessee Valley was in sad shape in 1933. Much of the land had been farmed too hard for too long, eroding and depleting the soil. Crop yields had fallen along with farm incomes. The best timber had been cut.

TVA went to work. It built dams to harness the region's rivers. The dams controlled floods, improved navigation, and generated electricity. TVA developed fertilizers, taught farmers how to improve crop yields, and helped replant forests, control forest fires and improve habitat for wildlife and fish.

The most dramatic change in Valley life came from electricity generated by TVA dams. Electric lights and modern appliances made life easier and farms more productive. Electricity also drew industries into the region, providing desperately needed jobs.

1940s and 50s During World War II, the United States needed aluminum to build bombs and airplanes, and aluminum plants required electricity. TVA met the growing need for electricity by building dams in record time. By the end of the war, TVA had completed a 650-mile (1,050-kilometer) navigation channel the length of the Tennessee River and became the nation's largest electricity supplier.

Even so, the demand for electricity was outstripping TVA's capacity to produce power from hydroelectric dams. Political interference kept TVA from seeking additional federal appropriations to build coal-fired plants, so

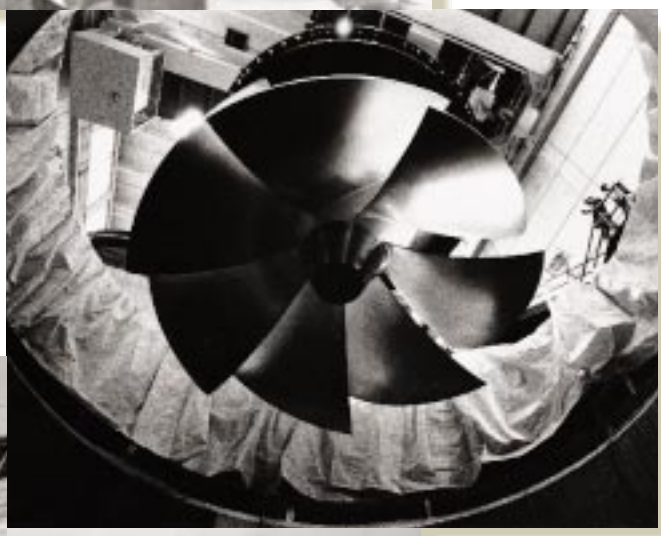
it sought the authority to issue bonds. Congress passed legislation in 1959 to make the TVA power system self-financing. TVA's power system would pay its own way.

1960s The 1960s were years of unprecedented economic growth in the Tennessee Valley. Farms and forests were in better shape than they had been in generations. Electric rates were among the nation's lowest and stayed low as TVA brought larger, more efficient generating units into service. Expecting the Valley's electric power needs to continue to grow, TVA began building nuclear plants as a new source of economical power.

1970s and 80s The economy changed in the Valley and the nation, prompted by an international oil embargo in 1973 and accelerating fuel costs later in the decade. The average cost of electricity in the Tennessee Valley increased fivefold from the early 1970s to the early 1980s.

Energy conservation became an economic necessity for homeowners and businesses alike, and TVA became a national leader in promoting energy conservation. With energy demand dropping and construction costs rising, TVA canceled several nuclear plants, as did other utilities around the nation. To become more competitive, TVA began improving efficiency and productivity while cutting costs. By the late 1980s, TVA had stopped the rise in power rates and paved the way for maintaining stable rates for the next decade.

1990s As the electric-utility industry moves toward deregulation, TVA is preparing for competition. It cut operating costs by nearly $800 million a year, reduced its workforce by more than half, increased the generating capacity of its plants, stopped building nuclear plants, and developed a plan to meet the energy needs of the Tennessee Valley for the next 25 years.



TVA is strengthening its position as an energy leader in price, services, and environmental stewardship as it helps guide the utility industry into the 21st century. ■

Sequoyah Nuclear Plant workers R.G. Lewis (left) and Ted Gatewood, part of a team that helped set a refueling outage record.

Nuclear News Is Good News

WITH THE COMPLETION OF WATTS BAR NUCLEAR PLANT UNIT 1 AND THE RESTART OF BROWNS FERRY NUCLEAR PLANT UNIT 3, TVA BECAME THE FIRST UTILITY EVER TO ADD TWO NUCLEAR GENERATING units to the power system at the same time.

But more important than being unique is how the added capacity will help TVA serve its customers. "Adding these two units increased TVA's net winter dependable capacity around 2,200 megawatts—9 percent," says TVA Nuclear President Oliver Kingsley. "The added capacity bolsters TVA's position to meet future increases in demand for electricity within its service area."

Performance of all five TVA Nuclear units continued to improve this past year:

- Reduced production costs by 11 percent.
- Achieved average capacity factor of 85 percent, approaching top quartile in nuclear industry.
- Kept five units in continuous, full-power operation during peak summer months of July and August.
- In April, employees at Browns Ferry Nuclear Plant completed a refueling outage in 31 days, which is 24 days fewer than the industry average.
- Process improvement/quality teams from TVA Nuclear received national recognition.

Hardworking TVA Nuclear employees are behind this success, emphasizes Kingsley. One good example: 30 High Impact Teams from Sequoyah Nuclear Plant, who completed the plant's Unit 2 spring refueling outage in a site record 50 days, 17 hours—under the watchful eye of the Nuclear Regulatory Commission.

"This outage cost $24 million," says Sequoyah Plant Outage Manager Larry Bryant. "Our previous best outage cost $27 million and took 64 days."

The outage planning took a year. "We researched what others were doing in terms of cost and duration," he says. "We told our managers, 'If we're going to stay competitive, we'll have to raise the bar.'" ■

Dollars to Deutsche Marks: An Unbeatable Bond

WHEN TVA SOLD $2 BILLION OF 10-YEAR BONDS THAT TRADED SIMULTANEOUSLY IN ALL MAJOR FINANCIAL MARKETS AROUND THE GLOBE, THE WORLD TOOK NOTICE. THE LARGEST BOND OFFERING IN 1995, IT EARNED TVA THE DISTINCTION OF "DEBUT BORROWER OF THE YEAR" FROM *INTERNATIONAL FINANCE REVIEW*.

"Selling bonds globally supports TVA's vision of being a recognized world leader in providing energy and related services and helps TVA broaden its investor base," says Chief Financial Officer David Smith.

Early this year, TVA built on its global reputation, issuing 5- and 30-year bonds internationally. In June, *Euromoney* magazine named TVA as "Best North American Issuer," based on the success of a variety of recent domestic and international offerings.

During the past two years, TVA Chairman Craven Crowell, Smith, Treasurer John Hoskins, and the financial staff have traveled to nine countries to talk to investors. "Most investors know the great things TVA has done from history books," says Smith. "We bring them up to date, telling them how we have reduced capital expenditures by 50 percent in the past two years, while continuing to increase our annual revenues and grow the business. We talk about setting an internal debt limit below the cap established by Congress—and keeping our electricity prices stable for 10 years."

TVA also has the innovative issues investors demand, including September's Deutsche mark bond—TVA's first issued in another currency. TVA teamed up with the European Investment Bank (EIB) to launch a 1.5-billion Deutsche mark offering in Europe at the same time the EIB launched a $1-billion offering in the United States.

Each corporation saved money by swapping proceeds with the other, which will allow TVA to make principal and interest payments in U.S. dollars. As a result, TVA sold Deutsche-mark-denominated bonds to a completely new international investor base at a lower cost than a dollar-denominated U.S. issue.

Many Deutsche mark investors were aware of TVA's worldwide reputation and held TVA in high esteem, but had not previously invested in TVA bonds because all previous issues were denominated in U.S. dollars. Many of them saw this as their only chance to invest in TVA bonds.

Fifteen countries in the European Union created the EIB to make long-term financing available to support balanced development. "This partnership furthered TVA's corporate vision of building alliances for society's global needs," Smith says. "Very few issuers around the world could form and execute such a unique financial alliance." ■

ANOTHER FIRST

A minority firm managed a corporate bond sale for the first time in history when TVA launched a $300-million bond issue August 14. New York-based Blaylock & Partners served as lead underwriter for the intermediate-term, non-callable bonds.

TVA engineers helped create America's premier whitewater river on the Ocoee in southeastern Tennessee.

Bringing Olympic Gold to the Ocoee

ONE HUNDRED AND THIRTY KAYAKERS AND CANOEISTS FROM 36 COUNTRIES DUG AND PLUNGED AND SWOOOSHED THROUGH RAPIDS—"SMILEY FACE," "SLAM DUNK," "HUMONGOUS." FORTY-FIVE THOUSAND SPECTATORS, BROILED IN THE HOT SUN, HAPPILY CHEERING THE ATHLETES ON.

And 3.5 billion television viewers got a good look at whitewater slalom events of the 1996 Olympic Games, the first ever to be held on a natural river—the Ocoee in southeastern Tennessee.

All this was made possible because TVA's Ocoee No. 3 hydroelectric plant provided water releases for the two days of Olympic competition.

"A delight," was how the United Kingdom's *Economist* magazine described the competition. "In these largely private-sector Olympics, here was something strangely unfashionable: a small triumph of state enterprise, masterminded by that child of the New Deal, the Tennessee Valley Authority, and by the United States Forest Service."

TVA was one of the first to support the idea to hold the Olympic whitewater events on the Ocoee, committing TVA Water Management expertise to help study the feasibility of the venue, and agreeing to provide water for 145 days for pre-Olympic and Olympic events.

"Our idea all along was that if the events took place on the Ocoee, it would help TVA Economic Development support sustainable development in the area," says Betsy Child, Senior Vice President of TVA Economic Development. In the mid-1980s, copper mines were shut down in this hollow of the Southern Appalachians, leaving behind double-digit unemployment and 1,000 workers who only knew mining.

"We knew the whitewater events could be a golden opportunity to bring jobs and development to the region," says TVA Project Manager Rick Mallory.

TVA studied regions nationwide that were unable to reap the benefits from similar opportunities. So it joined forces with the U.S. Forest Service, the Tennessee, North Carolina, and Georgia tourism bureaus, local chambers of commerce, and interested individuals and organizations, to help the people of the region establish goals and an integrated plan for meeting them, a full four years before the Olympic Games.

TVA Economic Development assisted small businesses financially and as advisers and mentors. The staff developed regional-resource inventories and statistical profiles, an electronic information center, a World Wide Web Home Page, a 1-800 area-information number, and a regional brochure and media kit.

The result? The Olympics poured about $24 million in direct spending and $69 million in indirect spending into Polk County, and the whitewater rafting industry adds more than $30 million a year to the area economy. Local sales taxes were up 21 percent in 1995, and new business starts increased 39 percent in 1994.

And the average unemployment rate decreased 26 percent from 1990 to 1994—all because TVA was willing to part with some water. ■

A Thoroughly Modern Hydro

HYDRO POWER IS INEXPENSIVE TO PRODUCE. IT'S CLEAN AND IT HAS THE FEWEST ENVIRONMENTAL ISSUES OF ANY ESTABLISHED AND RELIABLE POWER SOURCE. ALL TRUE, EVEN IF, LIKE TVA, YOU HAVE MANY HYDRO GENERATING UNITS DATING BACK TO THE 1930S.

"TVA saw a chance to take the good qualities of its hydro program and make them better, using technology that no one dreamed of 60 years ago," says TVA Director Bill Kennoy.

TVA is "modernizing"—refurbishing and upgrading 88 hydro units at 24 hydroelectric dams to be complete by 2010. These improvements will add 536 megawatts of capacity, enough to provide power to about 2,300 homes.

"It's the same concept as rebuilding a car engine to increase its power and extend its life," says Vice President of Hydro Operations Enrique (Henry) Martinez. "We're improving our generating capacity and cutting our future maintenance costs, working with what we have."

Hydro-modernization tasks run the gamut, from installing new turbine runners to replacing greased mechanical components with non-polluting greaseless components.

Here are a few more hydro accomplishments:

- Thirty-two megawatts of capacity were added to the hydro system this year.
- Six units were modernized in fiscal year 1996, bringing the total completed to 13.
- The completed projects have improved turbine efficiency by an average of 5 percent to date.
- The world's first two self-aerating discharge edge turbines were installed at the Norris hydroelectric plant. This new technology, jointly developed by TVA and Voith Hydro, adds oxygen to the water to improve water quality without sacrificing the generating efficiency of the plant.
- Chickamauga Unit 2 was modernized and returned to service in 90 days—a TVA record. ■

Gloria Lovett, Operations Supervisor at Kentucky Hydro Plant, one of 24 TVA hydroelectric dams to be upgraded by the year 2010.

Copper Basin Reclamation

AT ONE TIME, THE BARREN RED HILLS OF THE COPPER BASIN, WHICH DRAINS INTO THE OCOEE RIVER, COULD BE SEEN BY ASTRONAUTS ORBITING THE EARTH. UP CLOSE, MUCH OF THE COPPER BASIN LOOKED MORE LIKE THE GREAT BASIN OF NEVADA THAN TYPICAL HILL COUNTRY OF SOUTHEAST TENNESSEE.

But today, thanks to a cooperative private-public reclamation effort co-sponsored by TVA, the Basin is just another green valley.

"The recovery of the Copper Basin has to be one of the great reclamation success stories of all time," says Jack Muncy, who has worked closely with private industry and other groups as head of TVA's Cooperative Copper Basin Reclamation Project. "In terms of size, impact, and historic significance, I can't think of any project anywhere that can match it."

Two hundred years ago, the Copper Basin was a fertile valley with big timber, clear streams, and rich veins of copper running beneath its ridges. The problems began in the 1850s, shortly after the first copper mines opened in the Basin. Early mining companies set up refining operations that were crude, even by contemporary standards.

Copper was refined by heaping ore in piles with timbers and roasting off the sulfur, which produced sulfuric acid fumes. At times, the fumes were so thick that miners put bells on their mules to keep them from running into

one another.

Erosion was debilitating. Workers cleared forests to fuel the roasting fires, and dug up stumps when trees became scarce. Open-range grazing and burning to encourage grass helped prevent the forests from returning.

But it was the sulfuric acid fumes that pushed the Basin almost to the point of no return. After the railroad arrived in 1890 and the cost of transporting copper plummeted, the copper companies built smelters with tall stacks that carried fumes high into the air to rain down on neighboring hills and valleys, killing the remaining vegetation.

Without protective cover, the soft hills eroded into deep gullies. More than a meter of topsoil washed into nearby streams, suffocating fish by coating their gills, and smothering other aquatic life.

In the early 1900s, in one of the first major environmental lawsuits in this country, the U.S. Supreme Court ruled that the copper companies had to recover sulfuric acid to stop the acid rain. In the process, the Tennessee Copper Company discovered that acid was valuable—more valuable even than copper. And 90 years later, sulfuric acid is still the primary product of the Tennessee Copper Company's successor, Boliden Intertrade.

Reclamation of the Copper Basin began in the 1930s when the Tennessee Copper Company and TVA planted trees to combat erosion. These early attempts met with only moderate success, and much work in the 1940s and 1950s was devoted to finding plants that could tolerate the harsh conditions.

Reclamation by the copper and chemical companies' successor continued off and on during the next 50 years with some success. But by 1984, much of the Copper Basin was still a moonscape. Deeply concerned about the way the three Ocoee reservoirs were filling in with Copper Basin sediments, TVA stepped up the recovery. And TVA perfected a new approach—aerial seeding and fertilization. Private industry, other government agencies, and landowners joined in the effort.

The results have been phenomenal. "Soil erosion before reclamation was almost 200 tons per acre per year—about eight large tractor-trailer loads," says Muncy. "Within a year after treatment, it was less than a third of a tractor-trailer load—eight tons per acre per year."

Water quality in the Ocoee River is improving, fish are returning, and recreation is mushrooming. The Basin is green again. ■

TVA will help China harness water power from the Han River system, a tributary of the Yangtze River. Above, TVA Chairman Craven Crowell and China's Minister of Water Resources Niu Maosheng.

TVA Takes Expertise to China

WITH ITS 1.2 BILLION CITIZENS, AND AN ECONOMY THAT'S GROWING 10 TIMES FASTER THAN THE POPULATION, CHINA IS DESTINED TO BECOME THE LARGEST CONSUMER OF GOODS AND SERVICES in the world.

But China needs electric power and plenty of it for economic progress. That's where TVA comes in.

"Because of the similarities between the Tennessee Valley in the 1930s and many of China's river basins today, TVA's worldwide reputation as a successful manager of the Tennessee River system has great appeal to the Chinese," says TVA Chairman Craven Crowell.

In September, TVA and the State of Tennessee sponsored an Economic Opportunities Through Water and Energy Conference in Beijing. The conference created international trade opportunities for the 65 Tennessee Valley business leaders who attended.

TVA signed a memorandum of understanding with China's Ministry of Electric Power, which calls for TVA to cooperate with China in modernizing and automating that country's aging hydroelectric power plants. Other agreements, with China's Ministry of Water Resources and Lishui Hydro & Power Corp., could lead to TVA's involvement in development of the Han and Li rivers, and to China's tapping TVA's extensive flood-control expertise.

With scores of factories running under capacity because of electricity shortages, China announced in March that it intends to increase electrical generation by 40 percent in the next five years. Its plans for tapping the Han River system involve the construction of 12 new hydroelectric plants, generating 13.8 billion kilowatt-hours of electricity.

TVA won't manage Chinese projects, but will act as a consultant—a role that will improve business prospects for the Valley region.

"TVA made progress in achieving its international objectives by signing three agreements," says Crowell. "Now we're well-positioned to pursue activities in China." ■

LINKED BY LIGNITE

FIFTY MILLION YEARS AGO, THE SITE OF WHAT IS NOW THE CHESTER LIGNITE RESERVE IN MISSISSIPPI WAS A BOG. UNDER THE EARTH'S PRESSURE, ITS PEAT SLOWLY METAMORPHASIZED TO LIGNITE, A SOFT COAL PRODUCT. LEFT TO COMPRESS FOR MILLIONS OF YEARS, THE LIGNITE WOULD FORM COAL, AND LEFT STILL LONGER, it could eventually form diamonds.

But TVA won't wait that long. It's helping the state of Mississippi tap the reserve's wealth now.

In June 1996, TVA agreed to contract with CRSS, Inc., and Phillips Coal Company to purchase power from a lignite-burning electric power plant in Choctaw County. The $480-million facility will be built at the North Chester Reserve Site and is expected to generate 1,000 jobs and $7 million in taxes.

Distributors committed to TVA power: Sam Head (left), Columbus Light & Water, and Tom Underwood, Tallahatchie Electric Power Association

The plant will provide power to TVA and steam to business and industrial firms expected to locate near the facility. "TVA and the distributors of TVA power in Mississippi worked together to make this long-term commitment possible," says TVA Director Johnny Hayes. "If it hadn't been for the distributors and TVA cooperating, this lignite plant would not be happening."

The distributors are equally appreciative of TVA's involvement in the effort. "TVA has never generated power in this state; they've just distributed it," says Sam Head, General Manager of Columbus Light & Water and past president of the Tennessee Valley Public Power Association.

"People on the south end of the TVA system didn't always have the reliability of service that most of the TVA system enjoys. This partnership should take care of that issue. Even those of us who aren't near the lignite plant are very happy to have it in our state."

Six distributors served on the planning team that culminated in the CRSS, Inc./Phillips Coal/TVA partnership. "I was pleased TVA was willing to include us in the preliminary planning," says Tom Underwood, General Manager of the Tallahatchie Electric Power Association. "There's no doubt it took all of us working together to make this a success." ■

BUSINESS OUTLOOK

Deregulation and Competition

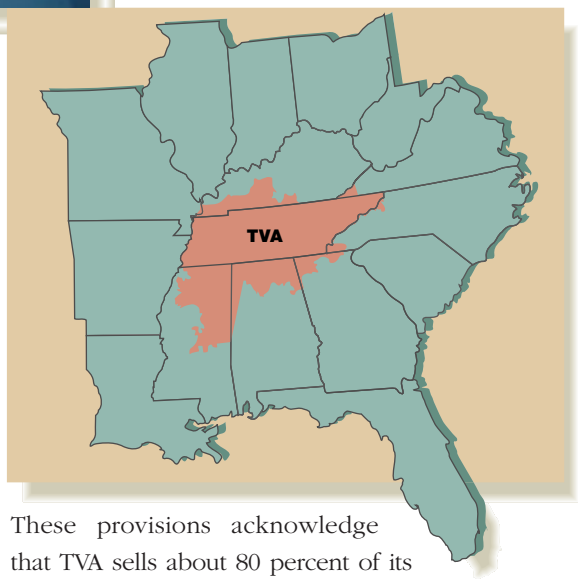
Competition in the electric-utility industry is no longer a future inevitability. Instead, deregulation and competition have already had a major impact on the industry, prompting utilities to make significant changes in the way they operate and are structured. TVA is preparing for these changes by implementing strategies for providing improved and expanded services to its existing and potential new customers in a flexible and responsive manner.

In completing its Integrated Resource Plan (IRP) during 1996, TVA incorporated assumptions regarding varying degrees of competition into the forecasts of electricity demand for the years 1996 through 2020. Titled *Energy Vision 2020*, TVA's IRP considered common characteristics of a competitive environment, TVA's current competitive position, and uncertainty in future power markets. The result is a long-range strategy that enables TVA to meet and exceed the needs of TVA's current customers, and has the flexibility to accommodate competitive changes in the utility industry. Key strategies contained in *Energy Vision 2020* include investing in up to 3,000 megawatts of flexible purchases of power, implementing up to 1,450 megawatts of energy efficiency and load management strategies, and researching and developing renewable energy resources.

The ultimate outcome of changes in the electric-utility industry and their effects on TVA's operating environment cannot be predicted at this time. However, TVA believes that it is well positioned to face the challenges related to deregulation and increased competition, and that it will continue its record of being a stable, low-cost provider of reliable electricity.

offer transmission service patterned after the open-access tariff but consistent with the TVA Act and the Energy Policy Act of 1992. TVA will also post available transmission capacity and conduct transmission business through an OASIS on the Internet. And TVA will implement a Code of Conduct based on FERC's standards contained in Order 889. This will include separating TVA's operations for transmission requests, scheduling, and transmission system security from TVA's wholesale off-system sales activities.

While TVA is not immune from the effect of these rulings on its competitive position, TVA is partially insulated by the "anti-cherry picking" provisions of the National Energy Policy Act of 1992.



These provisions acknowledge that TVA sells about 80 percent of its power to wholesale distributors, and exempt TVA from having to transmit power from neighboring utilities to wholesale customers within the TVA service area. Unless future legislation amends or repeals these provisions, TVA does not anticipate a significant impact on its current base of wholesale distributor customers in the near term.

With respect to competition at the retail level, several bills are being considered by Congress that would promote competition at the retail consumer level in a manner similar to consumer choice in the long-distance telephone industry. While no such legislation is expected to be passed in the near

Regulatory Matters

Several important regulatory rulings were issued during 1996 that will have a significant impact on TVA. On April 24, 1996, the Federal Energy Regulatory Commission (FERC) issued Order Nos. 888 and 889. Order 888 requires FERC-regulated utilities that own, control, or operate transmission lines to file nondiscriminatory open-access tariffs that offer others certain basic types of transmission service. Order 889 requires FERC-regulated utilities to participate in an electronic information system known as the Open Access Same-time Information System (OASIS), which allows for the electronic communication of information about transmission systems and services to all potential customers at the same time. This rule also requires FERC-regulated utilities to functionally separate their wholesale power marketing and transmission operations. The FERC also issued a Notice of Proposed Rulemaking (NOPR) to obtain comments on a system for reserving capacity on utilities' own and others' transmission lines.

In response to these rulings, TVA has taken steps to voluntarily comply with the FERC orders. Specifically, TVA has adopted changes (to be effective January 1, 1997) to its existing guidelines, originally adopted by the TVA Board in 1994, which

term, TVA supports full competition in the electric-utility industry and believes it is well positioned to succeed in a competitive environment.

Environmental Matters

TVA is an industry leader in environmental compliance and is committed to maintaining this position. Annually, TVA incurs costs associated with environmental regulatory legislation in the operation and management of its power and non-power programs. The majority of costs are related to impact studies for proposed projects, nuclear plant decommissioning, storage and disposal of spent nuclear fuel, and control of emissions from fossil fuel plants. In compliance with the provisions of the Clean Air Act Amendments of 1990, TVA has reduced its sulfur dioxide (SO_2) emissions by more than 40 percent since the amendments went into effect.

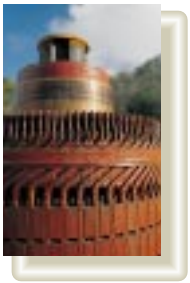
Environmental issues related to TVA's nuclear plants include provision for decommissioning TVA's six nuclear units (see notes 1 and 10). Expenses related to the disposal of spent fuel are included in the current cost of nuclear fuel.

During 1996, TVA made contributions of $123 million to its nuclear decommissioning trust fund. The investments in the trust fund are in excess of $400 million and are expected to grow to a level whereby TVA will have adequate funds for decommissioning of its nuclear plants at the end of their respective service lives.

RESULTS OF OPERATIONS

Overview

The 1996 financial results show a significant improvement over 1995. Net income for 1996 was $61 million as compared with $10 million for 1995. This improvement was driven by two primary factors: sales growth and operating efficiencies. TVA has continued to increase generation and sales over the past nine years, even though the number of employees has decreased. TVA also continued to achieve efficiencies in operating its power plants. These improvements have allowed TVA to maintain stable rates for nine consecutive years and enabled TVA to improve its competitive position.



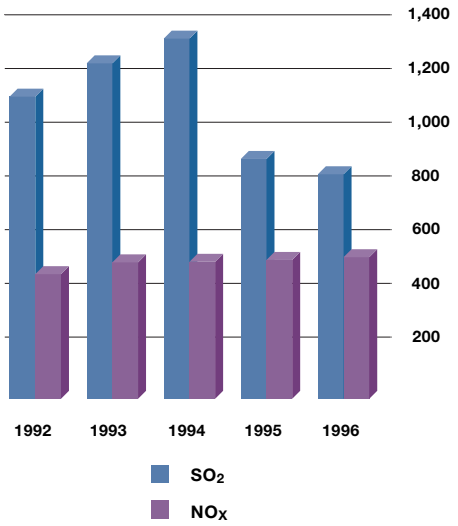
Operating Revenues

Operating revenues were $5,693 million in 1996 compared to $5,375 million in 1995. The $318-million increase was primarily due to an increase in kilowatt-hour sales of approximately 6 billion (4.5 percent), from 134 billion in 1995 to more than 140 billion in 1996. The increase in kilowatt-hour sales primarily resulted from overall growth within the municipalities and cooperatives segment and more extreme weather conditions in 1996.

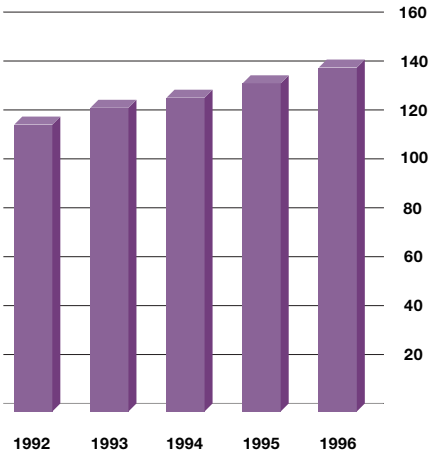
Operating Expenses

Total operating expenses increased $208 million in 1996, or 6 percent, from $3,448 million in 1995 to $3,656 million in 1996. The increase

EMISSIONS
(thousands of tons)



SALES OF ELECTRICITY
(billions of kwh)



resulted primarily from increased generation during 1996 and the introduction of two nuclear units to the power system.

Net fuel and purchased power expense decreased $165 million, or 11 percent, from $1,443 million in 1995 to $1,278 million in 1996 due to favorable fuel prices and greater off-system sales of electricity, which reflect the increased availability of reliable generating capacity.

Operating and maintenance costs increased $168 million, or 16 percent, from $1,050 million in 1995 to $1,218 million in 1996. The increase was primarily due to the operation of two additional nuclear generating units in 1996.

Depreciation and amortization expense increased $201 million from $703 million in 1995 to $904 million in 1996. This increase is primarily due to the two nuclear generating units that were placed in operation during the year.

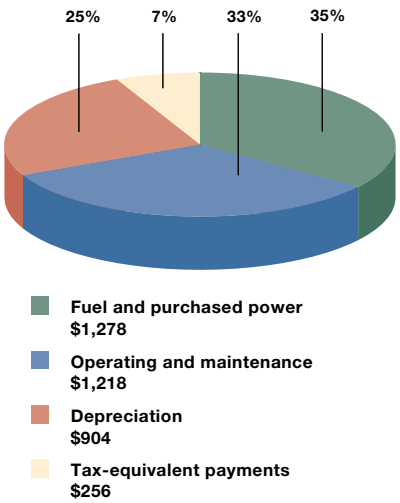
Other Expense

TVA incurred net other expense of $10 million and $91 million during 1996 and 1995, respectively. The 1995 net expense was primarily comprised of a $136-million charge for the voluntary early-out package offered employees and a write-off of nuclear fuel defabrication charges of about $15 million, offset by the recognition of an $81-million gain from a 1993 sale of investments.

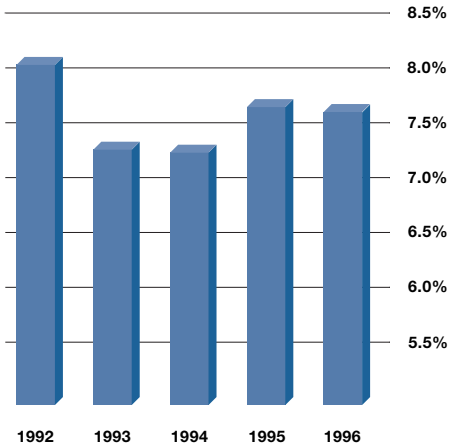
Interest Expense

Gross interest expense increased $59 million from $2,024 million in 1995 to $2,083 million in 1996. The change was due to an increase in total outstanding debt during 1996. Total outstand-

Operating Expenses
(millions of dollars)



Average Interest Rate



ing indebtedness net of unamortized discounts, as of September 30, 1996, was $27.3 billion, with an average interest rate of 7.60 percent, compared to $26.7 billion, with an average interest rate of 7.64 percent as of September 30, 1995. The allowance for funds used during construction decreased from $198 million in 1995 to $117 million in 1996, due to the reduction in the overall level of capital spending in 1996.

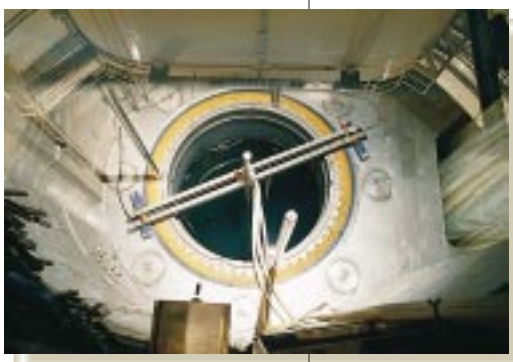
LIQUIDITY AND CAPITAL RESOURCES

TVA's power program is required to be self-supporting from revenues it produces and capital it raises in public markets. As the TVA Act does not authorize TVA to issue equity securities, TVA raises its capital requirements through the internal generation of funds and through borrowings subject to a congressionally mandated $30-billion limit.

TVA's capital requirements primarily relate to the construction of electric generating and transmission facilities. TVA has made significant investments in recent years to complete and restart certain nuclear units and expand and upgrade its fossil and hydro generating units and its transmission system.

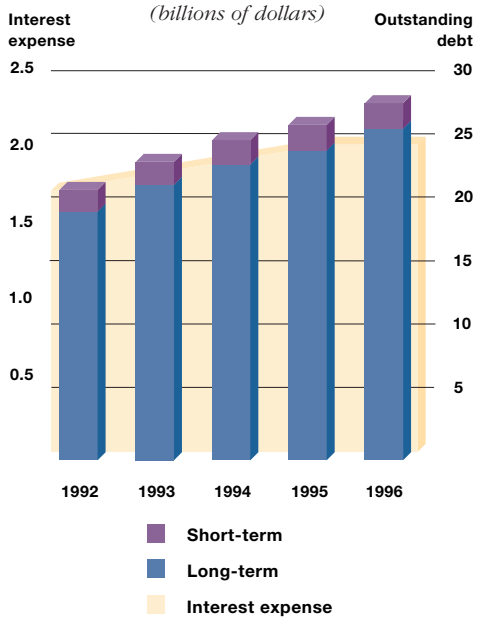
The 1996 completion of Watts Bar 1 and the restart of Browns Ferry 3 significantly reduce TVA's future capital requirements. The completion of TVA's nuclear construction program has contributed to TVA's self-imposing an internal debt ceiling of $28 billion. During 1996 and 1995, TVA's power program generated cash flow from operations of $910 million and $802 million, respectively.

During 1996, TVA continued to expand its access to the capital markets and to new investors. In October 1995, TVA raised $1.6 billion in two global bond issues. The issues, rated triple-A by Moody's Investors Service and Standard and Poors rating agencies, built upon the success of TVA's initial 10-year global bond issue by targeting new international investors and establishing TVA benchmarks at 5 and 30 years. In April 1996, TVA tapped the retail market for the second time by issuing $500 million of Quarterly Income Debt Securities (QIDS). These securities have some of the characteristics of a preferred stock and are listed on the New York Stock Exchange. In April 1996, TVA also marketed $600 million in a unique structure of 40-year bonds puttable at 2 and 10 years, at a price well below the comparable U.S. Treasury issue. Investor demand created an opportunity to reopen the issue for an additional $400 million in July 1996, which resulted



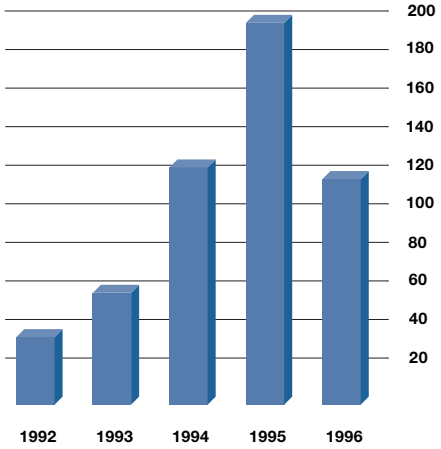
OUTSTANDING DEBT VS. INTEREST EXPENSE

(billions of dollars)



ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION

(millions of dollars)



in pricing levels for TVA superior to that of the original issue. In August 1996, TVA issued $300 million in the first corporate bond sale underwritten entirely by minority-owned firms. Over 70 percent of the issue was placed with new investors.

In September 1996, TVA capped off the fiscal year with its debut non-dollar global transaction, a 1.5 billion Deutsche mark issue. TVA obtained cost-effective funding by working with the European Investment Bank in an arrangement that swapped the cash flows back into dollars. The transaction also enabled TVA to broaden its investor base by further penetrating European and Asian investor markets.

Approximately $3.8 billion of the proceeds from the 1996 borrowings was primarily used to refinance existing debt, and $0.2 billion was used to finance capital expenditures. The remaining $0.4 billion consists primarily of an increase in investments and cash.

Since the TVA Power Program became self-funding in 1959, TVA has borrowed funds each year to help finance construction expenditures. In 1997, TVA expects to use only internally generated funds for capital expenditures and, for the first time since 1961, will not increase debt. The expected reduction in capital expenditures, the self-imposed debt limit, and the expanding investor base will allow TVA to continue to effectively manage its capital resources for the foreseeable future.

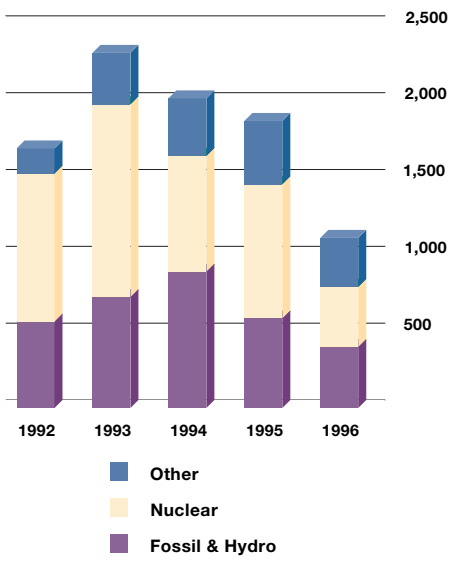
CONSTRUCTION PROGRAM

Construction expenditures decreased $760 million, or 41 percent, from $1.87 billion in 1995 to $1.11 billion in 1996 due primarily to the commercial operation of Watts Bar 1 in May and the commercial restart of Browns Ferry 3 in January. Construction expenditures are expected to continue to decline as TVA no longer has any generating units under active construction. Total capital expenditures for 1997, including capitalized interest, are projected to be approximately $920 million.

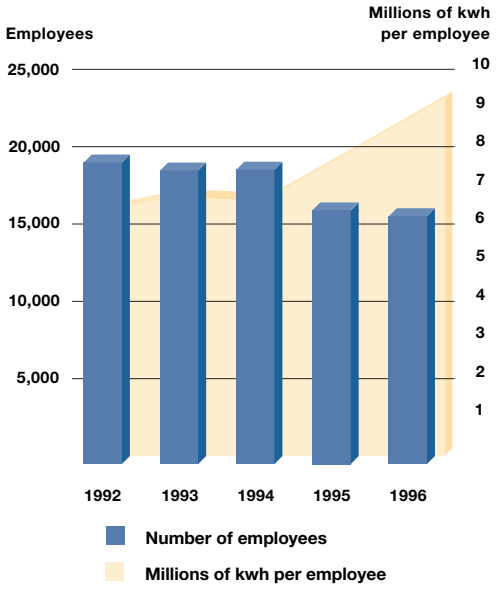
TVA has determined that it will not complete, by itself, three nuclear units (Bellefonte 1 & 2 and Watts Bar 2). Further construction on these units has been deferred, and TVA is actively considering alternatives for these units, such as joint venturing with a partner for completion and/or converting the Bellefonte plant to a combined-cycle plant utilizing natural gas or gasified coal as the primary fuel (see note 2).

During 1996, TVA spent approximately $308 million in an effort to upgrade and improve the fossil generating system, and to reduce emissions in accordance with the provisions of the Clean Air Act Amendments of 1990. TVA expects to spend approximately $344 million in 1997 to continue the

CONSTRUCTION EXPENDITURES
(millions of dollars)



PRODUCTIVITY PER EMPLOYEE



fossil system improvements and emission reduction initiatives. In addition, TVA expects to spend approximately $55 million on its hydroelectric dams in an effort to further improve the output and reliability of these units.

During 1996, TVA spent approximately $228 million to expand and improve the reliability of the transmission system, and TVA anticipates spending approximately $190 million in 1997 to further improve and upgrade its transmission facilities.

SYSTEM OPERATIONS

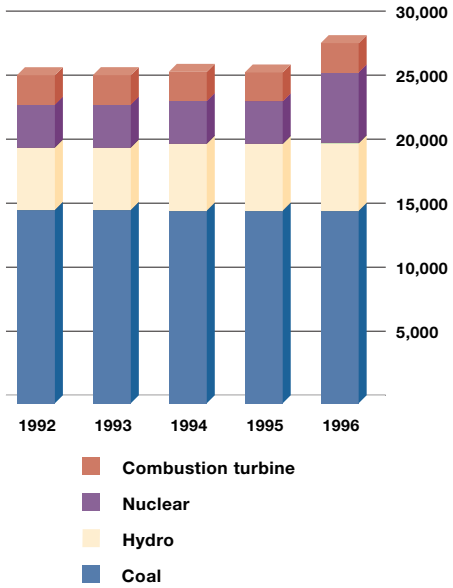
TVA's power system was marked by exceptional performance during 1996. Total electric sales exceeded 140 billion kilowatt-hours during 1996, representing an increase of 6 billion kilowatt-hours or 4.5 percent over 1995 electric sales of 134 billion kilowatt-hours.

TVA's net winter dependable capacity increased approximately 2,200 megawatts or 9 percent with the addition of two nuclear generating units to the power system. This additional capacity allowed TVA to meet an all-time system peak demand of 25,995 megawatts on February 5, 1996, when the average temperature in the Tennessee Valley was 2 degrees Fahrenheit (-17 degrees Celsius). With this increase in capacity, TVA has bolstered its position to meet future increases in demand for electricity within its service area.

TVA also achieved significant productivity milestones during 1996. On June 16, 1996, all five of TVA's nuclear generating units were operating at 100 percent power for the first time. In April, employees at the Browns Ferry Nuclear Plant completed a refueling outage in 31 days, which is 24 days below the industry average. TVA also achieved a reduction in the number of transmission-line interruptions—a measure of the reliability of the transmission system—for the third consecu-

WINTER DEPENDABLE GENERATION CAPACITY

(megawatts)



OPERATING HIGHLIGHTS

	1995	1996
Net winter dependable capacity (megawatts)	25,831	28,123
Nuclear capacity factor	80.0	85.1
Fossil equivalent forced outage rate	7.4	7.0
Number of transmission line interruptions	1,466	1,300

tive year. Interruptions decreased 11 percent, from 1,466 interruptions in 1995 to 1,300 interruptions in 1996. All of these accomplishments have helped TVA achieve its status as a reliable provider of electricity.

In addition to improvements in productivity, TVA has made significant improvements in the efficiency with which it operates its generating units. During 1996, TVA operated its nuclear units at an average of 85 percent of capacity, which is a 6 percent improvement over 1995. Additionally, the fossil units have operated at an average of 74 percent of capacity, which is an increase of 3 percent over 1995 and better than the industry average of 61 percent. Through continuing cost-reduction efforts, TVA has also reduced its cost of fuel. The average fossil fuel cost per kilowatt-hour has decreased 2 percent, from 1.26 cents in 1995 to 1.23 cents in 1996, even though TVA has burned more higher-cost, low-sulfur coal. The average nuclear fuel cost per kilowatt-hour has decreased 8 percent, from 0.61 cents in 1995 to 0.56 cents in 1996. These and other cost reduction initiatives have allowed TVA to maintain stable rates for nine consecutive years, and will enable TVA to continue to provide low-cost, reliable power in a competitive environment.

NONPOWER PROGRAMS

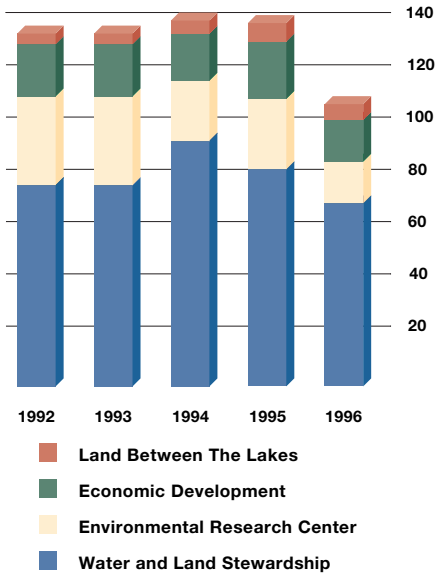
TVA's nonpower activities began with the creation of TVA in 1933 when Congress established TVA as a federal corporation to develop the natural resources of the Tennessee Valley region and to improve the lives of the region's population. Today, these nonpower activities encompass the general stewardship of the river system, federal lands and the environment, and economic development of the Tennessee Valley.

The primary source of funding for the nonpower programs consists of federal appropriations, with other funding provided from user fees and outside service revenues. Federal appropriations during 1996 and 1995 were $109 million and $139 million, respectively.

TVA overcame the nearly 22 percent reduction in appropriated funding in 1996 by generating more revenues, delivering programs more efficiently, eliminating some programs, and downsizing others. TVA has submitted to Congress plans to

APPROPRIATIONS

(millions of dollars)



phase out federal funding for economic development and the Environmental Research Center. The budgeted amount of federal appropriations for 1997 is $106 million.

With its broad mandate for integrated resource management, TVA has the flexibility to enter into economic development partnerships with other entities in order to foster business development, technology development and jobs creation. Examples of successful ventures have been the development of a small business incubation center in Nashville, Tennessee, and the development of the whitewater venue on the Ocoee River for the 1996 Summer Olympics. This course, designed by TVA engineers, is the first Olympic course to be constructed in a natural river bed. The success of the project was shared by TVA, the U.S. Forest Service, the Tennessee Olympics Development Agency, and various local agencies. The project has the potential to stimulate economic growth into the next century by creating an international recreation destination.

Commitment to community development is demonstrated through TVA's Quality Communities program. By integrating the principles of total quality management, strategic planning, and leadership development, the program builds on existing local capacity to enhance economic development. This program has been used as a national model by the U.S. Department of Agriculture.

Appropriated funds were invested to maintain the safety and viability of 54 dams and 14 locks. Improvements to the Pickwick channel were completed and multi-year dam safety improvements were initiated at Fontana, Hiwassee, Chickamauga, Watts Bar, and Pickwick dams.

SIGNIFICANT ACCOUNTING STANDARDS

Regulatory Accounting

TVA is currently subject to the provisions of Statement of Financial Accounting Standards (SFAS) No. 71, *Accounting for the Effects of Certain Types of Regulation.* As a result of applying this pronouncement, TVA has approximately $1.1 billion of regulatory assets, along with approximately $6.3 billion of deferred nuclear plants, as of September 30, 1996. In the event that deregulation of the utility industry precludes TVA from being subject to this pronouncement, TVA would be required to evaluate such regulatory assets under the provisions of SFAS No. 121, *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed Of.* This statement establishes requirements for evaluating and measuring asset impairments, and states that regulatory assets that are no longer probable of recovery through future revenues be charged to earnings. Such an event may have an adverse effect on future results of operations due to the write-off of regulatory assets. However, TVA intends to seek full recovery of any regulatory assets that may result from TVA's transition to doing business in the competitive market.

New Accounting Pronouncement

In 1996, the Financial Accounting Standards Board proposed an accounting standard entitled *Accounting for Certain Liabilities Pertaining to the Removal of Long-Lived Assets.* This pronouncement would require the accrual of costs associated with existing long-lived production facilities including nuclear plant decommissioning costs. Material adjustments to TVA's balance sheet could occur under the proposed standard. However, the impact on operating expenses from this future accounting change is not expected to be significant. ■

BALANCE SHEETS

At September 30 (in millions)	Power program		All programs	
Assets	**1996**	**1995**	**1996**	**1995**
Current assets				
Cash and cash equivalents	$ 238	$ 52	$ 318	$ 131
Accounts receivable	680	681	689	698
Inventories and other, at average cost				
Fuel	110	104	110	104
Other	278	251	278	251
Total current assets	**1,306**	1,088	1,395	1,184
Property, plant, and equipment				
Completed plant	27,955	18,412	29,069	19,488
Less accumulated depreciation	(6,553)	(6,061)	(6,854)	(6,351)
Net completed plant	21,402	12,351	22,215	13,137
Construction in progress	744	9,556	764	9,606
Deferred nuclear generating units	6,293	6,227	6,293	6,227
Nuclear fuel and capital lease assets	1,082	1,167	1,082	1,167
Total property, plant, and equipment	**29,521**	29,301	30,354	30,137
Investment funds	**440**	260	440	260
Deferred charges and other assets				
Loans and other long-term receivables	319	323	375	394
Debt issue and reacquisition costs	1,162	1,233	1,162	1,233
Other deferred charges	1,281	1,088	1,281	1,088
Total deferred charges and other assets	**2,762**	2,644	2,818	2,715
Total assets	**$34,029**	$33,293	$35,007	$34,296

The accompanying notes are an integral part of these financial statements

Liabilities and proprietary capital	Power program 1996	Power program 1995	All programs 1996	All programs 1995
Current liabilities				
Accounts payable	$ 392	$ 694	$ 417	$ 722
Accrued liabilities	187	130	196	141
Accrued interest	498	455	498	455
U.S. Treasury notes	–	150	–	150
Discount notes	1,774	2,681	1,774	2,681
Current maturities of long-term debt	2,250	1,306	2,250	1,306
Total current liabilities	**5,101**	5,416	5,135	5,455
Other liabilities	**1,580**	1,264	1,580	1,264
Long-term debt				
Public bonds—senior	19,403	19,153	19,403	19,153
Federal Financing Bank—senior	3,200	3,200	3,200	3,200
Public bonds—subordinated	1,100	600	1,100	600
Unamortized discount and other adjustments	(383)	(370)	(383)	(370)
Total long-term debt	**23,320**	22,583	23,320	22,583
Proprietary capital				
Appropriation investment	608	628	4,800	4,713
Retained earnings reinvested in power program	3,420	3,402	3,420	3,402
Accumulated net expense of nonpower programs	–	–	(3,248)	(3,121)
Total proprietary capital	**4,028**	4,030	4,972	4,994
Total liabilities and proprietary capital	**$34,029**	$33,293	$35,007	$34,296

STATEMENTS OF INCOME—POWER PROGRAM

For the years ended September 30 (in millions)	**1996**	**1995**	**1994**
Operating revenues			
Sales of electricity			
Municipalities and cooperatives	$4,980	$4,654	$4,582
Industries directly served	452	460	452
Federal agencies	172	179	296
Other	89	82	71
Total operating revenues	**5,693**	5,375	5,401
Operating expenses			
Fuel and purchased power, net	1,278	1,443	1,493
Operating and maintenance	1,218	1,050	1,081
Depreciation and amortization	904	703	639
Tax-equivalents	256	252	248
Total operating expenses	**3,656**	3,448	3,461
Operating income	**2,037**	1,927	1,940
Other expense, net	(10)	(91)	(59)
Income before interest expense	2,027	1,836	1,881
Interest expense			
Interest on debt	1,965	1,908	1,731
Amortization of debt discount, issue, and reacquisition costs, net	118	116	122
Allowance for funds used during construction	(117)	(198)	(123)
Net interest expense	**1,966**	1,826	1,730
Net income	**$ 61**	$ 10	$ 151

The accompanying notes are an integral part of these financial statements.

STATEMENTS OF CASH FLOWS

For the years ended September 30 (in millions)	Power program 1996	Power program 1995	Power program 1994	All programs 1996	All programs 1995	All programs 1994
Cash flows from operating activities						
Net power income	$ 61	$ 10	$ 151	$ 61	$ 10	$ 151
Net expense of nonpower programs	–	–	–	(127)	(182)	(136)
Items not requiring (providing) cash						
Depreciation and amortization	924	715	639	938	728	651
Allowance for funds used during construction	(117)	(198)	(123)	(117)	(198)	(123)
Nuclear fuel amortization	156	112	176	156	112	176
Other, net	162	72	217	164	142	216
Changes in current assets and liabilities						
Accounts receivable	(1)	(5)	76	7	22	66
Inventories and other	(22)	(8)	99	(22)	(8)	99
Accounts payable and accrued liabilities	(246)	74	(23)	(250)	(36)	(51)
Accrued interest	43	31	(21)	43	31	(21)
Other	(50)	(1)	(47)	(50)	(2)	(47)
Net cash provided by operating activities	**910**	802	1,144	803	619	981
Cash flows from investing activities						
Construction expenditures	(1,107)	(1,868)	(2,015)	(1,121)	(1,880)	(2,023)
Allowance for funds used during construction	117	198	123	117	198	123
Nuclear fuel	(76)	(77)	70	(76)	(77)	70
Investments	(162)	(100)	(26)	(162)	(100)	(26)
Other, net	(26)	(24)	(80)	(13)	(39)	(77)
Net cash used in investing activities	**(1,254)**	(1,871)	(1,928)	(1,255)	(1,898)	(1,933)
Cash flows from financing activities						
Long-term debt						
Issues	4,400	3,500	6,381	4,400	3,500	6,381
Redemptions	(2,706)	(2,503)	(3,175)	(2,706)	(2,503)	(3,175)
Debt defeased	–	–	(1,493)	–	–	(1,493)
Short-term borrowings, net	(1,057)	222	(726)	(1,057)	222	(726)
Borrowing expenses, net	(44)	(38)	(252)	(44)	(38)	(252)
Congressional appropriations	–	–	–	109	139	141
Payments to U.S. Treasury	(63)	(62)	(62)	(63)	(62)	(62)
Net cash provided by financing activities	**530**	1,119	673	639	1,258	814
Net change in cash	186	50	(111)	187	(21)	(138)
Cash at beginning of period	52	2	113	131	152	290
Cash at end of period	**$ 238**	$ 52	$ 2	$ 318	$ 131	$ 152

The accompanying notes are an integral part of these financial statements.

STATEMENTS OF CHANGES IN PROPRIETARY CAPITAL—POWER PROGRAM

For the years ended September 30 (in millions)	**1996**	**1995**	**1994**
Retained earnings reinvested at beginning of period	$ 3,402	$ 3,434	$3,325
Net income	61	10	151
Return on appropriation investment	(43)	(42)	(42)
Retained earnings reinvested at end of period	**3,420**	3,402	3,434
Appropriation investment at beginning of period	628	648	668
Return of appropriation investment	(20)	(20)	(20)
Proprietary capital at end of period	**$4,028**	$4,030	$4,082

STATEMENTS OF NET EXPENSE—NONPOWER PROGRAMS

For the years ended September 30 (in millions)	**1996**	**1995**	**1994**
Water and Land Stewardship	$ 75	$ 63	$ 86
Land Between The Lakes	7	6	4
Economic Development	25	23	20
Environmental Research Center	20	21	26
Columbia Dam	–	69	–
Net expense	**$127**	$ 182	$ 136

STATEMENTS OF CHANGES IN PROPRIETARY CAPITAL—NONPOWER PROGRAMS

For the years ended September 30 (in millions)	**1996**	**1995**	**1994**
Proprietary captial at beginning of period	$ 964	$1,007	$1,002
Congressional appropriations	109	139	141
Net expense	(127)	(182)	(136)
Transfers to other federal agencies, net	(2)	–	–
Proprietary capital at end of period	**$ 944**	$ 964	$1,007

The accompanying notes are an integral part of these financial statements.

1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

General

TVA is a wholly owned corporate agency and instrumentality of the United States. It was established by the TVA Act with the objective of developing the resources of the Tennessee Valley region in order to strengthen the regional and national economy and the national defense by providing (1) an ample supply of power within the region, (2) navigable channels and flood control for the Tennessee River System, and (3) agricultural and industrial development and improved forestry in the region. TVA carries out these regional and national responsibilities in an area that centers on Tennessee and parts of Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia.

TVA's programs are divided into two types of activities—the power program and the nonpower programs. Substantially all TVA revenues and assets are attributable to the power program. The power program is separate and distinct from the nonpower programs and is required to be self-supporting from power revenues and funds borrowed from public markets. The power program receives no congressional appropriations and is required to make annual payments to the U.S. Treasury in repayment of, and as a return on, the government's initial appropriation investment in TVA power facilities. Most of the funding for TVA's nonpower programs is provided by congressional appropriations. Certain nonpower activities are also funded by various revenues and user fees. Financial accounts for the power and nonpower programs are kept separately.

Power rates are established by the TVA Board of Directors as authorized by the TVA Act. The TVA Act requires TVA to charge rates for power that, among other things, will produce gross revenues sufficient to provide funds for operation, maintenance, and administration of its power system; payments to states in lieu of taxes; and debt service on outstanding indebtedness.

Revenue recognition

Revenues from power sales are recorded as service is rendered to customers. TVA accrues estimated unbilled revenues for power sales provided to customers for the period of time from the end of the billing cycle to month-end.

Property, plant, and equipment, and depreciation

Additions to plant are recorded at cost, which includes direct and indirect costs such as general engineering, a portion of corporate overhead, and an allowance for funds used during construction. The cost of current repairs and minor replacements is charged to operating expense. The TVA Act requires TVA's Board of Directors to allocate the cost of completed multipurpose projects between the power and nonpower programs, subject to the approval of the President of the United States. The original cost of property retired, together with removal costs less salvage value, is charged to accumulated depreciation. Depreciation is generally computed on a straight-line basis over the estimated service lives of the various classes of assets. The average of the composite rates applied individually to each major class of plant for fiscal years 1996, 1995, and 1994 was 2.67 percent, 3.19 percent, and 3.14 percent, respectively.

Decommissioning costs

The excess of the annual decommissioning provision over earnings from any investments designated for funding decommissioning costs is charged to depreciation expense. Effective for fiscal years 1994-1995, the decommissioning accruals were adjusted to reflect revised estimated useful lives for Browns Ferry and Sequoyah nuclear plants. During this period, investment earnings approximated decommissioning expense and no charges were made to depreciation expense. Decommissioning expense for 1996 is $13 million.

Allowance for funds used during construction

The practice of capitalizing an allowance for funds used during construction is followed in the power program. The allowance is applicable to construction in progress excluding deferred nuclear generating units. Effective October 1, 1994, TVA changed its assumptions used in determining the interest rate used to calculate the allowance for funds used during construction. The change was made to more accurately reflect the nature of the indebtedness issued to fund construction. The effect of the change for fiscal year 1995 was to increase the amount of interest capitalized by approximately $56 million.

Other deferred charges

Deferred charges primarily include regulatory assets capitalized under the provisions of Statement of Financial Accounting Standards No. 71, *Accounting for the Effects of Certain Types of Regulation*. Effective for 1994, TVA elected to reclassify a $1,009 million capitalized interest component of nuclear fuel to other deferred charges. This regulatory

asset is being amortized over a period of approximately eight years, generally on a straight-line basis, subject to adjustment based on annual generating and operating performance, and as considered necessary to ensure full recovery of these costs and compliance with the requirements of the TVA Act. The effect of this change is to increase amortization expense and reduce nuclear fuel expense. During fiscal years 1996, 1995, and 1994, this change reduced net income by $16 million, $7 million, and $126 million, respectively. The remaining balance of nuclear fuel not reclassified to deferred charges will continue to be expensed, based on generation.

Investment funds

Investment funds consist primarily of a portfolio of investments in trusts designated for funding nuclear decommissioning requirements (see note 10). These funds, at September 30, 1996, were invested in portfolios generally designed to earn returns consistent with overall equity market performance.

Debt issuance and reacquisition costs

Issue and reacquisition expenses, call premiums and other related costs, and discounts on power borrowings are deferred and amortized (accreted), respectively, on a straight-line basis over the term of the related outstanding securities.

Tax-equivalents

The TVA Act requires TVA to make payments to states and local governments in which the power operations of the corporation are conducted. The base amount is 5 percent of gross revenues from the sale of power to other than federal agencies during the preceding year, with a provision for minimum payments under certain circumstances. Cash paid for tax-equivalents for fiscal years 1996, 1995, and 1994 have been $256 million, $252 million, and $247 million, respectively.

Interest and capital costs

During fiscal years 1996, 1995, and 1994, cash paid for interest on outstanding indebtedness (net of amount capitalized) was $1,805 million, $1,678 million, and $1,628 million, respectively. In addition to paying interest on outstanding indebtedness, the TVA Act requires TVA to make annual payments to the U.S. Treasury. The annual Treasury payments represent a repayment of the original appropriation investment, along with a return on the appropriation investment. TVA paid $20 million each year for fiscal years 1996, 1995, and 1994 as a repayment of the appropriation investment. TVA paid $43 million to the U.S. Treasury in 1996 as a return on the appropriation investment, while paying $42 million in each of fiscal years 1995 and 1994.

Statements of cash flows

Cash and cash equivalents include the cash available in commercial bank accounts and U.S. Treasury accounts, as well as short-term securities held for the primary purpose of general liquidity. Such securities mature within three months from the date of acquisition.

Research and development costs

Expenditures related to research-and-development costs of new or existing products and processes are expensed as incurred. The amounts charged against income were $45 million in 1996, $43 million in 1995, and $47 million in 1994.

Insurance

TVA is primarily self-insured for property loss, workers' compensation, general liability, and automotive liability. TVA is also self-insured for health care claims for eligible active and retired employees. Consulting actuaries assist the company in determining its liability for self-insured claims. TVA maintains nuclear liability insurance with an outside party (see note 10).

Management estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the related amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

2 NUCLEAR POWER PROGRAM

The nuclear power program at September 30, 1996, consists of nine units—five operating, three deferred, and one inoperative—at four locations, with investments in property, plant, and equipment as follows and in the status indicated:

(in millions)	Operating units	Installed capacity (megawatts)	Completed plant, net	Construction in progress	Deferred	Fuel investment
Browns Ferry	2	2,304	$ 3,681	$ 36	$ –	$ 204
Sequoyah	2	2,442	2,035	102	–	121
Watts Bar	1	1,270	6,819	18	1,718	48
Bellefonte	–	–	–	–	4,575	–
Raw materials			–	–	–	504
Total	**5**	**6,016**	**$12,535**	**$156**	**$6,293**	**$877**

Browns Ferry 1, 2, and 3 were taken out of service in 1985 for plant modifications and regulatory improvements. Browns Ferry 2 was returned to service in 1991. Browns Ferry 3, after completing all essential programmatic and technical requirements, began fuel load in October 1995 and was connected to the TVA power system in November 1995. Browns Ferry 1 will continue to remain in an inoperative status until its ultimate disposition is determined. For financial reporting purposes, the undepreciated cost of Browns Ferry 1 of $86 million is included in net completed plant and is being depreciated as part of the recoverable cost of the plant over the remaining license period.

After receiving a low-power operating license from the Nuclear Regulatory Commission (NRC), fuel load at Watts Bar 1 was completed in November 1995. In February 1996, Watts Bar 1 received a full-power license and has operated commercially since May 27, 1996.

In 1988, TVA suspended construction activities on Watts Bar 2, and the unit is currently in lay-up. In 1988 and 1985, TVA deferred construction activities at Bellefonte 1 and 2, respectively. Estimated 1997 expenditures for the three units total $10 million and are limited to lay-up, maintenance, and ensuring that options for completion remain viable.

In 1993, TVA began an integrated resource planning process from which information was utilized to determine TVA's strategy for meeting future customer energy demands. As part of this long-term energy strategy, TVA reevaluated the need for finishing Bellefonte 1 and 2 and Watts Bar 2 as nuclear units. In December 1994, TVA determined it will not, by itself, complete Bellefonte 1 and 2 and Watts Bar 2 as nuclear units. In the Integrated Resource Plan (IRP), TVA determined that it would study the potential for converting the Bellefonte Nuclear Plant to a combined cycle plant utilizing natural gas or gasified coal as the primary fuel and/or joint venturing with a partner for completion. The feasibility of converting Bellefonte to such an alternate fuel will require in-depth engineering and financial analyses; and accordingly, TVA is utilizing an outside team of technical and financial experts. The IRP also concluded that Watts Bar 2 should remain in deferred status until completion of the Bellefonte study. The impact on TVA's financial position of completing, converting, or joint venturing these units will be determined upon completion of the Bellefonte study. The future decisions on these units will ultimately impact the method of cost recovery, and the TVA Board has determined that it will, at that time, establish rate adjustments and operating policies to ensure full recovery of the cost of these units and compliance with the requirements of the TVA Act. For financial reporting purposes, the cost of the three units is presented as deferred nuclear generating units.

Nuclear fuel

During 1994 and 1995, TVA converted certain fuel assemblies to forms suitable for use at alternate sites, and entered into various agreements wherein certain nuclear fuel was loaned or exchanged for fuel-related services and other consideration. As the book value of the natural uranium component of TVA's nuclear fuel exceeded market value, TVA recognized charges in the statements of income related to such transactions, totaling $31 million in 1995 and $140 million in 1994.

3 COMPLETED PLANT

Completed plant consists of the following at September 30:

(in millions)	1996			1995		
Power program	**Cost**	**Accumulated depreciation**	**Net**	**Cost**	**Accumulated depreciation**	**Net**
Fossil plants	$ 7,320	$ 2,790	$ 4,530	$ 6,826	$2,607	$ 4,219
Nuclear plants	14,370	1,835	12,535	5,813	1,552	4,261
Transmission	2,911	943	1,968	2,659	934	1,725
Hydro plants	1,273	454	819	1,184	449	735
Other	2,081	531	1,550	1,930	519	1,411
Total power	**$27,955**	**$6,553**	**$21,402**	$18,412	$6,061	$12,351

4 LEASES

Certain property, plant, and equipment are leased under agreements with terms ranging from one to 30 years. Most of the agreements include purchase options or renewal options that cover substantially all the economic lives of the properties.

Obligations under capital lease agreements in effect at September 30 were:

Fiscal year *(in millions)*	**General plant capital leases**
1997	$ 36
1998	36
1999	36
2000	36
2001	36
Thereafter	336
Total future minimum lease payments	**516**
Less interest element	(311)
Present value of future minimum lease payments	**$205**

5 APPROPRIATION INVESTMENT—POWER PROGRAM

The TVA Act requires TVA to make annual payments to the U.S. Treasury from net power proceeds. Payments must be of a market rate of return on the net appropriation investment in power facilities plus an annual repayment to reduce such investment (see note 1—interest and capital cost). The payments required by the TVA Act may be deferred under certain circumstances for not more than two years. The return is based on the appropriation investment as of the beginning of the year and the computed average interest rate payable by the U.S. Treasury on its total marketable public obligations as of the same date (6.87 percent at September 30, 1996).

6 DEBT

Borrowing authority

The TVA Act authorizes TVA to issue bonds, notes, and other evidences of indebtedness up to a total of $30 billion outstanding at any one time. TVA must meet certain cash flow and earnings tests that are contained in the TVA Act and the Basic TVA Power Bond Resolution. Debt service on these obligations, which is payable solely from TVA's net power proceeds, has precedence over the payment to the U.S. Treasury described in note 5.

Debt outstanding

Debt outstanding at September 30, 1996 and 1995 (excluding defeased debt of $950 million and $1.2 billion, respectively, which is not considered by TVA to be debt that is subject to the $30 billion bond limit), consists of the following:

(in millions)	**1996**	**1995**
Short-term debt		
U.S. Treasury notes	$ –	$ 150
Held by the public		
Discount notes (net of discount)	1,774	2,681
Current maturities of long-term debt—3.30% to 6.00%	2,250	1,306
Total short-term debt	4,024	4,137
Long-term debt		
Held by the public—senior		
Maturing in fiscal year 1997	–	2,250
Maturing in fiscal year 1998—5.07% to 5.98%	1,453	453
Maturing in fiscal year 1999—6.25% to 7.625%	750	1,550
Maturing in fiscal year 2000—7.43% to 8.375%	1,000	1,100
Maturing in fiscal years 2001 through 2045—6.00% to 8.625%	16,200	13,800
Held by Federal Financing Bank—senior		
Maturing in fiscal years 2003 through 2016—8.535% to 11.695%	3,200	3,200
Held by the public—subordinated		
Maturing in fiscal years 2045 through 2046—7.50% to 8.00%	1,100	600
Total long-term debt	23,703	22,953
Unamortized discount and other adjustments	(383)	(370)
Net long-term debt	23,320	22,583
Total debt	**$27,344**	$26,720

Short-term debt

The weighted average rates applicable to short-term debt outstanding in the public market as of September 30, 1996 and 1995, were 5.38 percent and 5.79 percent, respectively. During fiscal years 1996, 1995, and 1994, the maximum outstanding balance of short-term borrowings held by the public was (in millions) $3,537, $3,503, and $4,062, respectively, and the average amounts (and weighted average interest rates) of such borrowings were approximately (in millions) $2,692 (5.50 percent), $2,743 (5.83 percent), and $3,163 (3.75 percent), respectively.

Put and call options

Bond issues of $15.2 billion held by the public are redeemable in whole or in part, at TVA's option, on call dates ranging from the present to April 2012 at call prices ranging from 100 percent to 106.7 percent of the principal amount. Additionally, TVA has bond issues of $1.5 billion held by the public that are repayable in whole or in part at the option of the respective bondholders. One bond issue totaling $500 million, which matures in July 2045, is repayable in 2001 at the option of the bondholders, while another issue totaling $1 billion, which matures in April 2036, is repayable in 1998

or 2006 at the option of the bondholders. Both issues are reported with maturity dates corresponding to the earliest date on which bonds of each respective issue may be repaid at the option of the bondholders.

Advance refundings

TVA has incurred premiums totaling $1.5 billion to effect certain advance refundings during recent years. These premiums are being deferred and recognized as an expense ratably through the maturity dates of the new debt issues. Certain advance refundings were effected through in-substance defeasance transactions, wherein TVA transferred sufficient funds to establish irrevocable trusts to hold securities that are scheduled to earn interest and mature in amounts sufficient to meet debt service requirements.

Foreign currency transactions

During fiscal year 1996, TVA entered into a currency swap contract as a hedge for a foreign currency denominated debt transaction. Any gain (loss) on the debt instrument due to the foreign currency transaction will be offset by a loss (gain) on the swap contract. At September 30, 1996, the currency transaction resulted in a $16 million gain, which is included in the account "unamortized discount and other adjustments." The offsetting loss on the swap contract is recorded as a deferred liability.

7 FAIR VALUE OF FINANCIAL INSTRUMENTS

TVA uses the methods and assumptions described below to estimate the fair values of each significant class of financial instrument. TVA does not hold or issue financial instruments for trading purposes.

Cash and cash equivalents, and short-term debt

The carrying amount approximates fair value because of the short-term maturity of these instruments.

Investment funds

At September 30, 1996, these investments were classified as available for sale and carried at their fair value.

Loans and other long-term receivables

Fair values for these homogeneous categories of loans and receivables are estimated by determining the present value of future cash flows using the current rates at which similar loans are presently made to borrowers with similar credit ratings and for the same remaining maturities.

Bonds

Fair value of long-term debt traded in the public market is determined by multiplying the par value of the bonds by the quoted market price (asked price) nearest the balance sheet date. The fair value of other long-term debt and long-term debt held by the Federal Financing Bank is estimated by determining the present value of future cash flows using rates of financial instruments with quoted market prices of similar characteristics and the same remaining maturities.

The estimated values of TVA's financial instruments at September 30 are as follows :

	1996		1995	
(in millions)	Carrying amount	Fair amount	Carrying amount	Fair amount
Cash and cash equivalents	$ 318	$ 318	$ 131	$ 131
Investment funds	440	440	260	260
Loans and other long-term receivables	375	365	394	378
Short-term debt	1,774	1,774	2,831	2,831
Long-term debt, including current maturities	25,953	26,562	24,259	24,426

The fair market value of the financial instruments held at September 30, 1996, may not be representative of the actual gains or losses that will be recorded when these instruments mature or when they are called or presented for early redemption.

8 BENEFIT PLANS

Pension plan

TVA has a defined benefit plan consisting of two benefit structures, the Original Benefit Structure and the Cash Balance Benefit Structure, which covers most full-time employees. The plan assets are primarily stocks and bonds. TVA contributes to the plan such amounts as are agreed upon between TVA and the TVA Retirement System board of directors which, in no event, would be less than the amount necessary on an actuarial basis to provide assets sufficient to meet obligations for benefits. The pension benefit for participants in the Original Benefit Structure is based on the member's years of creditable service, average base pay for the highest three consecutive years, and the pension rate for the member's age and years of service, less a Social Security offset.

The Cash Balance Benefit Structure was implemented January 1, 1996. The pension benefit for participants in the Cash Balance Benefit Structure is based on credits accumulated in the member's account and the member's age. The account also increases at an interest rate equal to the change in the Consumer Price Index plus 3 percent, which amounted to 5.82 percent for fiscal 1996.

The components of pension expense for fiscal years ended September 30 were:

(in millions)	**1996**	**1995**	**1994**
Pension expense			
Service cost	$ 72	$ 62	$ 76
Interest cost on projected benefit obligation	309	304	275
Actual return on assets	(616)	(816)	(32)
Net amortization and deferral	217	450	(307)
Net pension (income) expense	**$ (18)**	$ 0	$ 12
Funded status			
Actuarial present value of benefit obligations			
Vested benefit obligation	$(3,506)	$(3,256)	$(2,839)
Nonvested benefits	(50)	(113)	(111)
Accumulated benefit obligation	(3,556)	(3,369)	(2,950)
Effects of projected future compensation	(401)	(323)	(389)
Projected benefit obligation	(3,957)	(3,692)	(3,339)
Plan assets at fair value	4,851	4,375	3,674
Excess of plan assets over projected benefit obligation	894	683	335
Unrecognized net gain	(770)	(627)	(280)
Unrecognized net obligation being amortized over 15 years beginning October 1, 1987	2	2	3
Prepaid pension cost	**$ 126**	$ 58	$ 58

The discount rate used to determine the actuarial present value of the projected benefit obligation was 8.0 percent in 1996, 7.5 percent in 1995, and 8.5 percent in 1994. The assumed annual rates of increase in future compensation levels for 1996 and 1995 ranged from 3.3 to 8.3 percent, and in 1994 ranged from 4.3 to 9.3 percent. The expected long-term rate of return on plan assets was 11 percent for 1996, 1995, and 1994.

Other postretirement benefits

TVA sponsors an unfunded defined benefit postretirement plan that provides for contributions toward the cost of retirees' medical coverage. The plan covers employees who, at retirement, are age 60 (or who are age 50 and have at least five years of service). TVA's contributions are a flat dollar amount based upon the participant's age and years of service and certain payments toward the plan costs.

The annual assumed cost trend for covered benefits is 11.0 percent in fiscal year 1996, decreasing by one-half percent per year reaching 5.5 percent in 2007 and thereafter. For fiscal years 1995 and 1994, annual trend rates of 11.5 percent and 13.0 percent respectively were assumed. The effect of the change in assumptions on a cost basis was not significant. Increasing the assumed health-care cost trend rates by 1 percent would increase the accumulated postretirement benefit obligation (APBO) as of September 30, 1996, by $25 million and the aggregated service and interest cost components of net periodic postretirement benefit cost for 1996 by $2 million.

The weighted average discount rate used in determining the APBO was 8.0 percent for fiscal year 1996, 7.5 percent for fiscal year 1995, and 8.5 percent for fiscal year 1994. For fiscal years 1996 and 1995, any net unrecognized gain or loss resulting from experience different from that assumed or from changes in assumptions, in excess of 10 percent of the APBO, is amortized over the average remaining service period of active plan participants. For fiscal year 1994, gains and losses resulting from experience different from that assumed, or from changes in assumptions, are amortized using a straight-line method over four years.

The following sets forth the postretirement plan's funded status at September 30:

(in millions)	**1996**	**1995**	**1994**
Accumulated postretirement benefit obligation (APBO)			
Retirees	$ 230	$ 214	$ 166
Fully eligible active plan participants	4	1	1
Other active plan participants	187	116	114
APBO	**421**	331	281
Unrecognized net loss (gain)	(95)	(15)	6
Accrued postretirement benefit cost	**$326**	$ 316	$ 287
Net periodic postretirement benefit cost			
Service cost	$ 8	$ 7	$ 10
Interest cost	24	26	22
Amortization of gain	–	–	(5)
Net periodic postretirement benefit cost	**$ 32**	$ 33	$ 27

Other postemployment benefits

Statement of Financial Accounting Standards No. 112, *Employers Accounting for Postemployment Benefits*, applies to postemployment benefits, including workers' compensation provided to former or inactive employees, their beneficiaries, and covered dependents after employment but before retirement. Adoption of SFAS No. 112 on October 1, 1994, changed TVA's method of accounting from recognizing costs as benefits are paid to accruing the expected costs of providing these benefits. This resulted in recognition of an original transition obligation of approximately $280 million. During fiscal year 1996, TVA made adjustments to certain assumptions utilized in the determination of the obligation at September 30, 1996. The adjustments to assumptions resulted in an increase in the original transition obligation of approximately $194 million at September 30, 1996. In connection with adoption of SFAS No. 112, and related approval by its Board of Directors, TVA recorded the transition obligation as a regulatory asset. The regulatory asset is being amortized over approximately 15 years, whereby the annual expense will approximate the expense that would be recorded on an as-paid basis.

Early-out and accelerated severance package

In 1996, TVA provided both voluntary and involuntary severance packages, which affected approximately 800 employees. The 1996 package totaled approximately $35 million and consisted primarily of severance pay, which was charged to the power program as other expense during 1996.

In 1995, TVA made available early-out benefit termination packages, which were accepted by approximately 2,500 employees. The 1995 package totaled $148 million and consisted of severance pay ($74 million), retirement benefits ($52 million), and postretirement health benefits ($22 mil-

lion). Of the total cost, $136 million was applicable to the power program and was charged to other expense during 1995. The remaining $12 million was applicable to nonpower operations and was recorded by the power program as a long-term receivable to be recovered from future available nonpower funds.

9 MAJOR CUSTOMERS

In accordance with contract provisions, the Department of Energy (DOE) exercised its right prior to fiscal year 1987 to reduce the amount of electric power it would purchase from TVA. TVA and DOE reached an agreement in December 1987, whereby DOE's payment obligations were satisfied through a series of payments to TVA totaling more than $1.8 billion between 1987 and 1994. Payments of $160 million were included in revenues in fiscal year 1994.

One municipal customer accounts for approximately 10 percent of total power sales and four other municipal customers account for an additional 21 percent of total power sales. These five municipal customers purchase power from TVA under long-term contracts for terms of 20 years, which require 10 years' notice to terminate.

10 CONSTRUCTION EXPENDITURES AND COMMITMENTS AND CONTINGENCIES

Construction expenditures

Construction expenditures, including capitalized interest, are estimated to be approximately $920 million for 1997 and $850 million for 1998. These estimates are revised periodically to reflect changes in economic conditions and other factors considered in their determination.

Purchase commitments

TVA has entered into approximately $2.4 billion in long-term commitments ranging in terms of up to eight years for the purchase of coal.

Contingencies

Nuclear insurance. The Price-Anderson Act sets forth an indemnification and limitation of liability plan for the U.S. nuclear industry. All NRC licensees, including TVA, maintain nuclear liability insurance in the amount of $200 million for each plant with an operating license. The second level of financial protection required is the industry's retrospective assessment plan, using deferred premium charges. The maximum amount of the deferred premium for each nuclear incident is approximately $79 million per reactor, but not more than $10 million per reactor may be charged in any one year for each incident. TVA could be required to pay a maximum of $396 million per nuclear incident on the basis of its five licensed units, but it would have to pay no more than $50 million per incident in any one year.

In accordance with NRC regulations, TVA carries property and decontamination insurance of $1.06 billion at each licensed nuclear plant for the cost of stabilizing or shutting down a reactor after an accident. Some of this insurance may require the payment of retrospective premiums of up to a maximum of approximately $43 million.

Acid rain legislation. The Clean Air Act Amendments of 1990 require fossil-fuel fired generation units to reduce their sulfur dioxide and nitrogen oxide emissions in two phases in order to control acid rain. The Phase I compliance period commenced on January 1, 1995, while the Phase II compliance period commences on or after January 1, 2000. Based on the level of emissions, 26 of TVA's 59 operating coal-fired units are classified as Phase I units, with the remaining units being Phase II units. Compliance with these requirements has resulted in substantial expenditures for the reduction of emissions at TVA's coal-fired generating plants.

TVA's compliance strategy to reduce sulfur dioxide emissions included the use of lower-sulfur coal at three of its fossil plants and the installation of scrubbers at its Cumberland Fossil Plant. During 1995, TVA completed the addition of scrubbers at Cumberland for a total cost of $638 million.

Nitrogen oxide reductions are required for 19 of TVA's Phase I units. These reductions were achieved through the installation of low-nitrogen-oxide burners at 13 units, with some of those units also being equipped with over-fire air. The emissions from the remaining Phase I units were averaged with those from controlled units to achieve compliance. During 1996, TVA installed equipment at eight units for Phase II nitrogen-oxide-emission requirements.

Expenditures related to the Clean Air projects during 1996 were approximately $80 million. TVA has already completed the actions necessary to achieve Phase I compliance for both

sulfur dioxide and nitrogen oxide emissions, and TVA is proceeding to take actions to comply with Phase II requirements that become effective in the year 2000 or after. The total cost of compliance cannot reasonably be determined at this time because of the uncertainties surrounding final Environmental Protection Agency regulations, resultant compliance strategy, potential for development of new emission control technologies, and future amendments to the legislation.

Hazardous substances. The release and cleanup of hazardous substances are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act. In a manner similar to other industries and power systems, TVA has generated or used hazardous substances over the years. TVA has been identified as a potentially responsible party with respect to three off-site disposal areas. TVA's liability at these sites has not yet been determined. In addition, TVA is currently investigating two other sites that TVA either owns or partially owns. TVA may have cleanup responsibilities at those sites by virtue of its control of the property. TVA's potential liabilities for its share of cleanup costs at these sites are uncertain but are not expected to be substantial.

Litigation. TVA is a party to various civil lawsuits and claims that have arisen in the ordinary course of its business. Although the outcome of pending litigation cannot be predicted with any certainty, it is the opinion of TVA counsel that the ultimate outcome should not have a material adverse effect on TVA's financial position or results of operations.

Decommissioning costs. Provision for decommissioning costs of nuclear generating units is based on the estimated cost to dismantle and decontaminate the facilities to meet NRC criteria for license termination. At September 30, 1996, the present value of the estimated future decommissioning cost of $305 million is included in other liabilities. The decommissioning cost estimates are based on prompt dismantlement and removal of the plant from service. The actual decommissioning costs may vary from the estimates because of changes in the assumed dates of decommissioning, changes in regulatory requirements, changes in technology, and changes in costs of labor, material, and equipment.

TVA maintains an investment trust fund to provide funding for the decommissioning of nuclear power plants. Prior to September 1993, $210 million of power funds was invested in zero coupon bonds. In September 1993, TVA determined that the portfolio of investments could be sold and such proceeds reinvested in instruments that would yield greater proceeds over the remaining term to decommissioning dates. Accordingly, these investments were sold for $373 million and TVA realized a gain of $163 million. The gain was deferred and amortized into income over a 24-month period beginning in October 1993. At September 30, 1995, a $260 million investment portfolio consisting of short-term marketable securities had been reestablished. During 1996, TVA contributed an additional $123 million to the fund and at September 30, 1996, the entire fund was invested in equity market index funds.

11 NONPOWER PROGRAMS

TVA's nonpower programs deliver various public services. These public services include managing navigable channels, providing flood control, overseeing certain recreation facilities, and generating general economic development. The nonpower programs encompass general stewardship of land, water, and wildlife resources. TVA's nonpower programs also conduct certain research and development activities in pollution prevention and remediation.

Funding for nonpower programs is primarily provided through federal appropriations. During fiscal years 1996 and 1995, the nonpower programs received appropriations of $109 million and $139 million respectively. Certain nonpower-program activities are also funded by user fees and outside-services revenues.

During fiscal year 1995, the nonpower programs had a net expense of $182 million, which included a $69 million charge for the write-off of the Columbia Dam and Reservoir project. The Columbia Dam and Reservoir, a multipurpose project financed by congressional appropriations, was suspended in prior years due to budget restrictions and environmental concerns. During fiscal year 1995, TVA determined that the Columbia Dam would not be completed, and accordingly, the project cost was expensed.

The completed plant of the nonpower programs consists of multipurpose dams and other plant. At September 30, 1996, the net completed plant balances for multipurpose dams and other plant were $705 million and $108 million, respectively. At September 30, 1995, the net completed plant balances for multipurpose dams and other plant were $682 million and $104 million, respectively.

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors of the Tennessee Valley Authority

We have audited the accompanying balance sheets (power program and all programs) of the Tennessee Valley Authority as of September 30, 1996 and 1995, and the related statements of income (power program), changes in proprietary capital (power program and nonpower programs), net expense (nonpower programs), and cash flows (power program and all programs) for each of the three years in the period ended September 30, 1996. These financial statements, are the responsibility of the Tennessee Valley Authority's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards and *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the power program and all programs of the Tennessee Valley Authority as of September 30, 1996 and 1995, the results of operations of the power program and nonpower programs, and cash flows of the power program and all programs for each of the three years in the period ended September 30, 1996, in conformity with generally accepted accounting principles.

As discussed in note 8 to the financial statements, in 1995 the Tennessee Valley Authority adopted Statement of Financial Accounting Standard No. 112, *Employers Accounting for Postemployment Benefits.*

In accordance with *Government Auditing Standards,* we have also issued a report, dated October 24, 1996, on our consideration of the Tennessee Valley Authority's internal control structure and a report, dated October 24, 1996, on its compliance with laws and regulations.

Coopers & Lybrand L.L.P.

Coopers & Lybrand L.L.P.
Knoxville, Tennessee
October 24, 1996

REPORT OF MANAGEMENT

Management is responsible for the preparation, integrity, and objectivity of the financial statements of the Tennessee Valley Authority as well as all other information contained in the annual report. The financial statements have been prepared in conformity with generally accepted accounting principles applied on a consistent basis and, in some cases, reflect amounts based on the best estimates and judgments of management, giving due consideration to materiality. Financial information contained in the annual report is consistent with that in the financial statements.

The Tennessee Valley Authority maintains an adequate system of internal controls to provide reasonable assurance that transactions are executed in accordance with management's authorization, that financial statements are prepared in accordance with generally accepted accounting principles, and that the assets of the corporation are properly safeguarded. The system of internal controls is documented, evaluated, and tested on a continuing basis. No internal control system can provide absolute assurance that errors and irregularities will not occur due to the inherent limitations of the effectiveness of internal controls; however, management strives to maintain a balance, recognizing that the cost of such a system should not exceed the benefits derived. No material internal control weaknesses have been reported to management.

Coopers & Lybrand L.L.P. was engaged to audit the financial statements of the Tennessee Valley Authority and issue reports thereon. Its audits were conducted in accordance with generally accepted auditing standards. Such standards require a review of internal controls, and an examination of selected transactions and other procedures sufficient to provide reasonable assurance that the financial statements neither are misleading nor contain material errors. The Report of Independent Accountants does not limit the responsibility of management for information contained in the financial statements and elsewhere in the annual report.

David N. Smith

David N. Smith
Chief Financial Officer
and Executive Vice President of Financial Services

STATISTICAL AND FINANCIAL SUMMARIES

For the years ended September 30	**1996**	**1995**	**1994**	**1993**	**1992**
Sales (millions of kilowatt-hours)					
Municipalities and cooperatives	117,035	110,245	108,073	105,566	98,505
Industries directly served	16,599	16,684	15,792	16,196	16,576
Federal agencies	6,966	7,226	4,407	2,382	2,204
Total sales	**140,600**	134,155	128,272	124,144	117,285
Operating revenues (millions of dollars)					
Electric					
Municipalities and cooperatives	$ 4,980	$4,654	$4,582	$4,479	$4,266
Industries directly served	452	460	452	472	472
Federal agencies	172	179	296	254	256
Other	89	82	71	71	71
Total revenues	**$5,693**	$5,375	$5,401	$5,276	$5,065
Revenue per kilowatt-hour (cents)[a]	**3.99**	3.94	4.03	4.06	4.12
Winter net dependable generating capacity (megawatts)					
Hydro[b]	5,298	5,225	5,242	4,885	4,885
Fossil	15,012	15,032	15,032	15,088	15,088
Nuclear units in service	5,545	3,342	3,342	3,365	3,361
Combustion turbine	2,268	2,232	2,264	2,284	2,284
Total capacity	**28,123**	25,831	25,880	25,622	25,618
System peak load (megawatts)—summer	**25,376**	25,496	23,398	23,878	21,980
System peak load (megawatts)—winter	**25,995**	24,676	24,723	21,666	21,974
Percent gross generation by fuel source					
Fossil	**65%**	71%	72%	77%	70%
Hydro	**11%**	12%	14%	13%	12%
Nuclear	**24%**	17%	14%	10%	18%
Fuel cost per kilowatt-hour (cents)					
Fossil	**1.23**	1.26	1.34	1.27	1.33
Nuclear[c]	**.56**	.61	1.10	1.09	1.10
Aggregate fuel cost per kwh net thermal generation	**1.06**	1.14	1.31	1.25	1.29
Fuel data					
Net thermal generation (millions of kilowatt-hours)	**131,898**	118,097	110,643	109,968	105,577
Billion Btu	**1,338,157**	1,197,295	1,120,868	1,105,395	1,069,725
Fuel expense (millions of dollars)	**1,395**	1,348	1,450	1,375	1,360
Cost per million Btu (cents)	**104.22**	112.61	129.40	124.42	127.16
Net heat rate, fossil only	**10,145**	10,138	10,131	10,052	10,132

a Excludes Department of Energy settlement payment of $160 million for the years 1992-1994.
b Includes 405 megawatts of dependable capacity from the Corps of Engineers projects on the Cumberland River System.
c TVA changed its method of expensing the interest component of nuclear fuel expense in 1995 (see note 1).

[Top row, left to right]

Fossil & Hydro Group

JOE DICKEY, TVA's Chief Operating Officer, has the responsibility for day-to-day production and delivery of electricity to TVA customers. He is also Executive Vice President in charge of the Fossil & Hydro Group, representing 22,578 megawatts of net winter dependable generating capacity.

Resource Group

KATE JACKSON, Executive Vice President of TVA's Resource Group, is responsible for TVA nonpower programs, which include navigation, flood control, the Environmental Research Center, Land Between The Lakes, and the management of the Tennessee River basin.

Administration

NORM ZIGROSSI, TVA's Chief Administrative Officer and Executive Vice President of Business Services, is responsible for all TVA corporate and administrative functions and for ensuring these functions are closely linked to the policies of the Board of Directors. He chairs TVA's Executive Committee.

Finance

DAVID N. SMITH, TVA's Chief Financial Officer and Executive Vice President of Financial Services, is responsible for the Finance, Controller, and Treasurer organizations; investor relations; and risk management. Through management of TVA's $30-billion capital structure, he develops fiscal strategies to ensure funding for corporate operations and growth.

TVA Nuclear

OLIVER KINGSLEY, JR., President of TVA Nuclear and Chief Nuclear Officer for TVA, oversees operation, maintenance, engineering, and construction of all nuclear units, representing 5,545 megawatts of net dependable generating capacity in operation.

[Bottom row, left to right]

Customer Service & Marketing

MARK MEDFORD, Executive Vice President of TVA's newly created Customer Service & Marketing Group, is responsible for customer account management, energy marketing, technology advancement, and economic development.

Transmission & Power Supply

BILL MUSELER, Executive Vice President of TVA's newly created Transmission & Power Supply Group, is responsible for engineering, construction, maintenance, operation, and dispatch for the 17,000-mile TVA transmission system.

General Counsel

ED CHRISTENBURY, TVA's General Counsel, advises the Board on legal matters, provides overall policy direction to the Office of the General Counsel, and oversees and coordinates all legal proceedings.

For investor inquiries:

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TVA is an equal opportunity and affirmative action employer. TVA also ensures that the benefits of programs receiving TVA financial assistance are available to all eligible persons regardless of race, color, sex, national origin, religion, disability, or age. This document can be made available in an alternative format upon request.

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