

**Serving the public interest...**

TENNESSEE VALLEY AUTHORITY

**the powerful balance**

1998 ANNUAL REPORT

**...in a competitive marketplace.**



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## Financial Highlights—Power Program

For the years ended September 30 (millions of dollars)

	1998	1997	Percent Change
Operating revenues	\$ 6,729	\$ 5,934	13
Operating expenses	(4,549)	(4,080)	12
Operating income	2,180	1,854	18
Other income, net	12	157	(92)
Interest expense	(1,959)	(2,003)	(2)
Net income	\$ 233	\$ 8	NM
<b>Total assets</b>	<b>\$ 33,615</b>	<b>\$ 33,684</b>	<b>–</b>
<b>Capitalization</b>			
Long-term debt, including current maturities	\$ 24,520	\$ 24,726	(1)
Proprietary capital	4,148	3,975	4
<b>Total capitalization</b>	<b>\$ 28,668</b>	<b>\$ 28,701</b>	<b>–</b>
Cash flow from operations	\$ 1,394	\$ 1,066	31
Capital expenditures	\$ 637	\$ 722	(12)

## Power System Statistics

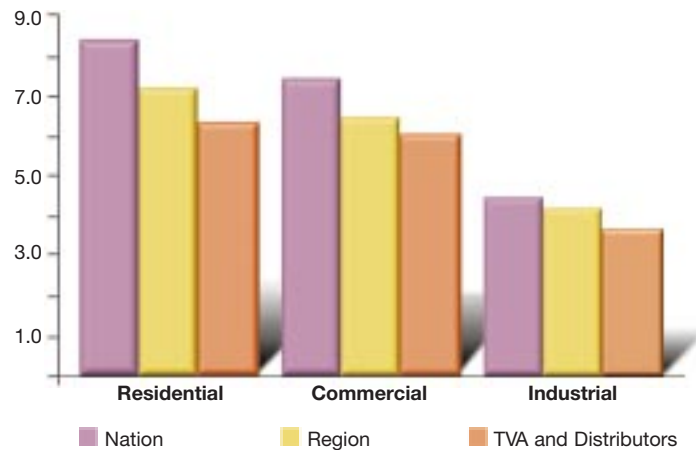
For the years ended September 30

	1998	1997	Percent Change
<b>System input (millions of kilowatt-hours)</b>			
System generation			
Hydro, including pumped storage	15,705	17,232	(9)
Fossil	94,311	93,417	1
Nuclear	44,173	42,008	5
Combustion turbine	1,295	339	282
Total net generation	155,484	152,996	2
Purchased	13,051	11,947	9
<b>Total system input</b>	<b>168,535</b>	<b>164,943</b>	<b>2</b>
<b>System output (millions of kilowatt-hours)</b>			
Sales			
Municipalities and cooperatives	123,330	114,771	7
Industries directly served	18,514	17,359	7
Federal agencies and other	21,293	27,198	(22)
Total sales	163,137	159,328	3
Other	1,663	2,029	(18)
Losses	3,735	3,586	4
<b>Total system output</b>	<b>168,535</b>	<b>164,943</b>	<b>2</b>
Net winter dependable capacity (megawatts)	28,498	28,417	–
System peak load (megawatts)—summer	27,253	26,661	2
System peak load (megawatts)—winter	23,204	26,670	(13)
Annual load factor	64.0	62.2	3
Number of employees	13,818	14,510	(5)
<b>Percent net winter dependable capacity by fuel source</b>			
Fossil	53%	53%	–
Nuclear	20%	20%	–
Hydro	19%	19%	–
Combustion turbine	8%	8%	–



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Average Cents Per kWh



Source: Energy Information Administration, average price data for 7/97 through 6/98

*TVA provides power to the Valley at the lowest feasible price, consistent with its Federal mandate*

## Electricity Generation

### Business Description

- Nation's largest wholesaler of electricity
- 28,498 megawatts of capacity (net winter dependable)
- 11 fossil plants (59 units)
- 3 nuclear plants (5 units)
- 29 hydro plants (109 units)
- 4 combustion turbine plants (48 units)
- 1 pumped storage plant (4 units)

### Customers and Markets

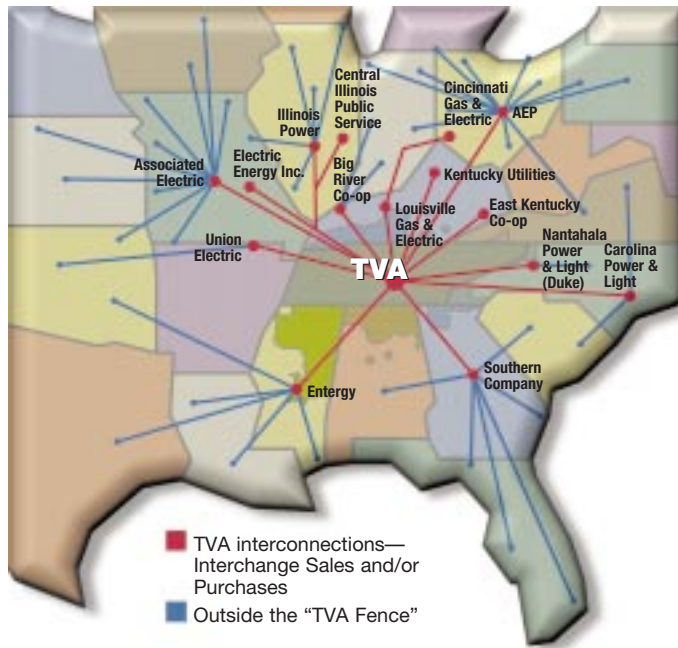
- 159 power distributors
- 64 large industrial and federal customers
- 8 million residential customers
- Tennessee and parts of six other states
- 4% average annual sales growth since 1993

## Corporate Profile Overview

TVA, a U.S. Government-owned corporation and the nation's largest wholesaler of electricity, is uniquely positioned to provide the powerful balance required for fair and equitable restructuring of the electric utility industry. TVA was established by Congress through the TVA Act in 1933 to provide a reliable supply of power at the lowest feasible price, and to strengthen the regional economy. TVA meets the energy needs of nearly 8 million people every day for dependable, competitively priced electricity and does it in a way that protects the interests of the public it serves. No U.S. tax dollars support the TVA power system.

TVA's core businesses of electricity generation, electricity transmission and integrated resource management reflect the unique nature and mission of TVA.

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*TVA serves the public interest through reliable delivery of power*



*TVA balances the competing needs of navigation, flood control, power supply, land use, water quality and recreation*

## Electricity Transmission

### Business Description

- Reliable under severe contingencies
- Well-positioned for power transfers
- 17,000 miles of transmission line
- 130,000 transmission line structures
- 850 individual interchange and delivery points
- 240,000 right-of-way acres
- 20,000 communication circuits
- A regional trading hub for the Chicago Board of Trade

### Customers and Markets

- 159 power distributors
- 64 industrial and federal customers
- Regional interconnected utilities

## Integrated Resource Management

### Business Description

- Nation's fifth largest river system
- 80,000 square miles of service area
- 650 miles of navigable river
- 25 dams for flood control
- 29 dams for power production
- 480,000 acres of recreation lakes
- 170,000 acres of recreation area
- 277,000 acres of reservoir land
- 11,000 miles of public shoreline

### Customers and Markets

- 8 million Valley residents
- 46 million tons of goods shipped annually on the Tennessee River
- Millions of annual visits to TVA facilities

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*Chairman  
Craven Crowell  
at TVA's Power  
Business Center in  
Chattanooga.*

### Letter From the Chairman

Since its inception, TVA has been a government corporation with “the flexibility and initiative of a private enterprise.” As an agency of the United States, TVA has public responsibilities and public ownership, and it is as efficient as any private corporation. For decades this “Powerful Balance” has given the citizens of the Tennessee Valley region and the nation a unique and valuable resource. Today, as the electric power industry restructures, TVA sets a standard for public responsibility against which private companies can be measured, as we continue to provide our core product—wholesale electric power—competitively, efficiently and reliably.

TVA’s Powerful Balance reflects our fundamentally different approach to running an electric utility. As one of the nation’s largest producers of electricity, we

provide our customers with competitively priced electric power while serving the public interest. Our goal is to make the decisions that are best for the Tennessee Valley and for the consumer. And in the coming era, a part of TVA’s Powerful Balance will be to ensure that all consumers reap any potential benefits of deregulation.

TVA welcomes the competition the open marketplace will bring—if it benefits the public. We’ve learned over the past decade that deregulation and competition do not necessarily lead to universal consumer benefit. Airline deregulation, for example, created competition in large cities, but many medium-sized cities found themselves with exorbitantly priced air service while many smaller ones found themselves with no air service at all. Two years after passage of the

Telecommunications Act of 1996, average cable rates are higher and there is still limited competition for local phone service, as many had predicted.

We should not be surprised to find that the Law of Unintended Consequences applies to deregulation. The key to measuring the success of deregulation is the degree to which regulatory change benefits the public.

Deregulation has the potential to save billions in energy costs for industrial customers and, in turn, make American industries more competitive in the global marketplace. This will benefit the entire American economy. As a public utility we support the lower energy costs and market imperatives that will require all utilities to operate efficiently and to compete fairly in the deregulated marketplace.

But already we’re seeing problems arise as deregulation touches different parts of the country. In one

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state deregulation legislation went on the books substantially favoring shareholders of private utilities over the consumers that the law was intended to benefit. The result has been a rethinking of that state's plan for utility restructuring.

In the Eastern United States, utilities looking toward the era of competition are closing marginal and unprofitable plants—with the result that last summer thousands of megawatts of capacity were unavailable. Predictably, many areas suffered interruptions during summer peaks, and the increasing need to move power from one part of the country to the other highlighted more than ever the shortcomings of the nation's transmission system. Spikes in demand for power also played havoc among power marketers. Some who relied too much on the short-term market to meet their commitments found themselves faced with having to purchase power at high prices, causing them either to not deliver the power or to incur costs that severely strained their financial positions.

Another trend in the industry as it moves toward deregulation is an increase in mergers and acquisitions. This had been predicted all along, and it's consistent with the experiences of other industries. But it also raises the question: Are these mergers better for the consumer? These are some of the current issues in deregulation, and others will surface as the industry moves closer to an open market.

We at TVA are well-positioned to meet the challenges of a deregulating marketplace—now and in the future. Our power system, financed entirely by power revenues, operates more efficiently than at any time in our recent history, thanks to improvements our employees continue to make

throughout our operations.

During an extended heat wave that tested power systems across the nation this summer, TVA met an all-time peak power demand of 27,253 megawatts and other peak demands almost as high. These successes were possible because a total of more than 2,200 megawatts of nuclear capacity were added from Browns Ferry Unit 3 (in 1995) and Watts Bar Unit 1 (in 1996). TVA is one of the few utilities to bring new generation facilities on line in the past three years and the only one to have added a new nuclear unit in the past five years.

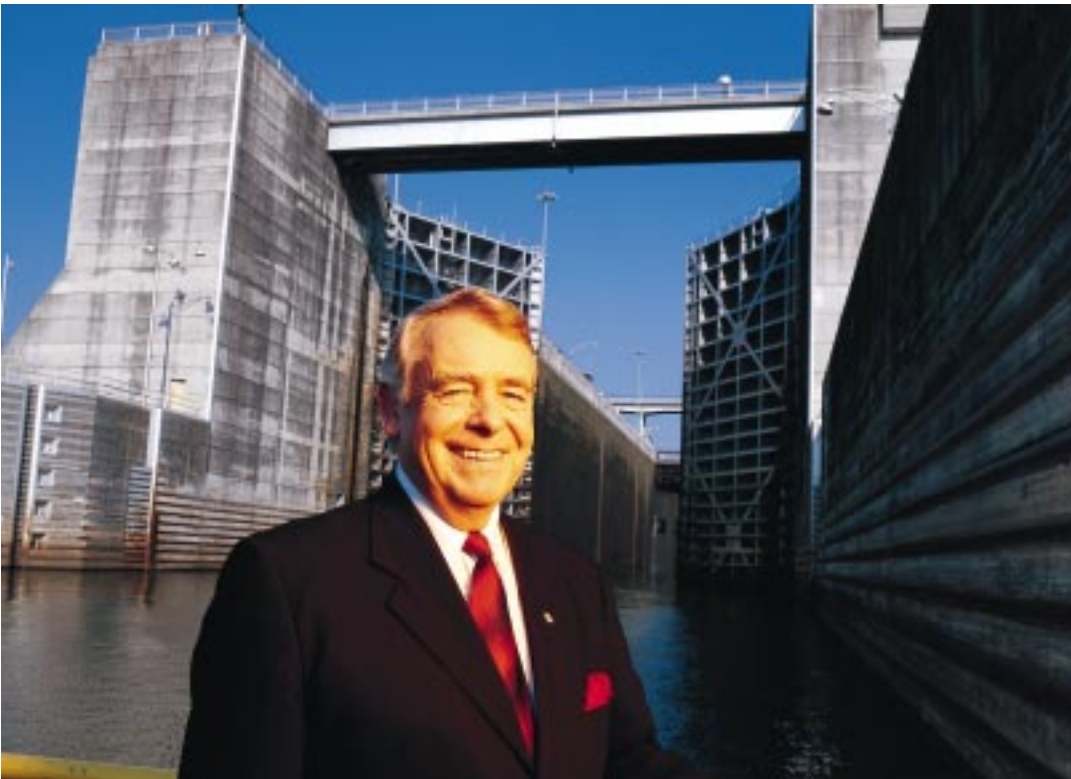
TVA's production costs are third-lowest among the nation's 50 largest electric utilities, and we're hard at work to find new ways to bring those costs even lower. We named Ike Zeringue President and Chief Operating Officer, and we are consolidating the

*Director  
Johnny Hayes  
meets with students  
taking part in  
TVA's Investment  
Challenge program.*



... in a competitive marketplace.

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*Director  
William Kennoy  
at a navigation lock  
at Wilson Dam.*

management of our power system and land-and-water management organization into a single unit under his direction. This move reaffirms that TVA's power generation and Tennessee River responsibilities are part of a single, integrated whole and should be managed that way.

TVA power prices will remain constant for the coming fiscal year. We are on track to achieve the ambitious goals laid out in our 10-Year Business Plan, designed to lower the cost of TVA power to be in line with the future competitive market price of electricity. We have reduced TVA's debt by over \$1 billion during the past two years. We've initiated a Business Transformation program to reduce costs in line with 10-Year Business Plan targets. And we are moving to more flexible contracts with our distributor customers to meet their needs in a competitive marketplace.

In October 1998 the Tennessee Valley Delegation and the Administration were instrumental in getting legislation passed on behalf of TVA to enable us to refinance \$3.2 billion in TVA bonds issued to the Federal Financing Bank. Refinancing this debt—which has an average interest rate of 9.7 percent—will enable TVA to save more than \$100 million annually in interest expense. All of TVA's long-term debt is now held by the public. Congress also approved \$50 million in direct appropriations for FY 1999 for TVA's water and land stewardship programs and the Land Between The Lakes.

Public power systems like TVA serve the interests of the people, and a key role for public power in the deregulated marketplace is to serve as a benchmark by which the performance of all power systems, public and private alike, can be measured. TVA will

fulfill this role by continuing to meet the needs of our customers for reliable, competitively priced electricity and by setting the standard for service to the public.

In January 1998 the Board outlined TVA's essential elements for success in the 21st century (see "TVA's Keys for Success" at right). TVA's Powerful Balance—generating competitively priced power while serving the public interest—is at the core of those elements. We continue to hone our operations to be the power producer of choice in terms of availability, reliability, service and cost. By doing so, we remain true to what makes TVA unique, strong and a vital part of America's energy future.

Craven Crowell  
Chairman



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## TVA's Keys for Success

Looking ahead to the era of competition, the TVA Board has outlined the key elements that it regards as essential for TVA's success in the 21st century. TVA must . . .

- Remain a public enterprise, owned by the government yet possessing the flexibility and initiative of a private corporation.
- Empower TVA employees to achieve operational excellence and efficiency in an increasingly competitive market.
- Continue to operate as an integrated whole, with the river and power systems working together to optimize benefits to the public.
- Work with TVA customers to give them the contract flexibility they need in the competitive era.
- Promote customer choice in a way that benefits all consumers.

. . . in a competitive marketplace.



Not only do we feel that the finance-restructuring story is one that investors will increasingly buy into, but we believe that the business plan in place at TVA for the firm as a whole is one that will be increasingly viewed in a positive way by investors.

—Salomon Smith Barney, *Bond Market Roundup: Strategy*, April 3, 1998

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### Finance

TVA's success and the prosperity of the Tennessee Valley have always gone hand in hand. TVA's financial performance allows us to provide rates that are among the most competitive in the country, which fosters further economic development for the region we serve.

- Our **10-Year Business Plan**, which was announced last year, gained momentum in 1998 with a \$695 million decrease in debt. That brought the total reduction in debt to over \$1 billion from a high of \$27.7 billion two years ago. The interest savings from our debt reduction, refinancing efforts and other cost-cutting initiatives have TVA on track to reduce the price of power in 2007 to projected market rates, the central goal of our 10-Year Business Plan.
- We saved \$95 million in **interest expense** this year through our debt-reduction and refinancing program.
- We found a way to balance our investment needs with a desire to help develop the Valley's financial leadership of the future with the **TVA Investment Challenge**, a program that provides real-world financial-investment experience to students at 19 public universities in our region. The Investment Challenge is funded by TVA, and each university develops its own program within TVA guidelines for managing a \$100,000 portfolio.
- TVA's \$571-million **nuclear decommissioning fund** had an average annual return of 17.6 percent since the Board adopted a new investment strategy in 1996. National investment firms manage \$362 million of the fund; three regional banks manage \$152 million; Valley and minority investment managers oversee \$55 million; and the 19 universities manage about \$2 million. This fund should cover all of TVA's future nuclear decommissioning costs.

### Bond Sales

Ensuring that TVA securities are attractive investments is crucial to our success in managing the debt





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and associated interest expense, and this year we excelled in our progress toward this goal. TVA once again captured the attention of financial markets with innovative bond offerings that attracted investors from throughout the nation and abroad. The result was exceptional value for both TVA and its investors.

TVA took advantage of low interest rates to refinance and redeem a significant amount of callable and maturing long-term debt, launching eight bond issues during the year. Each bond sale was unique, reflecting TVA's strategy of offering investment choices that take full advantage of market conditions and appeal to a diverse group of investors. By year's end TVA had refinanced and redeemed \$4.9 billion.

- TVA opened the fiscal year by pricing a \$250 million issue that targeted investors in the Western United States, further expanding TVA's investor base in that area of the country.
- In December, TVA achieved the then-lowest long-term financing rate of any U.S. corporation for the past 20 years when it priced \$600 million of 20-year bonds at 6.25 percent. Investor demand prompted TVA to issue an additional \$150 million of the bonds.
- In January, TVA offered \$250 million in securities that included an "estate feature," allowing the bonds to be redeemed at par in the event of the death of the bond holder.
- Also in January, TVA obtained its then-lowest long-term financing rate since 1967, when it issued \$1 billion in 40-year, non-callable bonds priced to yield 6.19 percent.
- TVA continued its global bond offerings in March with a \$1 billion issue of 15-year bonds priced at 6 percent. International demand was broader than any of TVA's previous five global issues, further



spreading the TVA name around the world as an attractive investment.

- TVA's unique Puttable Automatic Rate Reset Securities—PARRS—were so popular when sold in June that TVA had to more than double the size of the issue to \$575 million to satisfy investor demand. This first-of-its-kind, 30-year bond permits TVA, after a fixed-rate period of five years, to reset the coupon rate downward under certain market conditions. This feature will allow TVA to avoid incurring the expense of calling these bonds and marketing replacement securities. Investors have the flexibility to hold the bonds, trade them or redeem them at par if and when the interest rate is reset.
- In September, in an issue aimed primarily at Southeastern markets, TVA sold \$300 million of three-year bonds with a coupon of 5.28 percent.
- TVA's final 1998 financing occurred in mid-September, involving a \$500 million re-opening of its popular 15-year global offering. Turbulence in international financial markets led investors to seek high-quality, fixed-income investments. In this environment, TVA achieved an effective rate of 5.58 percent on this re-opener—its lowest-cost long-term financing since 1962.

*TVA's 10-Year Business Plan to keep prices competitive helps foster economic growth. Based partly on the price and availability of TVA electricity, Norandal Inc. chose Huntingdon, Tennessee, as the site for a new plant, adding to its operations in Brentwood, Tennessee.*

TVA is the best loved of the U.S. agencies . . .

—*Euroweek*,  
March 13, 1998

. . . in a competitive marketplace.

*A new 400-kilo-volt transmission substation in Lowndes, Mississippi, will enhance system reliability and support industrial growth in North Mississippi.*



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### Operations

TVA is a public power company, which means consideration of both costs and the public interest are naturally and powerfully balanced.

TVA's ability to meet peak demands in summer and winter is due largely to ongoing efficiency improvements and the fact that TVA is one of the few utilities to add generating capacity in the past three years—and the only one to add nuclear capacity in the past five years.

Hot, humid conditions across much of the country in the summer of 1998 forced many power companies to struggle to meet customer demand. Early in the summer TVA met four consecutive days of the highest peak power demands the TVA power system had ever been asked to supply. On June 24, TVA met an all-time-high peak demand of 27,253 megawatts. When the heat was on this summer, TVA was ready.

Providing reliable, affordable power—on hot days, cold days and all days in between—is at the core of what people and businesses expect their power companies to do. And the Operations organizations at TVA are very good at doing just that.

But that's only part of what TVA's Operations organizations are about. TVA customers also count on protection from floods and management of the Tennessee River and its tributary streams and lakes for navigational and recreational purposes.

In April the eastern part of the Tennessee Valley recorded its heaviest rainfall in 108 years. TVA flood-control efforts during the month reduced the crest on the Tennessee River by 14.7 feet at Chattanooga, preventing hundreds of millions of dollars in flood damage to that city. Flood-control operations at Norris Dam averted millions in damage to Clinton, Tennessee.

TVA further strengthened its integration of river-system and power-system operations by consolidating power-production, transmission and resource-stewardship functions into a single organization under President and Chief Operating Officer Ike Zeringue.



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To ensure system reliability in the future, TVA announced plans to install additional natural-gas combustion turbines at one or more of its fossil plants by the year 2000. The new turbines will produce 500 to 700 megawatts and help fulfill TVA's responsibility to meet customer demand during peak periods.

TVA's Year 2000 (Y2K) Project Team goals are on track to ensure readiness of all TVA information-technology equipment—including embedded chips at power-generation and transmission facilities. TVA also is working with customers and more than 800 vendors to ensure Y2K readiness of mutual systems. Final date-compliance validations will be made during 1999.

## Nuclear Excellence

Both Browns Ferry and Sequoyah nuclear plants received an INPO 1 rating, the highest possible rating from the Institute of Nuclear Power Operations, an industry organization that provides accreditation, evaluation, technical assistance and specialized management training to commercial nuclear power plants. The top rating indicates overall excellence has been achieved and that industry standards have been met with no significant weaknesses.

For the second consecutive year a leading nuclear-industry publication ranked TVA among the most efficient nuclear utilities in the nation and a leader in cost reduction. *Nucleonics Week* ranked Sequoyah, Browns Ferry and Watts Bar nuclear plants 4th, 9th and 23rd, respectively, for 1997, in efficiency out of 64 stations. TVA's nuclear capacity factor, a measure of productivity, was 86 percent in 1997 and reached 91 percent for 1998. The industry average was 78 percent.

On February 13, 1998, for the first time ever, all five nuclear units had been in operation for 100 or more days, producing more than 13.4 billion kilowatt-hours during that period. Browns Ferry Nuclear Plant Unit 3 was leading the way, going nonstop for 337 days on that date. It continued operating for



another 53 days—for a total of 390—setting a record for a large TVA generating unit.

## Protecting the Environment

TVA unveiled a new clean-air strategy in July 1998 to reduce pollutants that cause ozone and smog. The initiative will cut annual nitrogen-oxide emissions from TVA's coal-fired plants by 168,000 tons by the year 2003. New equipment—costing as much as \$600 million—will convert nitrogen oxide into harmless nitrogen and water. Its installation will help the states and cities that TVA serves to meet new, more stringent air-quality standards and will provide greater flexibility for industrial and economic growth in the region. This will also be a major step in supporting Tennessee's, Alabama's and Kentucky's efforts to meet ozone standards set by the Environmental Protection Agency last year. TVA earlier invested more than \$2 billion to reduce sulfur-dioxide and nitrogen-oxide emissions.

*With 390 days of continuous operation and a 25-day refueling, Browns Ferry Nuclear Plant helped TVA Nuclear produce an all-time high of 44 billion kilowatt-hours for the year.*

... in a competitive marketplace.

Management's key focus has been and will continue to be providing ample power at the lowest feasible rates to its Tennessee Valley customers.

—Moody's Investors Service Analysis, September 1998

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*Hydro modernization efforts like those at Douglas Dam are adding valuable generating capacity.*

### 1998 Highlights

- TVA was recognized among the “best performers” in transmission system operations and maintenance by an International Transmission Operations and Maintenance Study Group. The study compared TVA with 18 companies representing 12 nations.
- Rochester Institute of Technology and *USA TODAY* awarded their Quality Cup to a team of Allen Fossil Plant employees for innovative solutions in controlling costs while reducing power-plant emission levels. The team reduced unplanned-generation losses associated with burning cleaner, low-sulfur coal by 80 percent.
- The Tennessee Valley Electric System Advisory Committee, formed by DOE, recommended open and fair competition in wholesale power sales inside and outside TVA's service area. The committee included TVA stakeholders, investor-owned utilities and power marketers from outside the region.
- The Chicago Board of Trade selected TVA's transmission system as a hub for trading a new electricity futures contract, which will promote liquidity in this emerging market.
- In the winter storms of 1998, TVA's Transmission Emergency Operations Center went the extra mile to coordinate emergency efforts with distributors during severe weather. For example, January and February storms dumped 8 to 40 inches of heavy, wet snow across the eastern half of TVA's service area. Power was lost to 200,000 customers of some 20 TVA distributors. TVA helped coordinate distributors' efforts to meet this challenge and dispatched its own line crews and equipment to help.
- Browns Ferry Nuclear Plant Unit 3 set a world record for General Electric boiling-water reactors with a 19-day refueling outage and then ran nonstop for 390 days.
- Watts Bar Nuclear Plant completed its first cycle of operation and first refueling outage, achieving the highest capacity factor in U.S. history for a first unit at a nuclear site. The refueling outage was the shortest first-cycle outage for any large Westinghouse nuclear unit.
- Sequoyah Nuclear Plant Unit 2 achieved a 30-day refueling outage, setting a record for plants with ice-condenser containments.
- By the end of 1998, reliability improvements at TVA fossil plants, which have an average age of 40 years, have added the equivalent of a 1,500-megawatt power plant to the TVA system.
- TVA's Hydro Modernization Program is in progress, with 88 units at 24 hydro plants being modernized and rehabilitated. The program, estimated to cost over \$700 million, will add more than 500 megawatts of additional capacity to the hydro system while improving operating efficiency, reliability and



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river-water aeration. Through the end of 1998, work has been completed on 23 units, adding 195 megawatts of peak-generating capacity to the power system.

- Bull Run Fossil Plant was ranked No. 4 in heat rate in the country by *Electric Light & Power*.

## Integrated Resource Management

- TVA's flood-control efforts saved the Tennessee Valley hundreds of millions of dollars in flood damage in 1988. Annual flood damage savings average \$138 in the Tennessee Valley and an additional \$9 million along the Ohio and Mississippi Rivers.
- TVA generates income by selling almost 2 million tons annually of fossil-plant by-product materials once considered "waste":

**Gypsum**—Sold for making wallboard for the construction industry and for cement manufacturing.



**Slag and Bottom Ash**—Sold for making roofing shingles, industrial abrasives and aggregate. Also, thousands of tons are donated annually to communities for use as surface material for bike trails and on roads for snow and ice control.

**Fly Ash**—Sold for use in ready-mix concrete and block manufacturing.

*By determining the chemical makeup of each shipment of coal, Allen Fossil Plant employees can burn coal cleaner and avoid shutdowns.*

## Ike Zeringue Q&A

*In considering how TVA will carry out the Board's strategic direction to improve performance, cut costs and reduce debt, President and Chief Operating Officer Ike Zeringue answers several forward-looking questions about TVA Operations.*

### How will TVA continue to lower costs?

Overall, the most important thing we can do to lower costs is to focus even more on our core business. To do that, we will continually identify and eliminate activities that do not contribute significantly to our key operations. We also will continue to improve our core processes. TVA's process-improvement effort has gained momentum in recent years, and we are more effective and efficient as a result. Our Business Transformation program will broaden that effort across all organizational lines to achieve

fundamental improvements in our operations. Finally, the long-term reliability of our power system will remain a top priority. Although the power system is in the best shape it has been in for many years, we will continue to implement advanced-reliability techniques and improved planning to minimize the potential for long, expensive forced outages.

### How is TVA improving its current level of performance?

We are identifying improvement opportunities, setting aggressive goals and incorporating them into our business plans. We also are upgrading the training of our employees and shifting more responsibility lower in the organization where problems are more effectively identified and fixed. Teaching our workforce to look critically at themselves also helps to iden-

tify and fix performance problems that might otherwise be ignored. And we are continually focusing on maintenance practices that improve equipment reliability.

### What are the key issues facing TVA Operations in the deregulated marketplace, and how will they be addressed?

From an operations standpoint, our primary concern will be to ensure the availability of low-cost, reliable power to the marketplace. If we excel in the operational basics, we will succeed and do the best for TVA and its customers.

Now and in the future our primary commitment is to serve the public interest by providing reliable, competitively priced power and managing the Tennessee River System in ways that are environmentally responsible and encourage economic growth.

... in a competitive marketplace.



*Preparing the workforce of tomorrow: in support of schools and businesses across the Valley, TVA is developing a model network of School-to-Work programs by teaching computer-aided design.*

## Strategy

The strategy of the TVA Board is to continue supplying TVA's customers with reliable, competitively priced electricity while serving the public interest. To make that a reality, TVA is focusing not only on improvements to operations, but also on innovative solutions to economic and environmental concerns.

In January 1998 Chairman Craven Crowell met with TVA employees to outline the Board's strategy for TVA in the 21st century. This is embodied in the key elements (see page 7) the Board sees as essential for TVA's success in a restructured marketplace. These elements are the blueprint for TVA's continuing success. They cover points from the basic framework of operating as an integrated whole, with the river and power systems working together—which will not change—to meeting our customers' needs in a competitive marketplace—a process of continual change.

TVA's corporate goal is to be the power supplier of choice for our customers under any restructuring scenario. To meet that goal, we are continuing to hone our operations, embarking on a long-term process of

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“**Business Transformation**” and engaging in a companywide initiative to bring about change in our corporate culture.

- The linchpin of TVA's strategy for the future is our **10-Year Business Plan**. At the start of fiscal year 1998 we embarked upon an ambitious plan designed to strengthen TVA financially and to position our electric power operations to meet the competitive challenges of a restructured marketplace.

The 10-Year Business Plan charts a course for TVA to be able to sell reliable power at our projected market price in the Year 2007. At the end of 1998 we were ahead of schedule on one component of the Plan, debt reduction—having reduced the debt by \$350 million in 1997 and \$695 million in 1998, for a total of over \$1 billion.

- The 10-Year Business Plan calls for a continuing program of savings through cost-cutting and efficiency measures as well as debt reduction to reduce interest expense. To meet these goals, TVA launched the aggressive initiative, **Business Transformation**, with President and Chief Operating Officer Ike Zeringue serving as Executive Sponsor. Business Transformation is a process of organizational redesign that dramatically improves and more tightly aligns key business processes. In Business Transformation, teams of managers make detailed analyses of selected business functions, with the goals of recommending how those processes could be redesigned to achieve greater customer value and implementing those recommendations. TVA will emerge from Business Transformation with stronger, more efficient operations.
- An effort complementary to Business Transformation is our continuing commitment to **STAR 7**—our companywide program of Strategic Teamwork for Action and Results—which is built upon TVA's Seven Corporate Values (see list, above right). TVA's leadership is committed to make culture change a



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## TVA's Seven Corporate Values

- Integrity
- Respect for the Individual
- Teamwork
- Innovation and Continuous Improvement
- Honest Communication
- Leadership
- Flexibility

reality—starting at the top and extending throughout the organization. Thousands of employees have already taken part in three-day workshops designed to create the high-performance culture TVA needs to succeed in a more competitive world.

STAR 7 and Business Transformation are two sides of the same coin. STAR 7 creates the environment that enables us to make changes. Business Transformation, along with other change initiatives, enables us to identify and make the right changes.

The innovative approaches of Business Transformation and STAR 7 extend to TVA's initiatives in the

Customer Service & Marketing Group. TVA now offers more flexible contracts, which will build on the foundation of TVA's long-term strategy to achieve customer satisfaction through excellent service and competitive prices.

- Upgrades and modernization over the past decade have resulted in an increase in generation at our fossil and hydro plants by over 20 percent systemwide. Improvements in our transmission system have increased reliability to record levels. And throughout TVA, our employees continue to find ways to work better and more efficiently.

Although TVA could rest on its laurels . . . it is looking forward to the challenges it faces. As deregulation of the electric utility industry unfolds, TVA is preparing to operate in a more competitive environment.

—Edward Jones,  
*Investment Perspective*,  
July 1998



*Preparing for a world of change: TVA employees at a STAR 7 workshop.*

. . . in a competitive marketplace.



*The energy right® Connection is a pilot project helping homeowners cut their electric bills.*

## Innovative Leadership

Staying ahead in an increasingly competitive industry and changing regulatory environment requires new and innovative ideas. Throughout 1998 TVA established itself as a benchmark in many areas of management, business performance and customer service.

- **Improving customer service** involves even the most basic business elements, such as the ordinary electric bill—or bills, as the case may be. Shaw Industries, a large carpet manufacturer in Dalton, Georgia, has 29 plants and offices—and received 29 bills from different distributors of TVA power. Shaw now receives one bill from one distributor as the result of a **pilot project called “summary billing,”** which not only makes billing more convenient but also allows the company to see utility costs across the breadth of its operations.
- To provide customers with choices in power production, TVA issued requests for proposals for **“green power” electricity** generated from wind, solar, biomass or geothermal sources. If acceptable proposals are identified, TVA and distributors of TVA power will work together to offer green power to consumers.
- Nashville Electric Service and TVA launched a pilot project—the **energy right® Connection**—that enables customers to use a personal computer to control their heating, cooling and lighting systems. Programming these systems to take advantage of time-of-day rates can cut electricity bills by as much as 15 to 20 percent.
- TVA works with Valley communities to attract new

and expanding business and industry. Its inventive, high-tech electronic information system called **“Site Selector”** provides quick delivery of information critical to businesses seeking a worksite and even enables a client to “see” the features of a facility without having to travel there.

- TVA created a new **loan fund** from power revenues to help businesses in the Tennessee Valley start up and expand. It targets businesses at 15 TVA-assisted business incubators and provides loans for short-term working capital. The new program complements TVA’s effort to support businesses at every stage of their lifecycles.
- A partnership between TVA, Tennessee Technological University, local chambers of commerce and USDA Rural Development produced a **“virtual business incubator”** to provide business owners and entrepreneurs with public relations and marketing expertise, computer software, library resources and databases, secretarial assistance and Internet access.
- TVA nuclear employees developed a state-of-the-art program for testing **back-up safety equipment** that reduces costs and improves efficiency. This was recognized in the Nuclear Energy Institute’s Top Industry Practice award program, which honors the most innovative companies in the nuclear power industry.
- TVA is exploring the tremendous potential of **fuel cells** to convert the chemical energy of fossil fuels such as natural gas directly into electricity without the combustion process of traditional fossil-fueled plants. Major advantages of fuel cells include high efficiency, extremely low air emissions and high reliability. Perhaps the chief advantage is the elimination of transmission costs, since fuel cells can be based at the site where the power is needed. A fuel cell currently being tested by TVA could provide 25 kilowatts of power.
- Two TVA environmental projects for managing wastes received awards from Renew America’s National Awards Council for Environmental Sustainability. TVA’s **Constructed Wetlands Program** uses passive treatment systems at 20 coal-mine and fossil-plant sites to treat industrial wastewater and acid drainage, saving TVA an estimated \$20 million over the past 10 years. A joint project by TVA and the Electric Power Research Institute called the **“Waste Minimization Program”** is a comprehensive approach for minimizing the generation of various wastes and reducing the environmental impact of such wastes.





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## Overview

TVA is one of the largest electric power systems in the United States, generating over 155 billion kilowatt-hours (kWh) of electricity in 1998. TVA is primarily a wholesaler of power. Its customers include three major groups: (1) distributors, consisting of municipal and cooperative systems; (2) industries that have large or unusual loads; and (3) federal agencies. In addition, TVA sells and buys power through exchange power agreements with most of the surrounding electric systems. TVA's power-service area covers 80,000 square miles 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 is a wholly owned corporate agency and instrumentality of the United States, established by Congress in 1933 primarily to develop and manage the resources of the Tennessee Valley region and to strengthen the regional and national economy and the national defense.

The programs at TVA consist of power and nonpower programs. TVA's electric system operations are required to be self-supporting from power system revenues, which were about \$6.7 billion in 1998. No tax dollars fund TVA's power program.

Unless otherwise indicated, years (1998, 1997, etc.) in this discussion refer to TVA's fiscal years ended September 30. References to "notes" are to the Notes to the Financial Statements.

## Competition and Industry Restructuring

### TVA and Competition

Electric power industry restructuring is changing the way TVA and utilities across the nation generate, transmit and distribute electricity. TVA is positioning itself to compete successfully and fairly in a restructured marketplace by sustaining excellent operational performance and achieving greater financial flexibility.

In April 1998, the TVA Board consolidated TVA's power production, transmission and resource stewardship functions under its Chief Operating Officer as part of TVA's continuing preparation for success in the restructured utility industry. TVA believes that consolidating these functions will allow TVA to serve the Tennessee Valley better in a competitive market while setting a standard for public responsibility in universal access, customer service and reliability, economic development and environmental protection.

It is not unreasonable to expect that in the event any restructuring legislation is enacted, such legislation would enable TVA and the distributors of TVA power to take part, reciprocally, in competition outside the area for which they can now be a source of electric power supply. TVA cannot, however, predict the form that any restructuring legislation may take, and there is no guarantee that TVA will be able to sell power outside its current service area.

TVA's power supply contracts with distributors with the shortest minimum term are those which provide for termination on no less than five years' notice, which in no instance can be given before 2002. In today's competitive environment, some of the municipal and cooperative distributors may consider alternative wholesale supply arrangements upon expiration or termination of their power contracts with TVA.

### Progress on 10-Year Business Plan

TVA's management continues to develop plans and strategies to position TVA to fairly compete in a restructured electricity market. In July 1997, TVA announced its 10-Year Business Plan (the Plan), which set a target for a 15 percent reduction in the total cost of power by 2007.

The Plan incorporated an action by the Board of Directors approving an electric rate increase of 5.5 percent for residential and commercial customers effective October 1, 1997. The Plan also included initiatives to reduce fuel, labor, and supply costs, and offered the opportunity to TVA's distributor customers to change their power contracts from a rolling ten-year term to a rolling five-year term that first allows notice of termination to be given five years from the effective date of the amendment allowing the distributor a shorter term. The Plan was built on assumptions that TVA believed to be reasonable, based upon then current knowledge and predictions for the future. However, TVA expects conditions to change and will periodically update the Plan to reflect these changes.

As of September 30, 1998, TVA has reduced total debt by more than \$1 billion since September 30, 1996. TVA's total cost of power for 1998 approximated 4 cents per kWh. Both of these achievements reflect performance in line with the Plan targets.

### Legislative Activity

In March 1998, the Clinton administration proposed a Comprehensive Electricity Competition Plan (the Competition Plan), which addresses various aspects of national retail competition in the electric power industry. The Competition Plan includes extension of the Federal Energy Regulatory Commission's (FERC's) general regulatory authority to cover transmission service by cooperatives and all government-owned electric systems, including TVA. In addition, the Competition Plan notes that the Clinton administration is considering issues relating to the role that the TVA power system should play in the electric power industry after nationwide competition has begun. The Competition Plan further notes that the administration expects the recommendations of the Tennessee Valley Electric System Advisory Committee (the Advisory Committee) regarding TVA to provide the administration with a broad framework for bringing competition to TVA and restructuring its operations. The Advisory Committee is a subcommittee of the Secretary of Energy's Advisory Board and includes representatives of TVA, TVA customers, potential competitors, power marketers and vari-



ous other interest groups in the Tennessee Valley.

Although Congress did not enact retail choice legislation during 1998, TVA expects that retail electric competition bills will continue to be introduced in the next session of Congress and will receive considerable attention. TVA supports competition in the electric utility industry and will work to promote choice in a manner that benefits all TVA customers.

## Public Responsibility

Public power entities, including TVA, supply over 24 percent of the electricity consumed in the United States. The service territory covered by public power, however, spans a much greater percentage of the country's land mass, including much of the rural areas of the country. These statistics highlight the fundamental role of public utilities—serving the interests of all customers, even those in remote areas of the country, and providing adequate, reliable electricity at reasonable prices.

In a restructured market, it is possible for some consumers to benefit from retail choice and lower prices, while other consumers such as small commercial customers or those in rural areas may be placed at a disadvantage because providing reliable service to these customers may not prove cost-effective for private utilities.

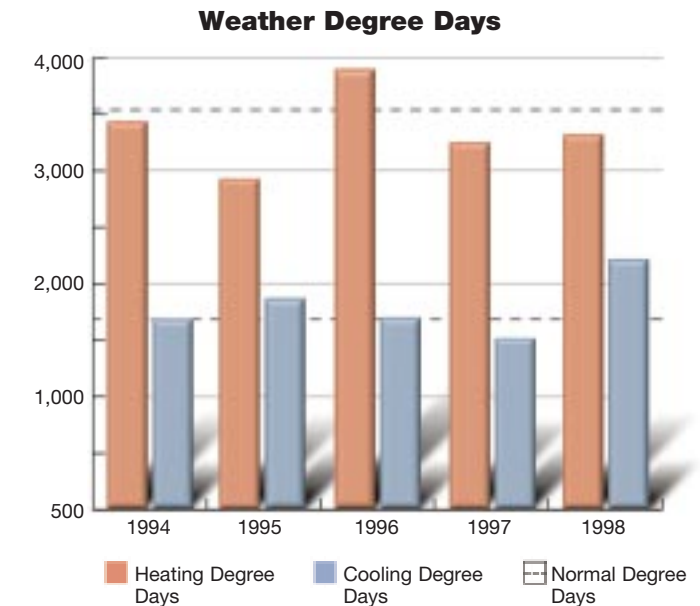
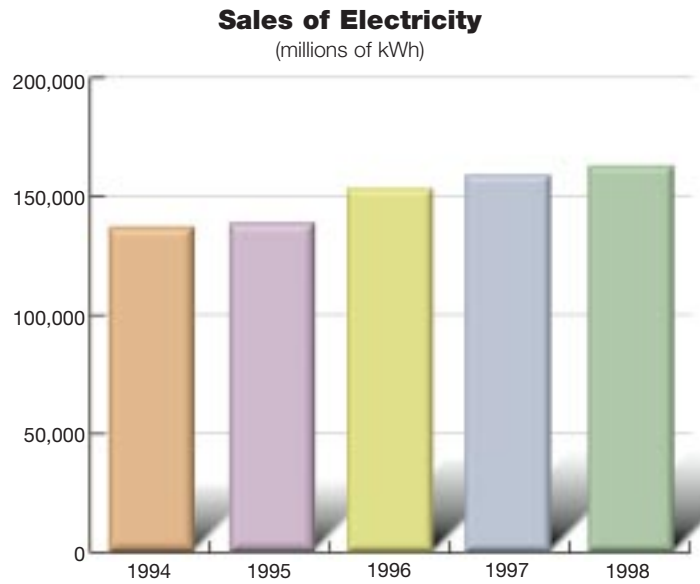
TVA is an advocate for the public's interest in universal access, customer service and reliability, economic development and environmental protection. TVA will continue to work actively with Congress in an effort to ensure that the public's interests in these important areas are addressed through the development of an equitable, effective framework for success in a restructured marketplace.

## Results of Operations

Net income for 1998 amounted to \$233 million, an increase of \$225 million from net income of \$8 million in 1997. The increase in earnings resulted primarily from a rate increase effective October 1, 1997, coupled with relatively hotter weather during the summer of 1998. Net income for 1997 was \$8 million compared with \$61 million for 1996. This decline was primarily driven by mild weather in 1997 compared to 1996.

### Operating Revenues

Operating revenues were \$6,729 million in 1998 compared with \$5,934 million in 1997. The \$795 million increase was primarily due to additional revenues from the 1998 rate increase, coupled with an increase in energy sales to municipalities and cooperatives as a result of the hot summer during 1998. The TVA service area experienced 2.2 percent greater heating degree days and 46.2 percent greater cooling degree days during 1998 compared with 1997. Accordingly, total kilowatt-hour (kWh) sales excluding off-system sales increased 7.7 billion kWh, from



139.7 billion in 1997 to 147.4 billion in 1998.

The \$17 million decrease in operating revenues from 1996 to 1997 was primarily due to a decrease in kWh sales excluding off-system sales of approximately 0.9 billion kWh, from 140.6 billion in 1996 to 139.7 billion in 1997. The decrease in kWh sales primarily resulted from milder weather conditions in 1997 compared to 1996.

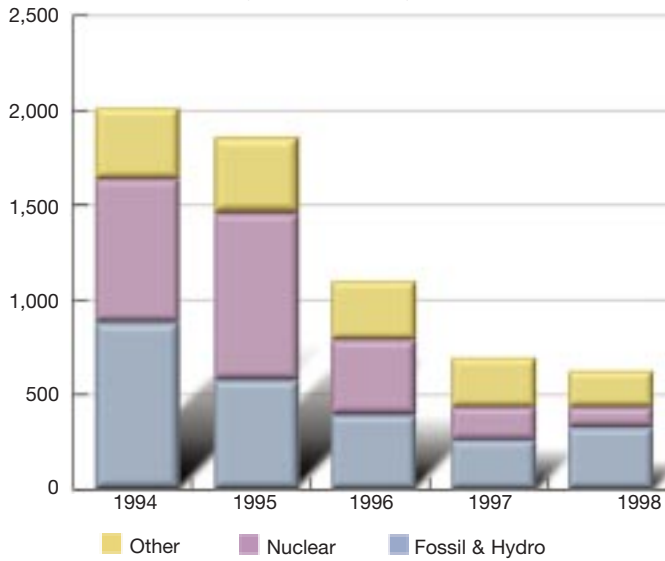
### Operating Expenses

Operating expenses increased \$469 million, or 11.5 percent, from \$4,080 million in 1997 to \$4,549 million in 1998. The increase in operating expenses is primarily due to higher fuel and purchased power expense in 1998 as a result of higher system generation and greater purchases of power at higher prices, coupled with an increase in operating and maintenance expense.

Total operating expenses increased \$166 million in 1997,

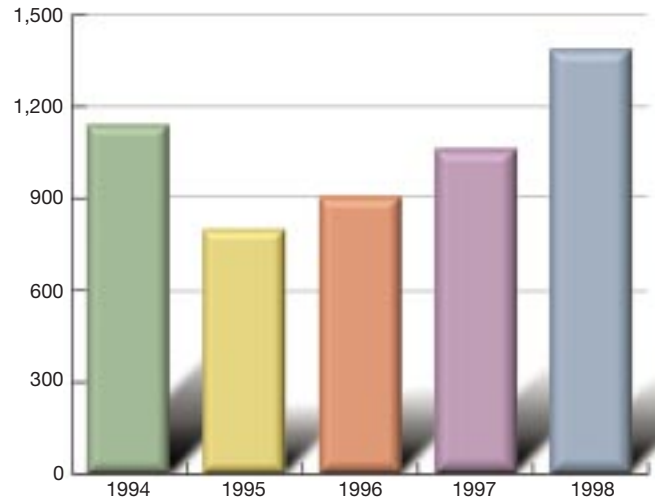
### Capital Spending

(millions of dollars)



### Cash Flows From Operations

(millions of dollars)



or 4.2 percent, from \$3,914 million in 1996 to \$4,080 million in 1997. The operation of the Watts Bar 1 and Browns Ferry 3 nuclear units for the entire year of 1997 resulted in higher depreciation and operating expenses in 1997 compared with 1996.

#### Other Income and Expenses

TVA had net other income of \$12 million in 1998 compared with net other income of \$157 million in 1997 and expense of \$10 million in 1996. The 1997 net other income consisted primarily of investment earnings of the decommissioning trust funds of \$138 million.

#### Interest Expense

Gross interest expense declined \$70 million from \$2,084 million in 1997 to \$2,014 million in 1998. Total outstanding indebtedness, net of unamortized discounts and certain other adjustments as of September 30, 1998, was \$26.3 billion, with an average interest rate of 7.45 percent, compared with \$26.9 billion, with an average interest rate of 7.56 percent as of September 30, 1997. The allowance for funds used during construction decreased from \$81 million in 1997 to \$55 million in 1998 as a result of the continued decline in overall construction spending.

Gross interest expense for 1997 remained relatively unchanged from 1996, resulting from a relatively constant level of outstanding debt of \$27.3 billion as of September 30, 1996, compared with \$26.9 billion as of September 30, 1997. In addition, allowance for funds used during construction declined \$36 million from \$117 million in 1996 to \$81 million in 1997.

## Liquidity and Capital Resources

### Capital Structure

During the first 25 years of TVA's existence, the U.S. Government made appropriation investments in TVA power facilities. In 1959, TVA received congressional approval to issue bonds to finance its growing power program. For the last four decades, TVA's power program has been required to be self-supporting from revenues and capital it raised through its issuance of debt. As a result, TVA funds its capital requirements through internal cash generation or through borrowings (subject to a congressionally mandated \$30 billion limit).

A return on the U.S. Government's initial appropriation investment in TVA power facilities, plus a repayment of the initial investment, is specified by law. The payment for 1998 was \$60 million and total cumulative repayments and return on investment by TVA to the U.S. Treasury exceed \$3 billion.

### Cash Flows

Net cash provided by operations for 1998, 1997, and 1996 was \$1,394 million, \$1,066 million, and \$910 million, respectively. This positive trend reflects improvements made in TVA's operations during the three-year period coupled with the rate increase in 1998.

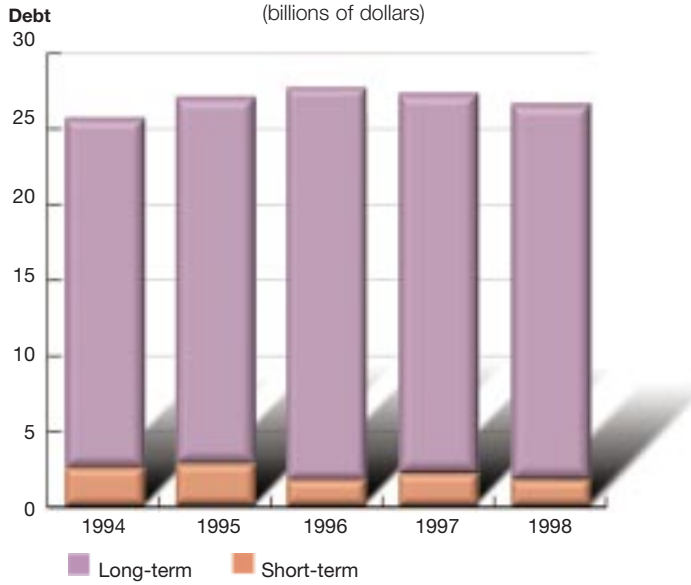
Net cash used in investing activities for 1998, 1997, and 1996 was \$742 million, \$580 million, and \$1,254 million, respectively. These changes reflect the annual decreases in construction spending, as well as the 1997 sale of certain receivables.

Net cash (used in)/provided by financing activities for 1998, 1997, and 1996 was \$(560) million, \$(425) million, and \$530 million, respectively. The cash used in financing activities during 1997 and 1998 reflects the aggregate repayment of total outstanding debt of over \$1 billion.



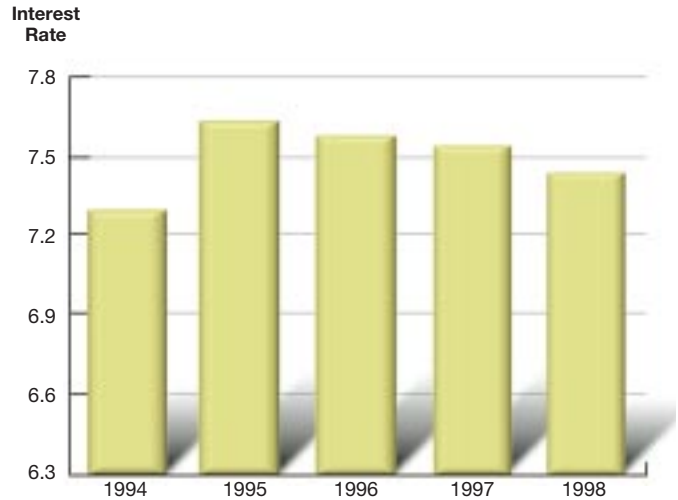
### Outstanding Debt

(billions of dollars)



### Interest Rate

(percent)



#### Capital Resources

During 1998, TVA accessed the capital markets through cost-effective long-term financing structures and continued to expand the investor base by tapping the global and retail markets. The proceeds from the 1998 borrowings were used to refinance existing debt.

#### System Operations

Over the last five years, TVA has made significant investments in its fossil plants through capital improvements and major maintenance projects to ensure continued operation at high performance levels, reduce operating costs and meet regulatory requirements. These investments have resulted in almost 1,500 megawatts of increased generating capacity and an increase in fossil generation of more than 20 percent since the late 1980s. Unplanned outages of the hydro system have been reduced to a level of less than half the national average. TVA has begun a Hydro Modernization Program which involves upgrading of 24 hydro plants. Upon completion, 88 units will have been upgraded for an aggregate increase in capacity of over 500 megawatts.

TVA is a dual-peaking utility. TVA met an all-time system peak demand of 27,253 megawatts on June 24, 1998 when the average temperature in the seven-state region was 94 degrees Fahrenheit (34.4 degrees Celsius). The winter system peak demand was 26,670 megawatts achieved on January 17, 1997 when the average temperature was 10 degrees Fahrenheit (-12.2 degrees Celsius). TVA met the all-time summer demand without any customer curtailment and was still able to help neighboring power systems meet their high demands as well.

To ensure that TVA will continue to meet growing demand, TVA plans to install additional peaking capacity at one or more of its fossil plants by the summer of 2000. TVA is negotiating a

contract to install up to eight natural-gas combustion turbines, pending environmental and technical review of the locations. The Gallatin and Johnsonville fossil plants, which have existing combustion turbines, are being considered as sites for the new turbines.

TVA is also seeking competitive proposals from independent power producers and distributors of TVA power for arrangements involving a mix of firm and optional peaking power. Under the arrangements, TVA could purchase 500 to 600 megawatts of gas-generated power to meet peak demand beginning June 1, 2001, and 500 to 600 megawatts of power to meet peak demand beginning June 1, 2002.

TVA may enter into additional electricity futures contracts for the sole purpose of limiting or otherwise hedging TVA's economic risks directly associated with electric power generation, purchases, and sales.

For a discussion of TVA's nuclear program, see note 2.

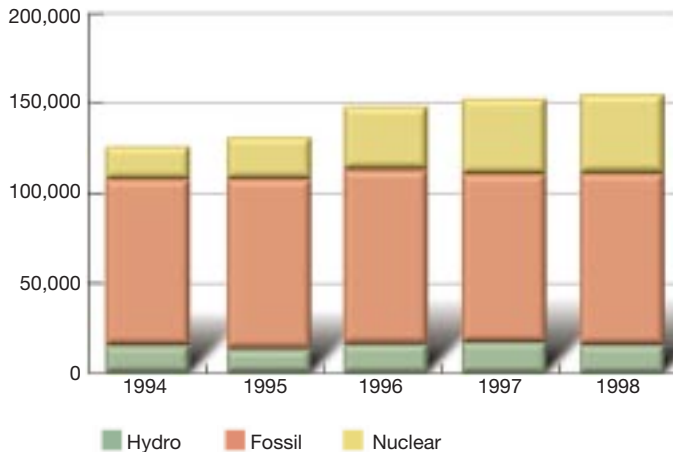
#### Other Issues

##### Year 2000 Readiness

The "Year 2000 issue" concerns the inability of information technology resources to properly recognize and process date-sensitive information related to the year 2000 and beyond. Since TVA's operations are extensively computerized and are also dependent upon the systems of others with which it conducts business, the failure by TVA or others with which it conducts business to become Year 2000 compliant on a timely basis could have a significant adverse effect on, among other things, TVA's results of operations, liquidity and financial condition, as well as TVA's generation and transmission operations. Specific risks to TVA associated with the Year 2000 issue include, but are not limited to, power production and delivery interruptions and administra-

### Generation by Source

(millions of kWh)



tive and accounting systems malfunctions.

TVA is taking measures to address the impact of the Year 2000 issue on its information technology systems and other systems that may be affected by the Year 2000 issue. TVA's Year 2000 efforts have focused on the following six areas: (1) computer hardware and equipment, (2) application software, (3) systems software, (4) embedded controls, (5) facilities, and (6) telecommunications. TVA's Year 2000 efforts with respect to each of these areas consist of five phases: (1) developing a Year 2000 remediation strategy, (2) inventorying and assessing the priority of items that may be affected by the Year 2000 issue, (3) replacing, repairing, or converting items affected by the Year 2000 issue, (4) testing and validating the Year 2000 readiness of replaced, repaired and converted items and (5) implementing the replaced, repaired and converted items.

TVA has developed a Year 2000 remediation strategy and has completed its initial inventory and the majority of its assessments of mission-critical items in each of the six areas discussed above. In addition, TVA has commenced its remediation, testing and implementation of mission-critical items in each of these areas. As of September 30, 1998, TVA's remediation, testing and implementation activities with respect to mission-critical computer hardware and equipment, application software, systems software, facilities, and telecommunication systems were approximately 80 percent, 30 percent, 90 percent, 95 percent, and 42 percent complete, respectively. TVA expects to complete its remediation, testing and implementation activities in each of these areas by March 1999 except for certain activities that will be scheduled throughout 1999 to minimize disruption of operations.

With respect to embedded controls, TVA's remediation, testing and implementation activities have focused on controls that affect the following four areas: (1) nuclear operations, (2) fossil operations, (3) hydro operations, and (4) transmission and power supply operations. As of September 30, 1998, remediation, testing and implementation activities for embedded controls

critical to TVA's nuclear, fossil, hydro, and transmission and power supply operations were approximately 10 percent, 15 percent, 60 percent, and 25 percent complete, respectively, and are expected to be completed by July 1999, November 1999, January 1999, and May 1999, respectively.

The Nuclear Regulatory Commission (the "NRC") has notified all utilities operating nuclear power plants that they are required to inform the NRC of steps they are taking to ensure that their computer systems will function properly by the year 2000. In connection therewith, the NRC required each such utility to submit a written indication of, among other things, whether it is pursuing a plan to solve its Year 2000 problems, similar to the plan outlined in the publication *Nuclear Utility Year 2000 Readiness* (the "NEI/NUSMG Plan"). In addition, not later than July 1, 1999, each such utility must submit a written response confirming that its plants are Year 2000 ready, or if its plants are not ready, the utility must provide a status report of work remaining to be done. TVA submitted its required response on July 22, 1998, indicating that it has pursued and is continuing a Year 2000 readiness program similar to that recommended in the NEI/NUSMG Plan.

In addition to remedying its own Year 2000 issues, TVA is communicating with suppliers, distributors, financial institutions and others with which it does business in an effort to assess the Year 2000 efforts of such entities and to share what TVA is doing to address its Year 2000 issues. As of September 30, 1998, TVA's assessment of the Year 2000 efforts of entities whose Year 2000 readiness is critical to TVA's operations was approximately 48 percent complete and is expected to be complete by June 30, 1999. Although TVA expresses no views about the adequacy of the Year 2000 conversion programs of the suppliers, distributors, financial institutions and other entities with which TVA interfaces, TVA will take the results of these assessments into account in developing its Year 2000 contingency plans.

TVA is in the early stages of developing contingency plans to address system failures that may result from Year 2000 problems. In addition, consistent with the General Accounting Office document *Year 2000 Computing Crisis: Business Continuity and Contingency Planning*, TVA has developed a business partnership program that includes elements for business continuity and contingency planning.

Although it is difficult to give an accurate estimate of the cost of TVA's Year 2000 work, TVA is allocating sufficient resources to address the Year 2000 issue and does not expect that such costs will be material to TVA's financial position and operations. The projected direct and indirect costs are estimated to be approximately \$38 million, of which approximately \$18 million had been expended as of September 30, 1998.

#### Labor Agreements

On September 30, 1998, TVA had 13,818 employees, of which



5,178 were trades and labor employees. Neither the federal labor laws covering most private sector employees, nor those covering most federal agencies are applicable to TVA; however, the TVA Board has a longstanding policy of recognizing and dealing with recognized representatives of its employees. This current structure has worked well for both TVA and its employees for more than 60 years. TVA employees are prohibited by federal law from engaging in strikes against TVA.

During late 1997 and 1998, TVA negotiated and entered into separate labor contracts with each of the four unions representing its salary policy employees, which contracts are effective through 2003 and contain supplementary agreements continuing through 2000. A similar agreement has been concluded with the Teamsters union and will be in effect through 2000. Provisions of these agreements include a significant degree of employment security for power-funded employees; a lump sum payment to employees in lieu of a base-wage increase for 1998; and for 1999 and beyond, negotiations on pay based on "total compensation," with additional flexibility to reward employees for their performance and productivity.

All annual trades and labor employees (excluding the Teamsters) are represented by six craft unions, through the Tennessee Valley Trades and Labor Council. TVA and the Council have been involved since the summer of 1997 in negotiating a new contractual arrangement. The parties' Framework Agreement, containing major aspects of the bargaining relationship, expired on December 31, 1997. TVA has also given notice for reopening the General Agreement and its Supplementary Schedules, which contain basic provisions on wages, hours, and conditions of employment. TVA's position is that it currently has the contractual right to cancel the General Agreement; however, that Agreement remains in effect at this time. There is also an ongoing dispute regarding appropriate bargaining units, and a process to address such disputes has been initiated, but is currently in abeyance, while additional negotiations between TVA and the Council to resolve major bargaining issues are being conducted.

#### **Litigation and Contingencies**

TVA is 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.

#### **Electricity Futures Trading Hub**

The TVA control area has been selected by the Chicago Board of Trade (CBOT) as a hub for trading electricity futures. For this purpose, TVA's control area is defined as its electric power system consisting of its transmission and generating facilities in which a common automatic generation scheme is applied. This

generation scheme matches TVA's generation (the power output of the generators within the system) with power purchases (capacity and energy purchased from outside entities), and maintains scheduled interchange and frequency with other utilities' control areas while providing sufficient capacity to maintain operating reserves. The TVA system has connections to other utilities which, along with TVA, cover 18 states and over 47 percent of the population of the United States.

#### **Environmental Matters**

TVA's activities are subject to various federal, state, and local environmental statutes and regulations. Major areas of regulation affecting TVA's activities include air and water pollution control and management and disposal of solid and hazardous wastes. Because TVA is a federal agency, it is subject only to those state and local environmental requirements for which Congress has clearly waived federal agency immunity. TVA's activities may, however, be subject to other environmental requirements that affect only federal agencies.

Annually, TVA incurs substantial costs associated with environmental regulatory legislation in the operation and management of its power and nonpower programs. The majority of costs and environmental issues are related to control of emissions from fossil fuel plants, impact studies on proposed projects, nuclear plant decommissioning, and storage and disposal of spent nuclear fuel.

TVA has incurred and continues to incur substantial capital expenditures and operating expenses to comply with environmental requirements (see note 9). TVA has spent more than \$2 billion on pollution control equipment to reduce sulfur-dioxide (SO<sub>2</sub>) and nitrogen-oxide (NO<sub>x</sub>) emissions at its coal-fired plants. To comply with the 1990 Clean Air Act Amendments, TVA has installed low-NO<sub>x</sub> burners at some of its fossil units and is using additional technologies at its remaining units to reduce NO<sub>x</sub> levels by about 40 percent by 2000.

During 1998, TVA unveiled a new clean-air strategy that will reduce NO<sub>x</sub> emissions from its coal-fired plants by 168,000 tons per year by 2003. The installation of new equipment will improve local and regional air quality and allow Tennessee Valley states greater flexibility for industrial and economic growth in the region. The new measures focus on reducing local and regional ozone concentrations to the levels needed to avoid violating the new, more stringent ozone standard that was established by the EPA last year. Meeting the new ozone standard will help continue economic prosperity in the Tennessee Valley and help avoid placing burdensome and expensive requirements on Valley residents.

TVA's new strategy is consistent with the types of controls that would be needed to comply with the Environmental Protection Agency's (EPA's) mandated revisions to State Implementation Plans for reduction of ozone transport, though the strategy will not by itself bring TVA into compliance with

expected revisions to state plans.

TVA will install equipment at its Allen, Cumberland, Bull Run, Paradise and Widows Creek fossil plants that breaks down nitrogen oxide into non-threatening nitrogen and water. The equipment is expected to be in place by 2003. Cost of implementation will be between \$500 million and \$600 million and is in addition to actions TVA is already taking to comply with the 1990 Clean Air Act Amendments.

The new reduction strategy, in conjunction with controls TVA is already implementing, will reduce NOx emissions by 75 percent; however, additional steps will have to be taken to meet EPA ozone transport reduction requirements.

TVA is also evaluating competitive proposals for "green" power to reinforce its environmental stewardship role. By adding green power to its current energy supply mix, TVA would help reduce carbon dioxide and fine particulate emissions and ozone. During 1998, TVA requested proposals for alternative fuel sources and received 21 responses for projects by independent power producers involving wind, biomass or landfill gases. TVA hopes to begin offering green power to residential customers by the summer of 2001. Whether there will be adequate demand for green power is not known at this time. It is estimated that the additional charge to residential customers who subscribe for green power would be \$2 to \$10 or more a month.

## Nonpower Roles and Responsibilities

TVA's responsibilities for managing public resources began with its creation in 1933. Today, these resource management activities help sustain the interconnected tributaries and the main stem of the Tennessee River—the nation's fifth-largest river system. Multiple benefits are balanced with environmental protection to provide flood control, navigation, recreation, and electric power production. Funding for these programs historically has included federal appropriations, power proceeds, and nonpower proceeds such as user fees.

Funding for TVA's nonpower programs has come under attack by certain investor-owned utilities and members of Congress. In 1997, Congress voted to end federal appropriations to TVA for 1999 and beyond, but to require TVA to continue to fund its nonpower programs that constitute "essential stewardship activities" with revenues derived from one or more various sources, including power revenues. Nonetheless, in October 1998, Congress approved an appropriation of \$50 million for TVA's nonpower programs for 1999.

The protection and equitable distribution of public benefits to American citizens is incorporated into TVA's integrated system. This natural stewardship will continue as long as TVA remains a public enterprise.

## Accounting Standards

### Accounting for the Effects of Regulation

TVA accounts for the financial effects of regulation in accordance with Statement of Financial Accounting Standards (SFAS) No. 71, *Accounting for the Effects of Certain Types of Regulation*. As a result, TVA records certain regulatory assets and liabilities that would not be recorded on the balance sheet under generally accepted accounting principles for non-regulated entities.

TVA has approximately \$1.9 billion of regulatory assets (see note 1—Other deferred charges and Debt issue and reacquisition costs) along with approximately \$6.3 billion of deferred nuclear plants as of September 30, 1998. In the event that competition in the utility industry changes the application of SFAS No. 71, TVA would be required to evaluate such regulatory assets and deferred nuclear plants under the provisions of SFAS No. 121, *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to Be Disposed Of*. Statement 121 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 a material adverse effect on future results of operations from 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 Pronouncements

The Financial Accounting Standards Board (FASB) has recently issued the following statements that will be applicable to TVA:

Statement of Financial Accounting Standards (SFAS) No. 130, *Reporting Comprehensive Income*, which is effective for fiscal years beginning after December 15, 1997. This Statement establishes standards for reporting and display of comprehensive income and its components. Comprehensive income includes, but is not limited to, foreign currency translation adjustments and unrealized holding gains and losses on available-for-sale securities. TVA will adopt this Statement in 1999 and such adoption is not expected to have a material effect on TVA's financial position or results of operations.

Statement of Financial Accounting Standards No. 132, *Employers' Disclosures about Pensions and Other Postretirement Benefits*, which is intended to improve the effectiveness of current footnote disclosure requirements for employers' pensions and other retiree benefits. This Statement is effective for fiscal years beginning after December 15, 1997, although earlier application is encouraged. While this Statement will result in additional financial disclosures, it will not impact TVA's financial position or results of operations (see note 7).

In June 1998, the FASB issued SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities*. The Statement established accounting and reporting standards requiring that every derivative instrument (including certain derivative instruments embedded in other contracts) be recorded on the balance sheet as



either an asset or liability measured at its fair value. The Statement requires that changes in the derivative's fair value be recognized currently in earnings unless specific hedge accounting criteria are met. TVA may engage in hedging activities using futures, forward contracts, options and swaps to hedge the impact of market fluctuations on energy commodity prices, interest rates and foreign currencies. TVA is currently assessing the effect, if any, on its financial statements of implementing SFAS No. 133. TVA will be required to adopt the standard in 2000.

In March 1998, the Accounting Standards Executive Committee of the American Institute of Certified Public Accountants issued Statement of Position (SOP) 98-01, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*, which provides guidance on accounting for the costs of computer software developed or obtained for internal use. Under SOP 98-01, certain costs which are currently expensed may now be capitalized and amortized over some future period. The SOP is effective for fiscal years beginning after December 15, 1998, although earlier application is encouraged. The impact of the application of the provisions of this Statement on TVA's financial position or results of operations upon its adoption are not known at this time.

#### **Nuclear Decommissioning Costs**

The FASB has reached several tentative conclusions with respect to its project regarding the accounting for closure and removal of long-lived assets, including the decommissioning of nuclear generating units. It is uncertain when the final statement will be issued and what impact it may ultimately have on TVA's financial position or results of operations. Effective for 1998, TVA changed its method of accounting for decommissioning costs and related liabilities in order to comply with certain of the FASB's tentative conclusions, as well as certain rate-setting actions. TVA's current accounting policy recognizes all obligations related to closure and removal of its nuclear units as incurred.

The liability for closure is measured as the present value of the estimated cash flows required to satisfy the related obligation and discounted at a determined risk free rate of interest. The corresponding charge to recognize the additional obligation was effected through the creation of a regulatory asset. TVA further modified its method of accounting for decommissioning costs such that earnings from decommissioning fund investments, amortization expense of the decommissioning regulatory asset, and interest expense on the decommissioning liability are deferred in accordance with SFAS No. 71.

### **Forward-Looking Information**

TVA's 1998 Annual Report contains forward-looking statements relating to future events and future performance. Any statements regarding expectations, beliefs, plans, projections, estimates, objectives, intentions or assumptions or otherwise relating to future events or performance may be forward-looking. Some examples of forward-looking statements include statements regarding TVA's projections of future power and energy requirements, future costs related to environmental compliance, targets for TVA's future competitive position, and the potential effect of the Year 2000 issue on TVA's operations. Although TVA believes that these statements are accurate, TVA does not guarantee their accuracy. Numerous factors could cause actual results to differ materially from those in the forward-looking statements. Such factors include, among other things, new laws and regulations, especially those related to the deregulation of electric utilities and various environmental matters; increased competition among electric utilities; legal and administrative proceedings affecting TVA; the financial environment; performance of TVA's generating facilities; fuel prices; the demand for electricity; weather conditions; changes in accounting standards; the efficacy of TVA's and its suppliers' and customers' Year 2000 remediation efforts; and other unforeseeable events.

## Balance Sheets

At September 30 (in millions)

Assets	Power program		All programs	
	1998	1997	1998	1997
<b>Current assets</b>				
Cash and cash equivalents	\$ 391	\$ 299	\$ 451	\$ 374
Accounts receivable	796	701	796	707
Inventories at average cost and other				
Fuel	153	112	153	112
Other	316	287	316	287
<b>Total current assets</b>	<b>1,656</b>	<b>1,399</b>	<b>1,716</b>	<b>1,480</b>
<b>Property, plant, and equipment</b>				
Completed plant	29,055	28,528	30,166	29,632
Less accumulated depreciation	(7,945)	(7,178)	(8,243)	(7,469)
Net completed plant	21,110	21,350	21,923	22,163
Construction in progress	548	605	558	622
Deferred nuclear generating units	6,311	6,303	6,311	6,303
Nuclear fuel and capital leases	922	1,040	922	1,040
<b>Total property, plant, and equipment</b>	<b>28,891</b>	<b>29,298</b>	<b>29,714</b>	<b>30,128</b>
<b>Investment funds</b>	<b>578</b>	<b>561</b>	<b>578</b>	<b>561</b>
<b>Deferred charges and other assets</b>				
Loans and other long-term receivables	104	121	151	170
Debt issue and reacquisition costs	861	1,096	861	1,096
Other deferred charges	1,525	1,209	1,525	1,209
<b>Total deferred charges and other assets</b>	<b>2,490</b>	<b>2,426</b>	<b>2,537</b>	<b>2,475</b>
<b>Total assets</b>	<b>\$33,615</b>	<b>\$33,684</b>	<b>\$34,545</b>	<b>\$34,644</b>

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



Liabilities and proprietary capital	Power program		All programs	
	1998	1997	1998	1997
<b>Current liabilities</b>				
Accounts payable	\$ 521	\$ 468	\$ 538	\$ 487
Accrued liabilities	175	161	180	172
Accrued interest	487	499	487	499
Discount notes	1,757	2,151	1,757	2,151
Current maturities of long-term debt	1,500	574	1,500	574
<b>Total current liabilities</b>	<b>4,440</b>	<b>3,853</b>	<b>4,462</b>	<b>3,883</b>
<b>Other liabilities</b>	<b>2,007</b>	<b>1,704</b>	<b>2,007</b>	<b>1,704</b>
<b>Long-term debt</b>				
Public bonds—senior	19,127	20,354	19,127	20,354
Federal Financing Bank—senior	3,200	3,200	3,200	3,200
Public bonds—subordinated	1,100	1,100	1,100	1,100
Unamortized discount and other adjustments	(407)	(502)	(407)	(502)
<b>Total long-term debt</b>	<b>23,020</b>	<b>24,152</b>	<b>23,020</b>	<b>24,152</b>
<b>Proprietary capital</b>				
Appropriation investment	568	588	4,936	4,887
Retained earnings reinvested in power program	3,580	3,387	3,580	3,387
Accumulated net expense of nonpower programs	—	—	(3,460)	(3,369)
<b>Total proprietary capital</b>	<b>4,148</b>	<b>3,975</b>	<b>5,056</b>	<b>4,905</b>
<b>Total liabilities and proprietary capital</b>	<b>\$ 33,615</b>	<b>\$ 33,684</b>	<b>\$ 34,545</b>	<b>\$ 34,644</b>

## Statements of Income—Power Program

For the years ended September 30 (in millions)	1998	1997	1996
<b>Operating revenues</b>			
Sales of electricity			
Municipalities and cooperatives	\$5,554	\$4,811	\$4,980
Industries directly served	523	464	452
Federal agencies and other	556	561	430
Other revenue	96	98	89
Total operating revenues	6,729	5,934	5,951
<b>Operating expenses</b>			
Fuel and purchased power	1,900	1,593	1,536
Operating and maintenance	1,347	1,201	1,218
Depreciation and amortization	1,038	1,014	904
Tax-equivalents	264	272	256
Total operating expenses	4,549	4,080	3,914
<b>Operating income</b>	2,180	1,854	2,037
Other income (expense), net	12	157	(10)
Income before interest expense	2,192	2,011	2,027
<b>Interest expense</b>			
Interest on debt	1,930	1,993	1,965
Amortization of debt discount, issue, and reacquisition costs, net	84	91	118
Allowance for funds used during construction	(55)	(81)	(117)
Net interest expense	1,959	2,003	1,966
<b>Net income</b>	\$ 233	\$ 8	\$ 61

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			All programs		
	1998	1997	1996	1998	1997	1996
<b>Cash flows from operating activities</b>						
Net power income	\$ 233	\$ 8	\$ 61	\$ 233	\$ 8	\$ 61
Net expense of nonpower programs	–	–	–	(91)	(121)	(127)
Items not requiring (providing) cash						
Depreciation and amortization	1,090	1,066	924	1,103	1,080	938
Allowance for funds used during construction	(55)	(81)	(117)	(55)	(81)	(117)
Nuclear fuel amortization	264	196	156	264	196	156
Other, net	(2)	(151)	162	9	(151)	164
Changes in current assets and liabilities						
Accounts receivable	(95)	(24)	(1)	(89)	(21)	7
Inventories and other	(72)	(19)	(22)	(72)	(19)	(22)
Accounts payable and accrued liabilities	72	56	(246)	59	52	(250)
Accrued interest	(11)	1	43	(11)	1	43
Other	(30)	14	(50)	(36)	14	(50)
Net cash provided by operating activities	1,394	1,066	910	1,314	958	803
<b>Cash flows from investing activities</b>						
Construction expenditures	(637)	(722)	(1,107)	(642)	(733)	(1,121)
Allowance for funds used during construction	55	81	117	55	81	117
Nuclear fuel	(151)	(159)	(76)	(151)	(159)	(76)
Proceeds from sale of investments	–	513	–	–	513	–
Purchases of investments	–	(483)	(162)	–	(483)	(162)
Proceeds from sale of loans receivable	–	211	–	–	211	–
Other, net	(9)	(21)	(26)	(8)	(13)	(13)
Net cash used in investing activities	(742)	(580)	(1,254)	(746)	(583)	(1,255)
<b>Cash flows from financing activities</b>						
Long-term debt						
Issues	4,625	3,100	4,400	4,625	3,100	4,400
Redemptions	(4,930)	(3,829)	(2,706)	(4,930)	(3,829)	(2,706)
Short-term borrowings, net	(394)	377	(1,057)	(394)	377	(1,057)
Debt issue and reacquisition costs, net	199	(12)	(44)	199	(12)	(44)
Congressional appropriations	–	–	–	69	106	109
Payments to U.S. Treasury	(60)	(61)	(63)	(60)	(61)	(63)
Net cash (used in) provided by financing activities	(560)	(425)	530	(491)	(319)	639
Net change in cash and cash equivalents	92	61	186	77	56	187
Cash and cash equivalents at beginning of period	299	238	52	374	318	131
<b>Cash and cash equivalents at end of period</b>	<b>\$ 391</b>	<b>\$ 299</b>	<b>\$ 238</b>	<b>\$ 451</b>	<b>\$ 374</b>	<b>\$ 318</b>

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)	1998	1997	1996
Retained earnings reinvested at beginning of period	\$3,387	\$3,420	\$3,402
Net income	233	8	61
Return on appropriation investment	(40)	(41)	(43)
<b>Retained earnings reinvested at end of period</b>	<b>3,580</b>	<b>3,387</b>	<b>3,420</b>
Appropriation investment at beginning of period	588	608	628
Return of appropriation investment	(20)	(20)	(20)
Appropriation investment at end of period	568	588	608
<b>Proprietary capital at end of period</b>	<b>\$4,148</b>	<b>\$3,975</b>	<b>\$4,028</b>

## Statements of Net Expense—Nonpower Programs

For the years ended September 30 (in millions)	1998	1997	1996
Water and Land Stewardship	\$ 65	\$ 78	\$ 75
Land Between The Lakes	8	7	7
Economic Development	8	22	25
Environmental Research Center	10	14	20
<b>Net expense</b>	<b>\$ 91</b>	<b>\$121</b>	<b>\$ 127</b>

## Statements of Changes in Proprietary Capital—Nonpower Programs

For the years ended September 30 (in millions)	1998	1997	1996
Proprietary capital at beginning of period	\$930	\$944	\$964
Congressional appropriations	69	106	109
Net expense	(91)	(121)	(127)
Other, net	—	1	(2)
<b>Proprietary capital at end of period</b>	<b>\$908</b>	<b>\$930</b>	<b>\$944</b>

*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 a service 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 has historically been separate and distinct from the nonpower programs and is required to be self-supporting from power revenues and proceeds from the issuance of debt. 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 appropriation investment in TVA power facilities. Most of the funding for TVA's nonpower programs has historically been 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.

### Fiscal year

Unless otherwise indicated, years (1998, 1997, etc.) refer to TVA's fiscal years ended September 30.

### Revenue

Revenues from power sales are recorded as power is delivered 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.

Off-system sales are presented in the accompanying statements of income—power program as a component of Sales of electricity—Federal agencies and other. Prior to 1998, off-system sales and purchases under exchange power agreements were reflected on a net basis in fuel and purchased power expense. Off-system sales for 1997 and 1996 have been reclassified to conform with the 1998 presentation.

### Property, plant and equipment, and depreciation

Additions to plant are recorded at cost, which includes direct and indirect costs 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 multi-purpose 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. Depreciation expense expressed as a percentage of the average annual depreciable completed plant was 3.23 percent for 1998 and 3.21 percent for 1997 and 1996.

### Decommissioning costs

Effective for 1998, TVA changed its method of accounting for decommissioning costs and related liabilities. TVA's current accounting policy recognizes as incurred all obligations related to closure and removal of its nuclear units. The charge to recognize the additional obligation in 1998 was effected through the creation of a regulatory asset. TVA further modified its accounting methodology such that earnings from decommissioning investments, amortization of the decommissioning regulatory asset, and interest expense on the decommissioning liability are deferred (see note 9—Decommissioning costs). The effect of the change was to decrease 1998 depreciation expense approximately \$38 million—primarily due to the deferral of the decommissioning components of earnings, amortization and interest.

During 1997, the excess of decommissioning investment earnings over the annual decommissioning provision was recorded as other income. Of the total investment earnings of \$151 million, \$13 million was recorded as an offset to the decommissioning provision, with the \$138 million excess recorded as other income. During 1996, the annual decommissioning provision of \$30 million exceeded the earnings from decommissioning fund investments of \$17 million and the \$13 million excess was charged to depreciation expense.

### 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.

### Loans and other long-term receivables

In June 1997, TVA entered into a five-year agreement with a bank pursuant to which TVA agreed to sell certain receivables relating to TVA's consumer energy-conservation programs. As of September 30, 1998, approximately \$218 million of the receiv-

ables have been sold for proceeds equal to their carrying amount. Under the terms of the agreement, TVA has retained substantially the same risk of credit loss as if the receivables had not been sold and, accordingly, an appropriate liability account has been established.

#### Other deferred charges

Deferred charges primarily include prepaid pension costs and regulatory assets capitalized under the provisions of SFAS No. 71, *Accounting for the Effects of Certain Types of Regulation*. At September 30, 1998, other deferred charges included total unamortized regulatory assets of \$1,260 million—of which \$342 million represents a capitalized interest component of nuclear fuel; \$377 million represents a transition obligation related to the adoption of SFAS No. 112, *Employers Accounting for Postemployment Benefits*; \$478 million represents an additional obligation related to the closure and removal of nuclear units (see Note 1—Decommissioning costs); and \$63 million represents TVA's portion of the costs for decommissioning the Department of Energy's (DOE) nuclear waste disposal facility. At September 30, 1997, the unamortized balances of regulatory assets of \$950 million included \$468 million representing a capitalized interest component of nuclear fuel; \$411 million representing a transition obligation related to the adoption of SFAS No. 112; and \$71 million representing TVA's portion of the costs for decommissioning the DOE's nuclear waste disposal facility. These regulatory assets have historically been amortized over periods ranging from eight to 15 years, generally on a straight-line basis.

#### Investment funds

Investment funds consist primarily of a portfolio of investments in trusts designated for funding nuclear decommissioning requirements (see note 9). These funds are invested in portfolios generally designed to earn returns in line with overall equity market performance.

#### Debt issue and reacquisition costs

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

TVA has incurred premiums related to certain advanced refundings, and also received premiums from the monetization of certain call provisions. In accordance with regulatory practices, TVA has deferred these premiums and is amortizing such premiums ratably through the maturity dates of the new debt issues. The unamortized balances of such regulatory assets at September 30, 1998 and 1997 were \$674 million and \$983 million, respectively.

#### 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 basic amount is 5 percent of gross revenues from the prior years' sale of power to other than federal agencies and interchange sales with other utilities, with the provision for minimum payments under certain circumstances.

#### Interest and capital costs

During 1998, 1997, and 1996, cash paid for interest on outstanding indebtedness (net of amount capitalized) was \$1,886 million, \$1,911 million, and \$1,805 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 1998, 1997 and 1996 as a repayment of the appropriation investment. TVA paid \$40 million to the U.S. Treasury in 1998 as a return on the appropriation investment, while paying \$41 million in 1997 and \$43 million in 1996.

#### Risk-management activities

TVA is exposed to market risk from changes in interest rates and currency exchange rates. To manage volatility relating to these exposures, TVA has entered into various derivative transactions, principally interest rate swap agreements and foreign currency swap contracts. TVA is exposed to credit losses in the event of nonperformance by counter-parties on the risk-management instruments. TVA monitors such risk and does not believe that there is a significant risk of nonperformance by any of the parties of these instruments.

Additionally, TVA may engage in hedging activities using forwards, futures or options to hedge the impact of market fluctuations on energy commodity prices. TVA currently accounts for these transactions using the deferral method and gains and losses are recognized in the accompanying financial statements when the related hedged transaction occurs. TVA's risk management policies allow the use of derivative financial instruments to manage financial exposures, but prohibits the use of these instruments for speculative or trading purposes.

#### Cash and cash equivalents

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 \$36 million in 1998, \$44 million in 1997, and \$45 million in 1996.

**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 TVA in determining certain liabilities for self-insured claims. TVA maintains nuclear liability insurance and nuclear property, decommissioning and decontamination insurance with an outside party (see note 9).

**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.

**1999 Regulatory and Financial Reporting**

**Accounting Changes**

The TVA Board of Directors has approved the following account-

ing changes effective October 1, 1998: 1) Reclassification of an additional \$332 million from nuclear fuel inventory to deferred charges. The regulatory asset will be amortized on a straight-line basis over an estimated three-year period, and interest will no longer be capitalized on TVA's nuclear fuel investment; 2) Maintenance costs incurred during nuclear fuel outages will be deferred and amortized on a straight-line basis over the estimated period until the next refueling outage, rather than expensed when incurred; 3) Debt issue and reacquisition costs will be amortized on a pooled basis over the weighted average life of TVA's public debt portfolio, rather than separately amortized over the respective terms of the related outstanding securities; 4) Annual provisions for amortization of deferred charges will be adjusted as necessary in order to achieve certain earnings levels as set forth in resolutions adopted annually by the TVA Board of Directors in connection with the rate review process. The targeted earnings levels will be based on the earnings requirements of the TVA Act and the Basic TVA Power Bond Resolution (see note 5). Such adjustments may result in either contracting or extending the estimated amortization periods, which range from three to 15 years.

**2. Nuclear power program**

The nuclear power program at September 30, 1998, 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:

(dollars in millions)	Operating units	Installed capacity (megawatts)	Completed plant, net	Construction in progress	Deferred units	Fuel investment
Browns Ferry*	2	2,304	\$ 3,328	\$ 50	\$ —	\$337
Sequoyah	2	2,442	2,047	37	—	241
Watts Bar	1	1,270	6,541	14	1,717	121
Bellefonte	—	—	—	—	4,594	—
Raw materials	—	—	—	—	—	28
<b>Total</b>	<b>5</b>	<b>6,016</b>	<b>\$11,916</b>	<b>\$101</b>	<b>\$6,311</b>	<b>\$727</b>

\* Browns Ferry 1, an inoperative unit, is discussed below

Browns Ferry 1, taken off-line in 1985 for modifications and improvements, 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 \$73 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.

Watts Bar 1 began operating commercially during 1996. In 1988, TVA suspended construction activities on Watts Bar 2, and the unit is currently in lay-up. Bellefonte 1 and 2 were deferred in 1988 and 1985, respectively. Estimated 1999 expenditures for the three deferred units total \$10 million and are limited to lay-up, maintenance and ensuring that options remain viable.

In 1993, TVA began an integrated resource planning process

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. TVA's IRP identified as a viable option the conversion of the Bellefonte facility to a combined-cycle plant utilizing natural gas or gasified coal. In 1997, an independent team of technical and financial experts completed a feasibility study to evaluate options for the conversion of the Bellefonte Nuclear Plant to a fossil fuel-fired plant. The feasibility study indicates that one of the most economical fossil conversion strategies is to complete Bellefonte as a natural gas-fired combined-cycle plant. TVA also issued an Environmental Impact Statement (EIS)



assessing the environmental impacts of various fossil conversion options. The EIS identified the natural gas-fired combined-cycle plant alternative as the preferred option. In addition, TVA submitted a proposal to DOE to complete Bellefonte as a nuclear plant and to operate it to produce tritium for DOE in addition to electricity. Further action will depend on DOE's evaluation of and response to the TVA proposal and DOE's other potential

options to produce tritium.

While the future decisions on these deferred units will ultimately impact the method of cost recovery, the TVA Board has determined that it will 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.

### 3. Completed plant – power program

Completed plant of the power program consists of the following at September 30:

(in millions)	1998			1997		
	Cost	Accumulated depreciation	Net	Cost	Accumulated depreciation	Net
Fossil plants	\$ 7,780	\$ 3,181	\$ 4,599	\$ 7,427	\$ 2,954	\$ 4,473
Nuclear plants	14,613	2,697	11,916	14,514	2,277	12,237
Transmission	3,265	1,038	2,227	3,144	982	2,162
Hydro plants	1,424	491	933	1,382	471	911
Other	1,973	538	1,435	2,061	494	1,567
<b>Total</b>	<b>\$ 29,055</b>	<b>\$ 7,945</b>	<b>\$ 21,110</b>	<b>\$ 28,528</b>	<b>\$ 7,178</b>	<b>\$ 21,350</b>

### 4. Appropriation investment—power program

The TVA Act requires TVA to make annual payments to the U.S. Treasury from net power proceeds as a return on the appropriations investment in the power system and as a repayment of that investment. The payments required by the TVA Act may be deferred under certain circumstances for not more than two

years. The annual repayment amount is \$20 million. 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 (6.71 percent at September 30, 1997).

## 5. 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 4.

### Debt outstanding

Debt outstanding at September 30, 1998 and 1997 consisted of the following:

(in millions)	1998	1997
<b>Short-term debt</b>		
Held by the public		
Discount notes (net of discount)	\$ 1,757	\$ 2,151
Current maturities of long-term debt - 5.88%	1,500	574
Total short-term debt	3,257	2,725
<b>Long-term debt</b>		
Held by the public - senior		
Maturing in 1999	-	2,450
Maturing in 2000 - 6.00% to 8.375%	1,250	1,000
Maturing in 2001 - 5.28% to 6.50%	2,100	1,800
Maturing in 2002 - 6.875% to 7.45%	-	1,500
Maturing in 2003 - 6.125%	1,250	1,250
Maturing in years 2004 through 2044 - 5.98% to 8.625%	14,527	12,354
Held by Federal Financing Bank—senior		
Maturing in 2003 through 2016 - 8.535% to 11.695%	3,200	3,200
Held by the public- subordinated		
Maturing in 2045 through 2046 - 7.50% to 8.00%	1,100	1,100
Total long-term debt	23,427	24,654
Unamortized discount and other adjustments	(407)	(502)
Net long-term debt	23,020	24,152
<b>Total debt</b>	<b>\$ 26,277</b>	<b>\$ 26,877</b>

### Short-term debt

The weighted average rates applicable to short-term debt outstanding in the public market as of September 30, 1998 and 1997, were 5.54 percent and 5.56 percent, respectively. During 1998, 1997, and 1996, the maximum outstanding balance of short-term borrowings held by the public was (in millions) \$2,914, \$3,962, and \$3,537, respectively, and the average amounts (and weighted average interest rates) of such borrowings were approximately (in millions), \$2,234 (5.58 percent), \$2,743 (5.47 percent), and \$2,692 (5.50 percent), respectively.

### Put and call options

Bond issues of \$9.1 billion held by the public are redeemable in whole or in part, at TVA's option, on call dates ranging from the present to July 2020 at call prices ranging from 100 percent to 106.7 percent of the principal amount. During 1998, TVA monetized the call provisions on approximately \$2 billion of public bond issues. Additionally, TVA has bond issues of \$2.1 billion held by the public that are redeemable in whole or in part

at the option of the respective bondholders. One bond issue totaling \$500 million, which matures in July 2045, is redeemable in 2001 by the bondholders. A second issue totaling \$121 million, which matures in April 2036, is redeemable in 2006 at the option of the bondholders, and a third issue totaling \$1.5 billion, which matures in April 2036, is redeemable in 1999 or 2006 at the option of the bondholders. A fourth issue totaling \$250 million, which matures in January 2018, includes a provision for a right of redemption upon the death of a beneficial owner in certain specified circumstances. All of these issues are reported in the debt schedule with maturity dates corresponding to the earliest redeemable dates.

### Bond discount and premium

Discounts and premiums on power borrowings are deferred and amortized (accrued), respectively, as components of interest expense on a straight-line basis over the term of the related outstanding securities.

**Foreign currency transaction and interest rate swap**

During 1996, TVA entered into a currency swap contract as a hedge for a foreign currency denominated debt transaction where TVA issued 1.5 billion Deutschemark bonds, the cash flows of which were swapped for those of a U.S. dollar obligation of \$1 billion. Any gain (loss) on the debt instrument due to the foreign currency transaction is offset by a loss (gain) on the swap contract. At September 30, 1998 and 1997 the currency transaction resulted in gains of \$102 million and \$131 million, respectively, which are included in the account “unamortized discount and other adjustments.” The offsetting loss on the swap contract is recorded as a deferred liability. If any loss/gain were to be incurred as a result of the early termination of the swap contract,

any resulting charge (income) would be amortized over the remaining life of the bond as a component of interest expense.

Additionally, in 1997, TVA entered into a 10-year fixed rate interest swap agreement with a notional amount of \$300 million. Such agreement was entered into to hedge TVA’s inflation exposure related to its inflation-indexed accreting principal bonds.

**Subsequent Event**

During October 1998, Congress passed legislation enabling TVA to refinance \$3.2 billion in TVA bonds issued to the Federal Financing Bank. TVA retired these bonds on October 23, 1998, through proceeds from short-term borrowings and expects to refinance on a long-term basis in 1999.

**6. 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.

**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, 1998, these investments were classified as trading securities and carried at their fair value.

**Loans and other long-term receivables**

Fair values for these homogeneous categories of loans and receiv-

ables 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 :

(in millions)	1998		1997	
	Carrying amount	Fair amount	Carrying amount	Fair amount
Cash and cash equivalents	\$ 451	\$ 451	\$ 374	\$ 374
Investment funds	578	578	561	561
Loans and other long-term receivables	151	151	170	160
Short-term debt	1,757	1,757	2,151	2,151
Long-term debt, including current maturities	24,927	26,732	25,228	26,127

The fair market value of the financial instruments held at September 30, 1998, may not be representative of the actual gains or losses that will be recorded when these instruments mature or if they are called or presented for early redemption.



## 7. Benefit plans

### Pension plan

TVA has a defined benefit plan for most full-time employees that provides two benefit structures, the Original Benefit Structure and the Cash Balance Benefit Structure. 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 member's age. A member's account receives credits each pay period equal to 6.0 percent of his or her straight-time earnings. The account also increases at an interest rate equal to the change in the Consumer Price Index plus 3.0 percent, which amounted to 5.82 percent for 1998 and 1997.

During 1998, TVA effected plan amendments such that certain pension benefits were enhanced resulting in approximately \$590 million in additional pension plan benefit obligations.

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

(in millions)	1998	1997	1996
<b>Pension expense:</b>			
Service cost	\$ 67	\$ 70	\$ 72
Interest cost on projected benefit obligation	328	308	309
Actual return on assets	(223)	(1,334)	(616)
Net amortization and deferral	(256)	899	217
<b>Net pension income</b>	<b>\$ (84)</b>	<b>\$ (57)</b>	<b>\$ (18)</b>
<b>Funded status:</b>			
Actuarial present value of benefit obligations:			
Vested benefit obligation	\$(5,098)	\$ (3,770)	\$ (3,506)
Nonvested benefits	(10)	(48)	(50)
Accumulated benefit obligation	(5,108)	(3,818)	(3,556)
Effects of projected future compensation	(537)	(391)	(401)
Projected benefit obligation	(5,645)	(4,209)	(3,957)
Plan assets at fair value	5,968	5,962	4,851
Excess of plan assets over projected benefit obligation	323	1,753	894
Unrecognized prior service cost	470	(7)	(7)
Unrecognized net gain	(572)	(1,529)	(763)
Unrecognized net obligation being amortized over 15 years beginning October 1, 1987	-	-	2
<b>Prepaid pension cost</b>	<b>\$ 221</b>	<b>\$ 217</b>	<b>\$ 126</b>

The discount rate used to determine the actuarial present value of the projected benefit obligation was 7.0 percent in 1998 and 8.0 percent in 1997 and 1996. The assumed annual rates of increase in future compensation levels for 1998, 1997 and 1996 ranged from 3.3 to 8.3 percent. The expected long-term rate of return on plan assets was 11.0 percent for 1998, 1997, and 1996.

### 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 and older (or who are age 50 and have at least five years of service). TVA's contributions are a flat dollar amount based upon the participants' age and years of service and certain payments toward the plan costs.

In connection with the pension plan benefit amendments, TVA also effected other postretirement benefit plan amendments during 1998 such that certain retiree health benefits were discontinued, resulting in approximately \$120 million in reduced other postretirement benefit obligations.

The annual assumed cost trend for covered benefits is 10.0 percent in 1998, decreasing by one-half percent per year to a level of 5.0 percent in 2008 and thereafter. For 1997 and 1996,

an annual trend rate of 10.5 percent and 11.0 percent, respectively, was assumed. The effect of the change in assumptions on a cost basis was not significant. Increasing the assumed health-care cost trend rates by 1.0 percent would increase the accumulated postretirement benefit obligation (APBO) as of September 30, 1998, by \$17 million and the aggregated service and interest cost components of net periodic postretirement benefit cost for

1998 by \$2 million.

The weighted average discount rate used in determining the APBO was 7.0 percent for 1998 and 8.0 percent for 1997 and 1996. Any net unrecognized gain or loss resulting from experience different from that assumed or from changes in assumptions, in excess of 10.0 percent of the APBO, is amortized over the average remaining service period of active plan participants.

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

(in millions)	1998	1997	1996
<b>Accumulated postretirement benefit obligation (APBO)</b>			
Retirees	\$ 118	\$ 220	\$ 230
Fully eligible active plan participants	1	2	4
Other active plan participants	87	126	187
<b>APBO</b>	<b>206</b>	<b>348</b>	<b>421</b>
Unrecognized prior service costs	25	—	—
Unrecognized net (loss) gain	(5)	—	(95)
<b>Accrued postretirement benefit cost</b>	<b>\$ 226</b>	<b>\$ 348</b>	<b>\$ 326</b>
<b>Net periodic postretirement benefit cost</b>			
Service cost	\$ 8	\$ 13	\$ 8
Interest cost	26	32	24
Amortization of loss	—	4	—
<b>Net periodic postretirement benefit cost</b>	<b>\$ 34</b>	<b>\$ 49</b>	<b>\$ 32</b>

**Other postemployment benefits**

Other postemployment benefits include workers' compensation provided to former or inactive employees, their beneficiaries and covered dependents after employment but before retirement. Adoption of Statement of Financial Accounting Standards No. 112, *Employers Accounting for Postemployment Benefits* (SFAS No. 112) in 1995 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 1996, TVA made adjustments to certain assumptions utilized in the determination of the obligation at September 30, 1996, which resulted in an increase in the original transition obligation of approximately \$194 million. In connection with the 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 packages**

In 1997 and 1996, TVA provided both voluntary and involuntary severance packages, which affected an aggregate of approximately 2,500 employees. During this period, severance costs totaled approximately \$48 million and consisted primarily of severance pay (\$75 million) and a related pension curtailment gain of \$27 million. The aggregate costs of the severance packages have been charged to the power program primarily as other expense during 1997 and 1996 in the amounts of \$11 million and \$35 million, respectively, and the nonpower program as nonpower expense during 1997 and 1996 in the amounts of \$8 million and \$6 million, respectively.

**8. Major customers**

One municipal customer accounts for approximately 10 percent of total power sales and four other municipal customers account for an additional aggregate 19 percent of total power sales.

These five municipal customers purchase power from TVA under long-term contracts for terms of 20 years, which require a notice of 10 years to terminate.

## 9. Construction expenditures and commitments and contingencies

### 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, 1998, total \$36 million annually through 2003, and an aggregate of \$264 million thereafter, for a total commitment of \$444 million, which includes an interest element of \$249 million.

### Construction expenditures

Construction expenditures, including capitalized interest, are estimated to be approximately \$828 million for 1999 and \$719 million for 2000. These estimates are revised periodically to reflect changes in economic conditions and other factors considered in their determination.

### Fuel purchase commitments

TVA has entered into approximately \$2.6 billion in long-term commitments ranging in terms of up to seven years for the purchase of coal, and approximately \$216 million in long-term commitments ranging in terms of up to five years for the purchase of uranium.

### Contingencies

**Nuclear insurance.** The Price-Anderson Act sets forth an indemnification and limitation of liability plan for the U.S. nuclear industry. All Nuclear Regulatory Commission (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 \$88 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 \$528 million per nuclear incident on the basis of its six licensed units, but it would have to pay no more than \$60 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 \$22 million.

**Clean Air legislation.** The Clean Air Act Amendments of 1990 require coal-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, for sulfur dioxide and January 1, 1996, for nitrogen oxide, while the Phase II compliance period commences on 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 strategy for complying with the 1990 Amendments includes the use of scrubbers at two fossil units and the use of lower-sulfur coal at other fossil units to reduce sulfur dioxide. TVA has completed all planned scrubbers and is on schedule to complete the change-over to lower-sulfur coal.

Nitrogen oxide reductions were required for 19 of TVA's Phase I units. These reductions were achieved through the installation of low-nitrogen-oxide burners at 13 units. TVA is in compliance with all Phase I requirements and is currently installing nitrogen oxide reduction equipment to bring TVA's remaining units in compliance with Phase II nitrogen oxide emission requirements.

Expenditures related to the Clean Air projects during 1998 and 1997 were approximately \$64 million and \$40 million, respectively. 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 emerging Environmental Protection Agency regulations, resultant compliance strategies, 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 many 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 five off-site disposal areas. TVA's liability at these sites has not yet been determined. In addition, TVA is currently investigating one other site that TVA owns. TVA may have cleanup responsibilities at this site by virtue of its control of the property. TVA's potential liabilities for its share of cleanup costs at all of these sites are uncertain but are not expected to be substantial.

**Pending 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. The Financial Accounting Standards Board (FASB) has reached several tentative conclusions with respect to its project regarding the accounting for closure and removal of long-lived assets, including the decommissioning of nuclear generating units. It is uncertain when the final statement will be issued and what impact it may ultimately have on TVA's financial position or results of operations. Effective for 1998, TVA changed its method of accounting for decommissioning costs and related liabilities in order to comply with certain of the FASB's tentative conclusions, as well as certain rate-setting actions.

TVA's current accounting policy recognizes as incurred all obligations related to closure and removal of its nuclear units. The liability for closure is measured as the present value of the estimated cash flows required to satisfy the related obligation and discounted at a determined risk-free rate of interest. The corresponding charge to recognize the additional obligation was effected through the creation of a regulatory asset. TVA further modified its method of accounting for decommissioning costs such that earnings from decommissioning fund investments, amortization expense of the decommissioning regulatory asset, and interest expense on the decommissioning liability are deferred in accordance with SFAS No. 71, *Accounting for the Effects of Certain Types of Regulation*. At September 30, 1998, the present value of the estimated future decommissioning cost of \$814 million was included in other liabilities. The decommissioning cost estimates from a 1995 study 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 the cost of labor, materials and equipment.

TVA maintains an investment trust fund to provide funding for the decommissioning of nuclear power plants. In May 1997,

## 10. Nonpower programs

TVA's nonpower programs provide various public services, including managing navigable river channels, providing flood control and overseeing certain recreation facilities. 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 the nonpower programs has historically been primarily provided through federal appropriations. Certain nonpower program activities are also funded by user fees and outside services revenues. In 1997, Congress passed legislation that anticipated no further appropriations to TVA after 1998 and

TVA sold the entire \$402 million equity index fund portfolio and transferred the proceeds to trust portfolios managed by independent money managers. During 1997, TVA recognized \$151 million of income related to the fund, which included an \$81 million gain on the sale of fund investments and \$70 million in net appreciation and interest income. As of September 30, 1998, the decommissioning trust fund investments totaled \$571 million and were invested in securities designed to achieve a return in line with overall equity market performance.

Effective September 22, 1998 the NRC amended its regulations regarding decommissioning funding. TVA is studying the change in regulation for potential impacts on both the required amount of funding and the nature of the trust accounts. The new regulation becomes effective on November 23, 1998 and is not expected to have a material impact on TVA's financial position or results of operations.

**Cost-based regulation.** As a regulated entity, TVA is subject to the provisions of SFAS No. 71, *Accounting for the Effects of Certain Types of Regulation*. Accordingly, TVA records certain assets and liabilities that result from the effects of the ratemaking process that would not be recorded under generally accepted accounting principles for non-regulated entities. Currently, the electric utility industry is predominantly regulated on a basis designed to recover the cost of providing electric power to its customers. If cost-based regulation were to be discontinued in the industry for any reason, profits could be reduced and utilities might be required to reduce their asset balances to reflect a market basis less than cost. Discontinuance of cost-based regulation would also require affected utilities to write-off their associated regulatory assets. Such regulatory assets for TVA total approximately \$1.9 billion at September 30, 1998, along with approximately \$6.3 billion of deferred nuclear plants. Management cannot predict the potential impact, if any, of the change in the regulatory environment on TVA's future financial position and results of operations.

required TVA to fund its nonpower programs that constitute "essential stewardship activities" from one or more sources, including power revenues. Nonetheless, in October 1998, Congress appropriated \$50 million for TVA's nonpower programs for 1999.

The completed plant of the nonpower programs consists of multipurpose dams and other plant. At September 30, 1998, the net completed plant balances for multipurpose dams and other plant were \$698 million and \$115 million, respectively. At September 30, 1997, the net completed plant balances for multipurpose dams and other plant were \$699 million and \$113 million, respectively.

## Report of Independent Accountants

### To the Board of Directors of the Tennessee Valley Authority

In our opinion, the accompanying balance sheets (power program and all programs) 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) 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, 1998 and 1997, 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, 1998, in conformity with generally accepted accounting principles. 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 of these statements in accordance with generally accepted auditing standards and Government Auditing Standards issued by the Comptroller General of the United States which 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, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

In accordance with Government Auditing Standards, we have also issued a report, dated October 23, 1998, on our consideration of the Tennessee Valley Authority's internal controls over financial reporting and our tests of compliance with certain provisions of laws, regulations, contracts and grants.



PricewaterhouseCoopers LLP  
Knoxville, Tennessee  
October 23, 1998

## 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.

PricewaterhouseCoopers LLP 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  
Chief Financial Officer  
and Executive Vice President of Financial Services

## Statistical and Financial Summaries

For the years ended September 30	1998	1997	1996	1995
<b>Sales (millions of kilowatt-hours)<sup>a</sup></b>				
Municipalities and cooperatives	123,330	114,771	117,035	110,245
Industries directly served	18,514	17,359	16,599	16,684
Federal agencies and other	21,293	27,198	19,964	12,356
Total sales	163,137	159,328	153,598	139,285
<b>Operating revenues (millions of dollars)<sup>a</sup></b>				
Electric				
Municipalities and cooperatives	\$5,554	\$4,811	\$4,980	\$4,654
Industries directly served	523	464	452	460
Federal agencies and other	556	561	430	277
Other	96	98	89	82
Total revenues	\$6,729	\$5,934	\$5,951	\$5,473
Electric revenue per kilowatt-hour (cents) <sup>b</sup>	4.07	3.66	3.82	3.87
<b>Winter net dependable generating capacity (megawatts)</b>				
Hydro <sup>c</sup>	5,491	5,384	5,298	5,225
Fossil	15,003	15,014	15,012	15,032
Nuclear units in service	5,620	5,625	5,545	3,342
Combustion turbine	2,384	2,394	2,268	2,232
Total capacity	28,498	28,417	28,123	25,831
<b>System peak load (megawatts)—summer</b>	27,253	26,661	25,376	25,496
<b>System peak load (megawatts)—winter</b>	23,204	26,670	25,995	24,676
<b>Percent gross generation by fuel source</b>				
Fossil	62%	61%	65%	71%
Hydro	10%	11%	11%	12%
Nuclear	28%	28%	24%	17%
<b>Fuel cost per kilowatt-hour (cents)</b>				
Fossil	1.25	1.23	1.23	1.26
Nuclear <sup>e</sup>	.71	.58	.56	.61
Aggregate fuel cost per kWh net thermal generation	1.10	1.04	1.06	1.14
<b>Fuel data</b>				
Net thermal generation (millions of kilowatt-hours)	139,727	135,735	131,898	118,097
Billion Btu	1,426,151	1,381,837	1,338,157	1,197,295
Fuel expense (millions of dollars)	1,538	1,406	1,395	1,348
Cost per million Btu (cents)	107.81	101.73	104.22	112.61
Net heat rate, fossil only	10,207	10,180	10,145	10,138

<sup>a</sup> Sales have been adjusted to include sales to other utilities.

<sup>b</sup> Excludes Department of Energy settlement payment of \$375 million for 1988, \$465 million for 1989, \$311 million for 1990 and \$160 million for the years 1991-1994.

<sup>c</sup> Includes 405 megawatts of dependable capacity from the Corps of Engineers projects on the Cumberland River System.

<sup>d</sup> Reflects expiration of TAPOCO exchange agreement in 1990—renewed in 1994.

<sup>e</sup> TVA changed its method of expensing the interest component of nuclear fuel expense in 1995.



1994	1993	1992	1991	1990	1989	1988
108,073	105,566	98,505	97,299	96,748	92,538	91,392
15,792	16,196	16,576	17,422	17,134	16,260	15,141
13,599	10,952	8,970	5,720	6,300	6,777	5,154
137,464	132,714	124,051	120,441	120,182	115,575	111,687
\$4,582	\$4,479	\$4,266	\$4,272	\$4,292	\$4,109	\$4,100
452	472	472	531	548	526	513
441	414	342	286	455	624	675
71	71	71	68	69	62	60
\$5,546	\$5,436	\$5,151	\$5,157	\$5,364	\$5,321	\$5,348
3.87	3.92	3.97	4.09	4.15	4.15	4.40
5,242	4,885 <sup>d</sup>	4,885 <sup>d</sup>	4,885 <sup>d</sup>	4,885 <sup>d</sup>	5,201	5,201
15,032	15,088	15,088	15,249	15,249	15,249	15,249
3,342	3,365	3,361	3,361	2,296	2,296	1,148
2,264	2,284	2,284	2,284	2,284	2,284	2,284
25,880	25,622	25,618	25,779	24,714	25,030	23,882
23,398	23,878	21,980	22,081	21,749	20,638	21,343
24,723	21,666	21,974	20,752	24,627	20,369	20,116
72%	77%	69%	68%	68%	71%	86%
14%	13%	14%	16%	19%	18%	11%
14%	10%	17%	16%	13%	11%	3%
1.34	1.27	1.33	1.35	1.37	1.41	1.43
1.10	1.09	1.10	1.02	1.00	1.08	1.36
1.31	1.25	1.29	1.29	1.32	1.37	1.44
110,643	109,968	105,577	98,153	93,595	92,106	86,278
1,120,868	1,105,395	1,069,725	998,934	946,113	925,455	865,876
1,450	1,375	1,360	1,263	1,233	1,261	1,240
129.40	124.42	127.16	126.48	130.36	136.26	143.22
10,131	10,052	10,132	10,177	10,109	10,048	10,036

## The Board

### **CRAVEN CROWELL, *Chairman***

In fifth year of a nine-year term as Chairman of TVA's Board • appointed by President Clinton in 1993 to be TVA's 11th Chairman • 14 years of service at TVA, including tenure as an officer and member of the corporation's top management team • serves as board member and Chairman of the Membership & Strategic Issues Committee of the Electric Power Research Institute • serves on the board of the Nuclear Energy Institute • graduated from Lipscomb University in 1965 • served in the Marine Corps Reserve and Naval Reserve.

### **JOHNNY H. HAYES, *Director***

Appointed to TVA Board in 1993 • has focused on economic development initiatives, helping to bring new manufacturing and service firms to the Tennessee Valley, while promoting expansion of existing business and industry • served two appointments in the cabinet of Tennessee Governor Ned McWherter, first as Commissioner of Employment Security in 1991 and a year later as Commissioner of Economic & Community Development • before entering public service, founded and served as President of Newman, Hayes & Dixon, an independent insurance agency in Hendersonville, Tennessee • co-chairs the Knoxville/TVA Community Relations Council • graduated from Tennessee Technological University in 1962.

### **WILLIAM H. KENNOY, *Director***

Appointed to TVA Board in 1991 • has 25 years of experience as a professional engineer and private business executive • in 1997 was named Initiator & Director of East Tennessee Intermodal Transportation & Commerce Center Inc., a nonprofit public corporation • from 1971 until TVA appointment was President of Kennoy Engineers Inc., an environmental engineering firm in Lexington, Kentucky. • in the early '60s, directed radionuclide water analysis for the U.S. Public Health Service in Montgomery, Alabama, and investigated drainage problems in the San Joaquin Valley for the State of California • graduated from the University of Kentucky in 1960 with a B.S. in civil engineering.

## Executive Committee



**IKE ZERINGUE,**  
*President & Chief  
Operating Officer*

More than 23 years in the nuclear industry • directed startup and

licensing of TVA's Watts Bar and Sequoyah nuclear plants and recovery and restart of Browns Ferry Nuclear Plant • directed startup, maintenance and operation of Arizona Public Service Co.'s Palo Verde Unit 3 • became TVA's Senior VP of Nuclear Operations in 1993 • was named TVA's Chief Nuclear Officer and Executive VP of TVA Nuclear in 1997 • appointed in 1998 to current position, overseeing power generation and transmission functions and river management • nuclear engineering degree from North Carolina State University • graduate work in mechanical engineering • graduated from Advanced Management Program at Harvard Business School.



**NORM ZIGROSSI,**  
*Chief Administrative  
Officer & Executive  
Vice President,  
Business Services*

Joined TVA in 1986

• served as TVA's first Inspector General until 1992 • was President of TVA's Resource Group from 1992–94 • was named Chief Administrative Officer in 1994 and Executive VP of Business Services in 1996 • before joining TVA, held a number of management and executive positions with the FBI, including the position of Special Agent in charge of Washington, D.C., field office • attended Loyola School of Law in New Orleans • holds a B.A. from Ohio Wesleyan University and an M.S. from the University of Maryland.



**DAVID N. SMITH,**  
*Chief Financial Officer  
& Executive Vice  
President, Financial  
Services*

Joined TVA as Chief

Financial Officer in 1995 • was named Executive VP of Financial Services in 1996 • led refinancing of \$16 billion of debt with a variety of global and retail bond offerings since 1995 • previously co-founded and served as Executive Director of Odyssey Financial, a corporate consulting firm • played key role in the reorganization of LTV Corp., enabling it to successfully emerge from one of the largest, most complex bankruptcies in U.S. history • VP of Corporate Development for 10 years at Cyclops Corp. • CPA certification in 1969 • graduate of Northwestern University • M.B.A. in finance from Northwestern's Kellogg School of Business.



**MARK O. MEDFORD,**  
*Executive Vice  
President, Customer  
Service and Marketing  
Group*

Joined TVA in 1989 as VP & Nuclear Technical Director • served in several TVA executive positions before being named to current position in 1996 • responsible for relations between TVA and its customers • directs staffs managing customer accounts, product development and pricing, marketing, economic development, and technology advancements • more than 20 years of public and private utility experience • before joining TVA, was Manager of Nuclear Regulatory Affairs at Southern California Edison • served in U.S. Navy from 1971–75 and was assigned to Bettis Atomic Power Laboratory • B.S. and M.S. degrees from Rice University • M.B.A. from California State Polytechnic University • Ph.D. in executive management from Claremont Graduate School.



**EDWARD S. CHRISTENBURY,**  
*Senior Vice President  
and General Counsel  
TVA's General  
Counsel since 1987*

advises the Board on legal matters and serves as Secretary to the Corporation • oversees and coordinates all legal work for TVA • worked at the Nuclear Regulatory Commission for seven years before joining TVA • while there, served as an Assistant General Counsel and supervised NRC attorneys representing the agency staff in nuclear-licensing proceedings • was a trial attorney and supervisor at the U.S. Department of Justice for 11 years • licensed to practice before the Supreme Court of the United States • has an undergraduate degree in Business Administration and law degree from the University of Tennessee.



**KATHRYN J. JACKSON,**  
*Executive Vice  
President,  
Resource Group*

Joined TVA in 1991 • appointed to current position in 1996 • served as VP of Technology Advancements, overseeing technological development to improve performance of TVA power system • Director of the Joint Institution for Energy & Environment • Director of the Wildlife Habitat Council • Presidential appointee, the National Recreation Lake System Study Commission in 1998 • Distinguished Lecturer at Princeton University in 1997 • Advisor on the Carnegie Mellon College of Engineering Advisory Council in 1998 • B.S. in physics from Grove City College • M.S. in industrial engineering management from the University of Pittsburgh • M.S. and Ph.D. in engineering and public policy from Carnegie Mellon University • postdoctoral fellowship at the National Academy of Sciences/Engineering at the National Research Council in Washington, D.C.



**WILLIAM J. MUSELER,**  
*Executive Vice  
President,  
Transmission/Power  
Supply Group*

Joined TVA in 1991 • named to current position in 1996 • served as Site VP for TVA's Bellefonte and Watts Bar nuclear plants, VP of Power System Reliability & Competition and VP of Transmission/Power Supply • has 30-plus years of experience in electric-power industry • previously was VP of Electric Operations at Long Island Lighting Co. • did R&D work on early reactor designs at Brookhaven National Laboratory and at Combustion Engineering Inc. • B.S. in engineering science at the Pratt Institute • M.S. in mechanical engineering at Worcester Polytechnic Institute.



**JOHN A. SCALICE,**  
*Chief Nuclear  
Officer & Executive Vice  
President, TVA Nuclear*

Joined TVA in 1989 as Plant Manager at Watts Bar Nuclear Plant • served as Browns Ferry Plant Manager • as Site VP at Watts Bar, played a key role in the successful licensing, startup and operation of that nuclear unit • named to current position in April 1998 • responsible for all management of TVA's three operating nuclear plants • has more than 27 years of experience in the nuclear industry in areas of plant operations, nuclear security, reactor engineering • Senior Reactor Operator license • B.S. in mechanical engineering and M.S. in nuclear engineering from Polytechnical Institute of New York.



**JOSEPH R. BYNUM,**  
*Executive Vice  
President, Fossil &  
Hydro Power Group*

Worked in TVA engineering and plant operations positions from 1972–82 • Plant Manager of Palo Verde Nuclear Generating Station for Arizona Public Service from 1982–87 • named to senior position in TVA's Nuclear Power Operations in 1987 • appointed VP of Nuclear Operations in 1989 • served as VP of several TVA Fossil & Hydro organizations from 1993–98, including Maintenance & Testing Services, Fuel Supply & Engineering, and Fossil Operations • named to current position in August 1998 • B.S. in electrical engineering and M.S. in nuclear engineering from Georgia Institute of Technology.



*“TVA has a reputation of being among the most innovative of the U.S. agency borrowers.”*

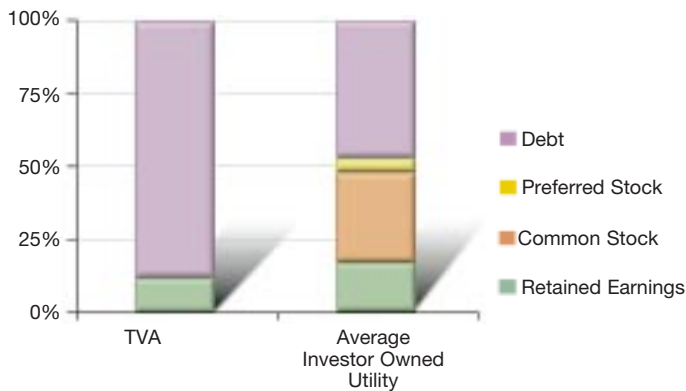
—INTERNATIONAL FINANCIAL REVIEW, March 14, 1998

### Earnings Objective

Consistent with its Federal charter, TVA’s objective is to deliver a reliable supply of power to its customers “at rates as low as are feasible.” Although TVA operates much like a non-profit corporation, it is required by statute and bond resolutions to achieve certain levels of earnings for the protection of its investors.

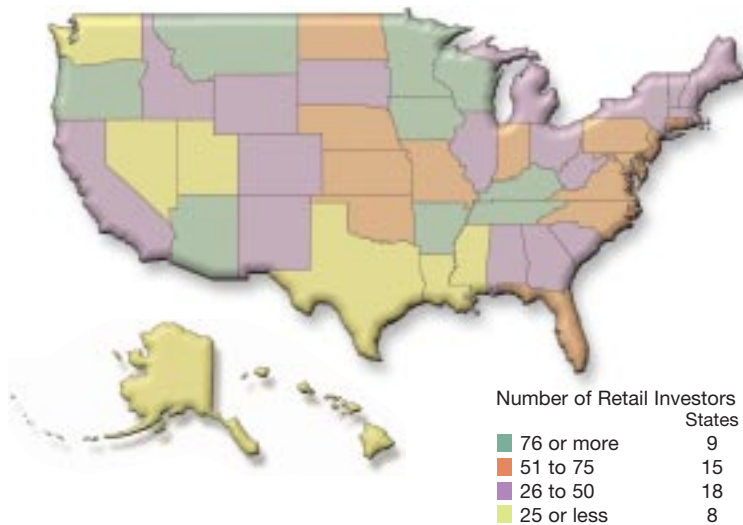
TVA is a corporation wholly-owned by the United States government that primarily finances its capital requirements through cash flows and by issuing debt. TVA does not accumulate and carry forward a large amount of retained earnings because it does not generate a large annual profit. TVA is not authorized by the TVA Act to issue equity securities.

### Comparative Capital Structures



### 150,000 Retail Investors

Individual Investors Per 100,000 People



### Investment Opportunities

TVA designs and markets innovative debt structures, including Quarterly Income Debt Securities (QIDS) and estate bonds, Putable Automatic Rate Reset Securities (PARRS) and a variety of power bonds. TVA’s power bonds have a Triple-A rating, and interest on TVA’s securities is generally exempt from state and local income taxes. As of September 30, 1998, TVA had 27 long-term public debt issues outstanding, totaling \$21.7 billion.

### Securities Listings

TVA’s power bonds, excluding PARRS, are traded on the New York Bond Market, and its QIDS and PARRS are traded on the New York Stock Exchange under the equity symbols TVA, TVB and TVC. Some power bonds are listed on foreign exchanges.

### Interest Payments

Investors will receive semi-annual interest payments for power bonds, except for estate bonds, PARRS and the 1996 Series C global bonds. Investors who own QIDS, estate bonds and PARRS will receive quarterly interest payments, and investors who own TVA’s 1996 Series C global bonds will receive annual interest payments.

### Form and Denomination

Security	Book Entry Form	Par Value Denomination
QIDS	The Depository Trust Corporation	\$25
PARRS	The Depository Trust Corporation	\$25
1996 Series C Global	The Depository Trust Corporation	\$1,000
Power Bonds	Federal Reserve Bank System	\$1,000

Market prices and broker policies may require that investors pay more or less than par value for the security.

#### For More Information

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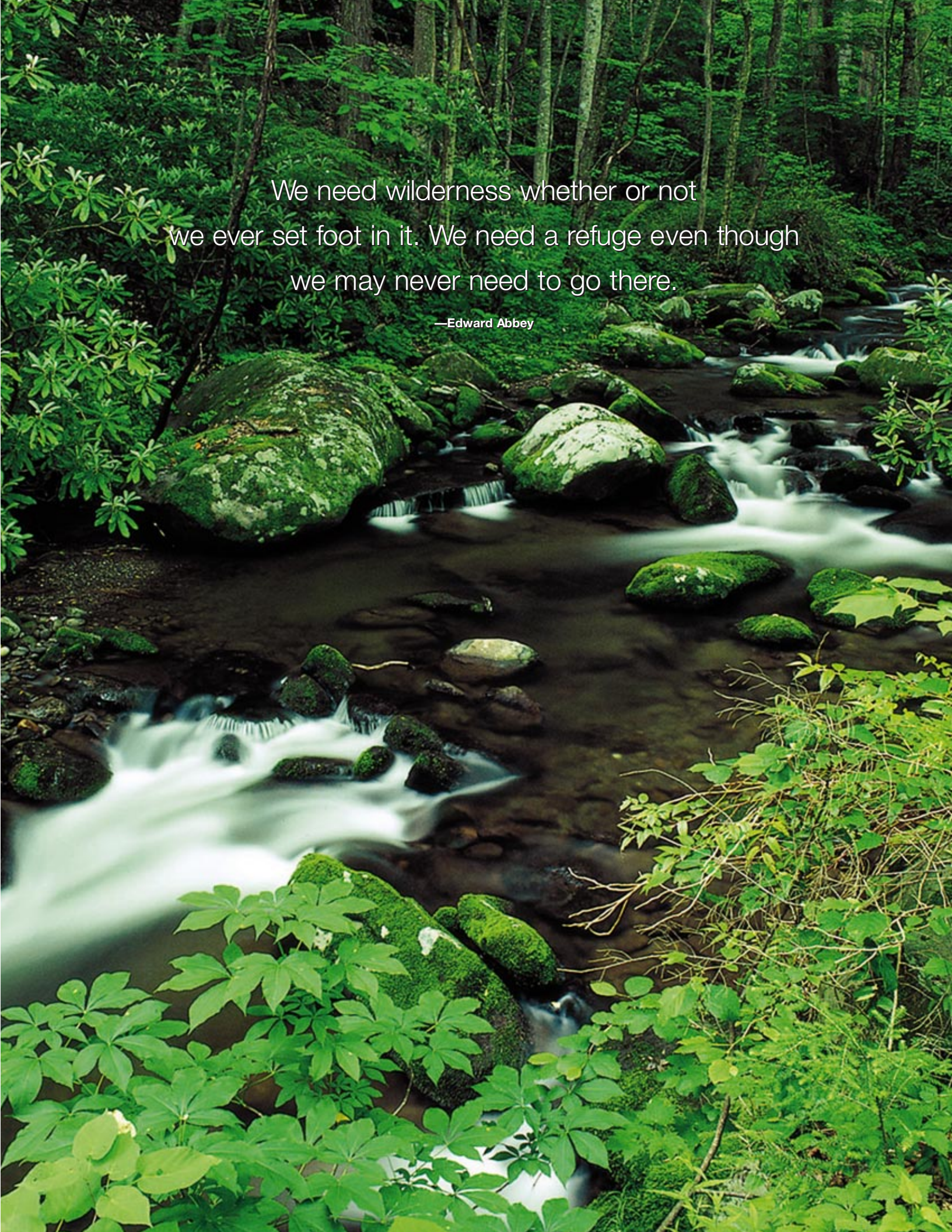
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**TVA homepage**

[www.tva.com](http://www.tva.com)

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.



A photograph of a small, clear stream flowing through a dense forest. The water is white and frothy as it cascades over several large, moss-covered rocks. The surrounding vegetation is vibrant green, with various types of leaves and ferns visible. The background is filled with tall, thin trees, creating a sense of a deep, wild wilderness.

We need wilderness whether or not  
we ever set foot in it. We need a refuge even though  
we may never need to go there.

—Edward Abbey



## Forward-Looking Statements

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This annual report contains forward-looking statements relating to future events and future performance. Any statements regarding expectations, beliefs, plans, projections, estimates, objectives, intentions or assumptions or otherwise relating to future events or performance may be forward-looking. Some examples of forward-looking statements include statements regarding TVA's projections of future power and energy requirements, future costs related to environmental compliance, targets for TVA's future competitive position, and the potential effect of the Year 2000 issue on TVA's operations. Although TVA believes that these statements are accurate, TVA does not guarantee their accuracy. Numerous factors could cause actual results to differ materially from those in the forward-looking statements. Such factors include, among other things, new laws and regulations, especially those related to the deregulation of electric utilities, and various environmental matters; increased competition among electric utilities; legal and administrative proceedings affecting TVA; the financial environment; performance of TVA's generating facilities; fuel prices; the demand for electricity; weather conditions; changes in accounting standards; the efficacy of TVA's and its suppliers' and customers' Year 2000 remediation efforts; and unforeseeable adverse events.