

"For the rest of this century, we do not foresee the luxury of a choice in meeting new electric energy demands. Basically we will have coal and we will have uranium in addition to which we must have a dedicated effort at energy conservation."

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# 76 Power Annual Report

## Tennessee Valley Authority

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# Power Annual Report

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For the fiscal year ended

June 30, 1976

TENNESSEE VALLEY AUTHORITY

A corporation wholly owned by the United States of America

Board of Directors . . . . . Aubrey J. Wagner, Chairman  
William L. Jenkins, Director  
General Manager . . . . . R. Lynn Seeber  
General Counsel . . . . . Herbert S. Sanger, Jr.  
Comptroller . . . . . Willard R. Stinson  
Manager of Power . . . . . Godwin Williams, Jr.

*On the cover: The quotation is part of a statement emphasizing the vital role of nuclear power development signed by 63 top officials of major U.S. electric systems and printed as an advertisement in the March 30, 1976 issue of the Wall Street Journal. TVA Board Chairman Aubrey J. Wagner was one of those officials.*

TVA is a corporate agency of the United States Government. It was established by Act of Congress in 1933 to develop the Tennessee River system and to assist in the development of other resources of the Tennessee Valley and adjoining areas.

The production and sale of electric power are part of TVA's resource development program. TVA supplies power at wholesale to 160 municipal and cooperative distributors and one privately owned electric system which in turn distribute power to about 2.5 million customers in parts of seven states. TVA also serves directly 49 industrial customers with large or unusual

power requirements and several Federal nuclear, aerospace, and military installations.

Financially, the power program is separate from other TVA programs. It is required to be self-supporting and self-liquidating. Power accounts are kept in accordance with the uniform system prescribed for electric utilities by the Federal Power Commission.

This report deals with TVA's electric power activities. Additional information about power or other activities may be obtained from the Director of Information, Tennessee Valley Authority, Knoxville, Tennessee 37902.

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## Statistical Highlights

	Fiscal Year	
	1976	1975
Energy sales, billions of kilowatthours	108.7	106.4
Operating revenues, millions	\$1,692.5	\$1,176.3
Net income, millions	\$ 126.1	\$ 103.4
Requirement for dividend and repayment to U.S. Treasury, millions	\$ 85.1	\$ 91.4
Net increase in borrowings, millions	\$ 745.0	\$ 865.0
Taxes and payments in lieu of taxes, millions	\$ 55.1	\$ 42.0
Total assets, millions	\$6,803.8	\$5,876.8
Construction expenditures, millions	\$1,065.5	\$ 944.2
Capacity in service, kilowatts	27,071,480	26,726,630
Capacity under construction or planned, kilowatts	20,727,000	21,188,000
Ultimate customers served by distributors of TVA power	2,522,000	2,459,000
Ultimate customers added	63,000	57,000
Average annual residential use, kilowatthours	14,370	14,540
Average residential rate, cents per kilowatthour	2.26	1.76

# Sales

As business picked up nationally during 1976, the need for electric energy in the Tennessee Valley also began to increase. Market factors produced mixed results from the different classes of customers, but overall sales increased two percent from 106.4 billion kilowatthours to 108.7 billion.

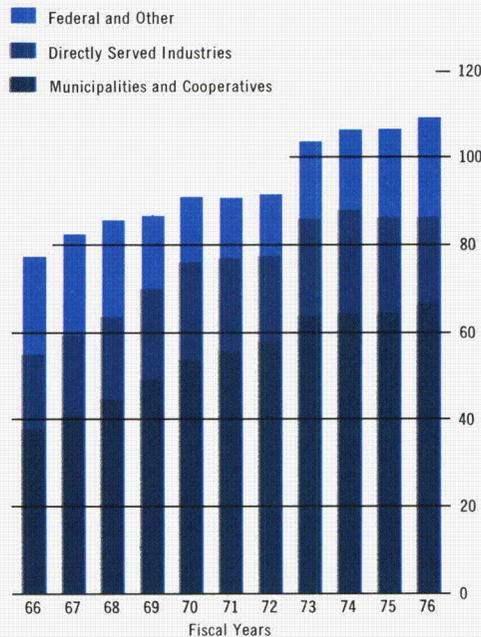
Sales to the 160 municipal and cooperative electric systems distributing TVA power went from 64.5 billion kilowatthours to 66.5 billion. Sales to the distributors continued to increase throughout the business recession, but growth had been slight for two years. The relatively greater growth this year was influenced by increasing customers, incomes, employment, and commercial activity.

Federal installations served by TVA increased their use of electric energy 11 percent to nearly 22 billion kilowatthours. The resumption of normal year-round deliveries to the Energy Research and Development Administration (ERDA) facilities at Oak Ridge, Tennessee, and Paducah, Kentucky, contributed to the increase. During the middle of fiscal 1975 the then-Atomic Energy Commission had temporarily reduced energy use at those facilities to help conserve coal supplies.

The increase in sales to the distributors and Federal agencies was partly offset by a decrease in sales to the 49 industries with large or unusual power requirements that are served directly by TVA. Sales to these customers diminished by nine percent during 1976 to 19.9 billion kilowatthours. The lingering effects of the recession tended to restrain power use by these industries, but their consumption began to show significant increases during the last three months of the fiscal year. Many of these and other commercial and industrial establishments began to use power at near their 1973 levels.

The distributors' residential sales of 32 billion kilowatthours were up just slightly in 1976, as a relatively steady upward trend was moderated by decreased heating requirements and energy conservation.

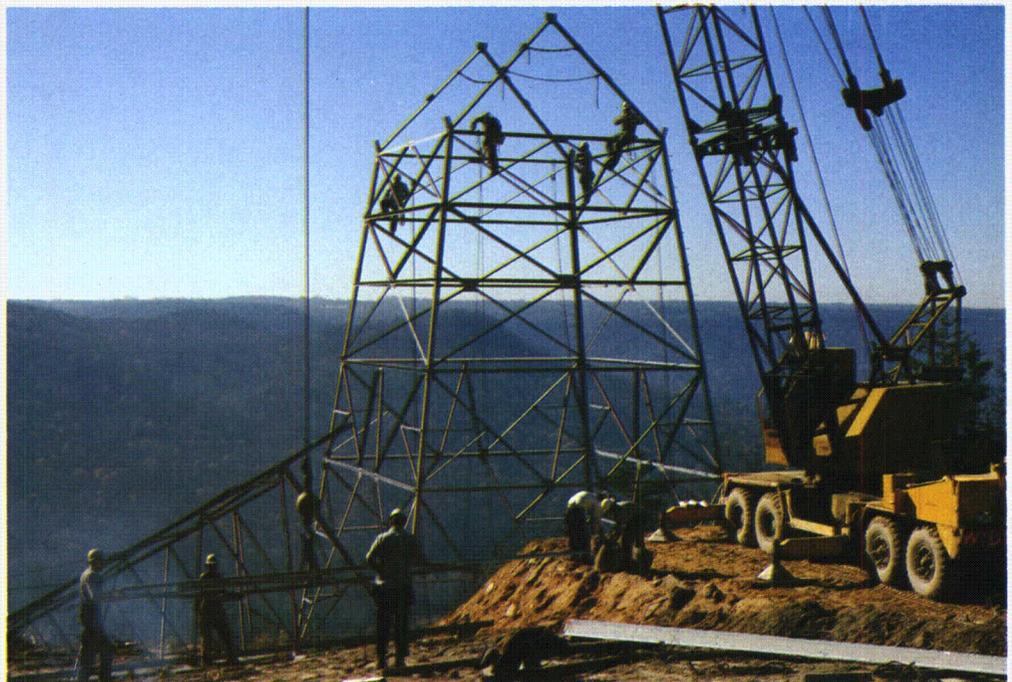
## SALES Billions of Kilowatthours



Unusually cold weather during a few weeks of the winter caused heavy energy use for those periods, but the winter overall was warmer than normal. Average residential use declined about one percent this year to 14,370 kilowatthours. The average home nationwide, by comparison, used about 8,300 kilowatthours. Most of this difference represents the larger percentage of homes here using electric space and water heating. Nationally residential customers' average bills totaled \$275 for the year. Valley customers used nearly twice as much electric energy for but \$50 more.

Although Valley residents do not use more energy per person than the national average, a larger part of the energy used is electric.

Sales by distributors to their commercial and industrial customers were six percent higher than the previous fiscal year, reversing the earlier decline.



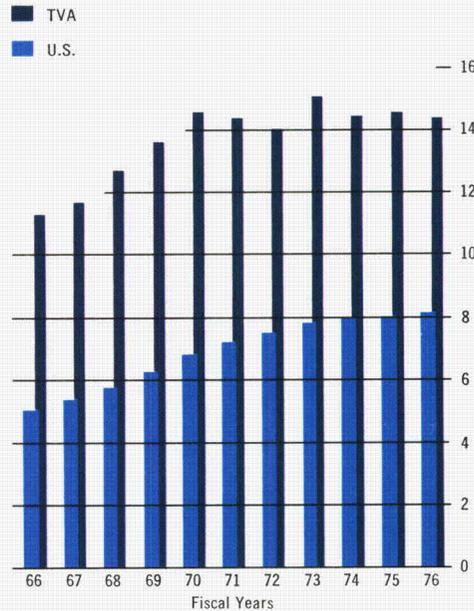
*This 110-mile transmission line in Alabama, completed in May, established the first 500,000-volt interconnection between the TVA system and Alabama Power Company. This is one of several extra-high-voltage interconnections with neighboring systems that help save money and increase system reliability.*

The distributors added 63,000 new customers during the year, significantly higher than the 57,000 added the preceding year.

Conservation of electric energy in the Tennessee Valley is estimated to have saved six billion kilowatthours during the year, thus helping to protect valuable energy resources and save money for consumers. However, more electric energy is going to be needed in the future. Energy must be supplied for more jobs, for a growing population, for environmental protection, for more schools, hospitals, and homes. In view of the national problems involved in future oil and gas supplies, electricity produced from coal and uranium must provide an increasing share of the Nation's total energy needs.

### AVERAGE RESIDENTIAL USE

Thousands of Kilowatthours



# Revenues and Expenses

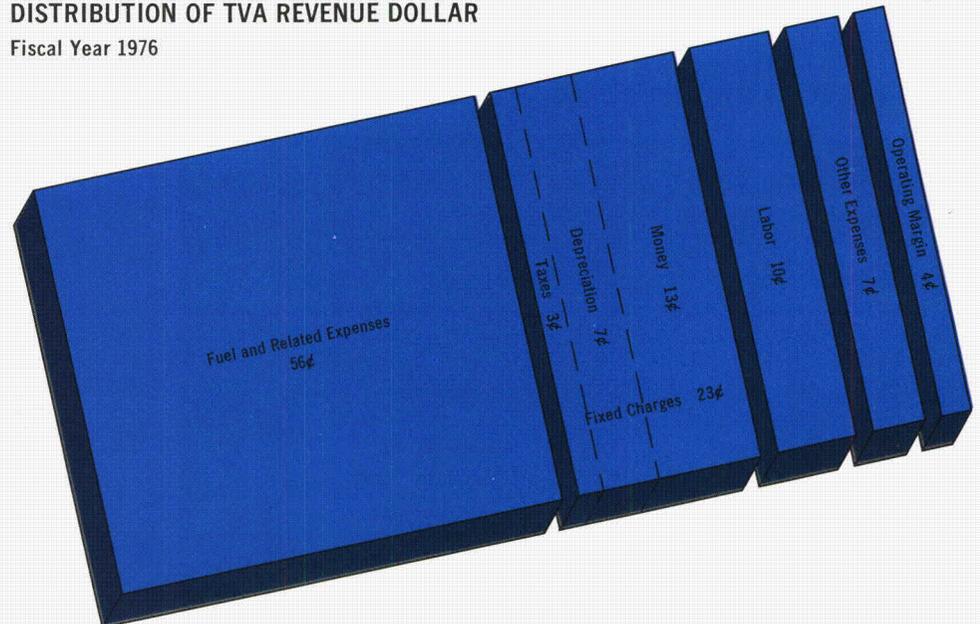
Operating revenues were \$1,693 million, \$516 million higher than the previous year. Much of this increase resulted from the operation of the January 1975 rate adjustment which provided for charges for power each month to reflect increases or decreases in the cost of fuel and purchased power. Some of the higher cost can be traced to the outage of Browns Ferry Nuclear Plant units 1 and 2 and the delay of unit 3, and the resulting need to replace the cheaper nuclear power with generation from fossil-fired plants and power from other systems.

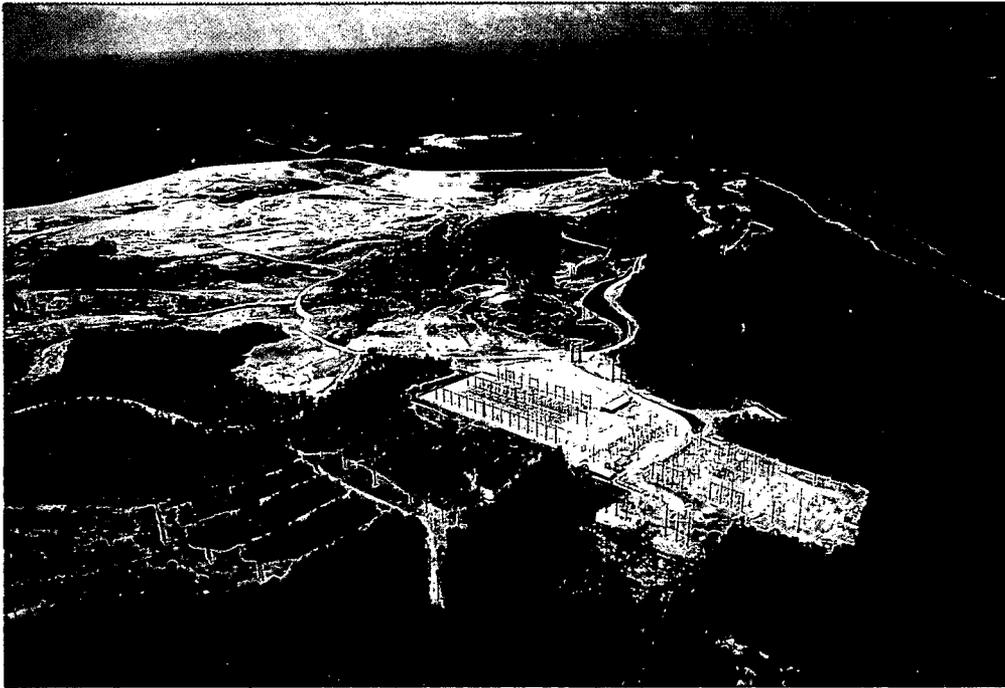
Fuel costs increased 61 percent, from \$455 million to \$731 million. The average cost of coal burned in TVA plants had doubled during fiscal 1975 from \$9 to \$18 per ton and then leveled off. The cost of coal burned remained fairly stable during 1976, averaging \$18.72.

The net cost of power imports was \$219 million, 62 percent higher than the year before.

### DISTRIBUTION OF TVA REVENUE DOLLAR

Fiscal Year 1976





Beginning in 1978, peaking power will be available from Raccoon Mountain Pumped Storage Plant. The upper reservoir will hold water for release through four reversible pump-turbines during peak load periods. A visitors' overlook permits a view of the Tennessee River Gorge.

The combined cost of fuel and net power imports was \$950 million, taking 56 cents of each dollar of revenue. By contrast, five years ago fuel and net power imports together took only one-third of the revenue dollar.

TVA makes payments in lieu of taxes to states and counties on its power properties and operations. These payments annually represent five percent of revenue from sales of electric energy for the previous year, excluding revenues from Federal agencies. In 1976, TVA paid \$48 million to the states and counties, up \$12 million from the year before. These payments are now almost five times what they were in 1966.

Other operating costs increased \$68 million, primarily reflecting higher prices for materials, equipment, and additional power plant maintenance at several plants. However, these increases are small compared to the increase in fuel-related expenses.

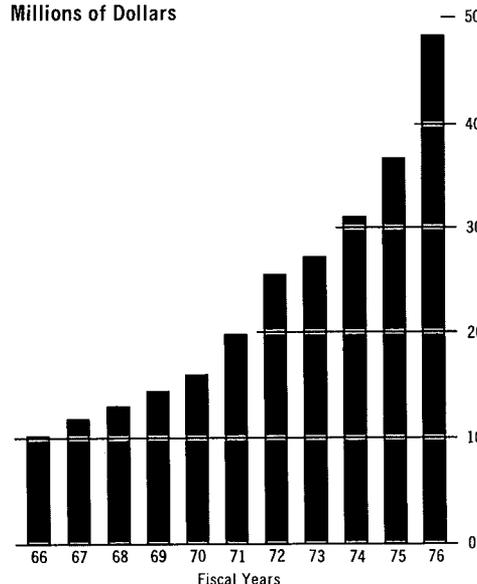
Interest charges increased from \$229 million to over \$292 million while other income—principally the allowance for funds used during construction—increased about \$22 million, making net interest expense \$41 million higher than the year before. Depreciation was \$12 million more than in the previous year.

Net income was \$126 million, \$23 million above the previous year and the first increase after four years of declining earnings.

The TVA Act requires TVA to pay a return or dividend to the U.S. Treasury on outstanding appropriations invested in the power system and to repay a portion of the appropriations each year. This year's dividend was \$65 million, which as required by the TVA Act is based on the average interest rate payable on the Treasury's marketable public obligations at the beginning of the fiscal year—in this case 6.53 percent. Total payments due the Treasury for fiscal 1976 and payable on September 30, 1976, were \$85 million, including the \$20 million required by the Act to reduce the appropriations investment.

### TVA PAYMENTS IN LIEU OF TAXES

Millions of Dollars



# System Operations

Electric service to TVA customers was maintained without major interruption. Some distribution systems had outages due to storms and other similar circumstances, such as those caused by the high wind and rain spawned by Hurricane Eloise in September 1975. TVA bulk power transmission, however, was unimpaired.

The year's peak load for the region's customers was 20,381,000 kilowatts on January 9, a new record. The peak occurred when the morning's Valley-wide average temperature dropped to eight degrees and temporarily boosted requirements for heat.

Fully 80 percent—82 billion kilowatt-hours—of system net generation came from TVA's coal-fired steam plants. The year before, generation at these plants was lower because of efforts to conserve coal and because of unusual maintenance problems. This year coal-fired generation was

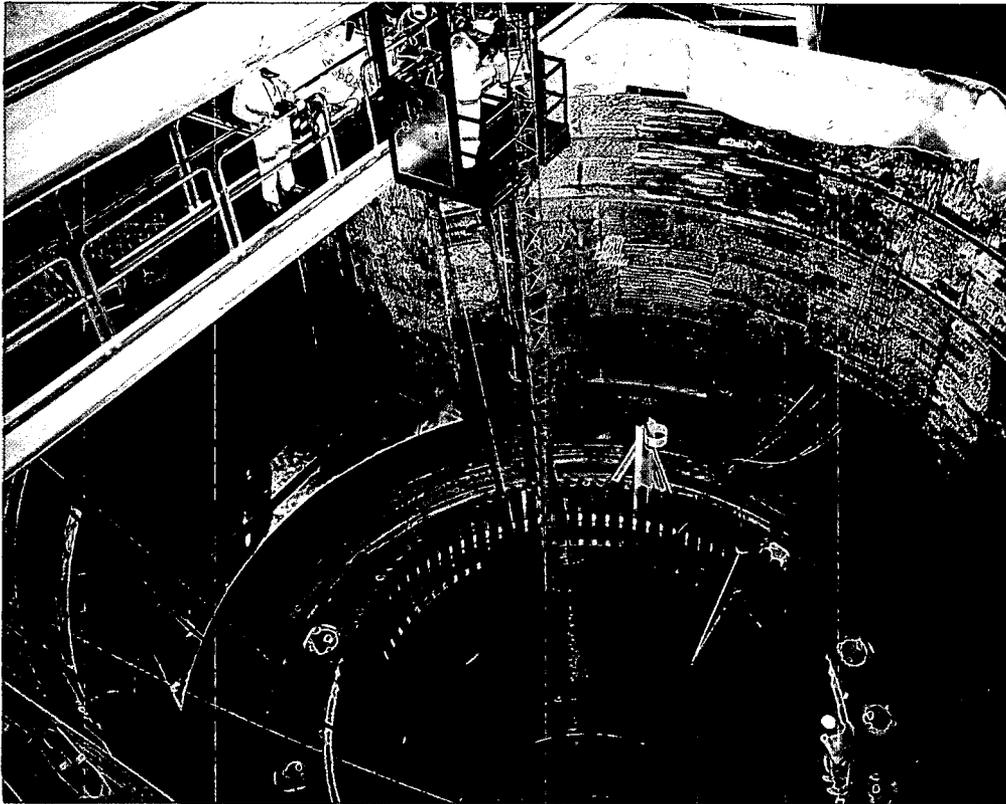
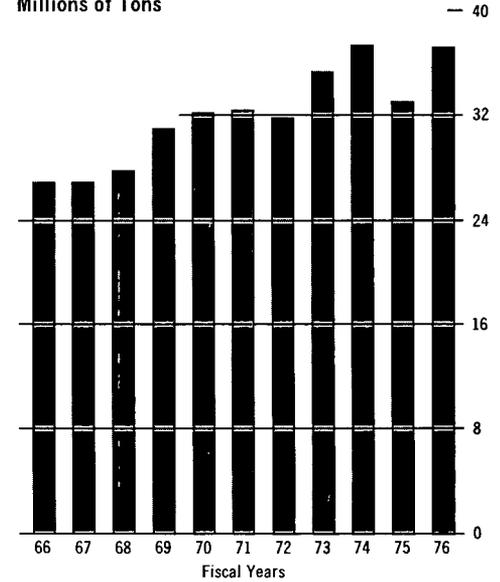
again near the level of 1974, requiring 37 million tons of coal.

This year's hydroelectric output was above average at 19.2 billion kilowatt-hours—almost one-fifth of TVA's net generation. Still, this was down from the unusually high hydro production of the four previous years—about 23 billion kilowatt-hours per year.

Browns Ferry Nuclear Plant units 1 and 2 were out of service all year to repair damage from an electrical cable fire in March 1975. This long outage was necessary to redesign control cable systems, establish procedures to repair the damage, and gain regulatory approval of the plans in addition to performing repair work itself. Several other plant modifications were completed during this outage.

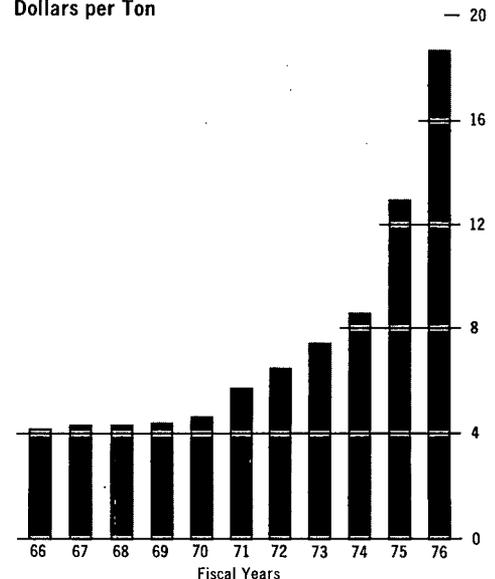
The Nuclear Regulatory Commission (NRC) held a public hearing to review

**COAL BURNED**  
Millions of Tons



Fuel loading began for Browns Ferry unit 3 on July 4, 1976. This unit will bring TVA's nuclear capacity to 3,456,000 kilowatts—more than the total of all TVA-owned dams.

**AVERAGE COST OF COAL BURNED**  
Dollars per Ton



changes to the technical specifications for units 1 and 2 as a result of the fire.

After the hearing in August, a license to resume operation of units 1 and 2 was received. A full power license was also received for unit 3, which was still under construction during the year and not involved in the hearing.

Primarily because of the unavailability of these nuclear units, as well as outages of some coal-fired units, TVA imported large quantities of power from other systems and reduced its export of power to other systems. Net power imports grew from 8.7 billion kilowatthours in 1975 to 11.7 billion in 1976, or about 10 percent of the total power supply.

Under TVA's power exchange arrangements with other power systems, fiscal year power imports have historically balanced power exports, varying one way or the other with circumstances in any given year. But the unusual conditions TVA experienced in 1975 and 1976 required much larger quantities of power from other systems.



*Stator being rewound on a 36-year-old generating unit at Chickamauga Dam. Even long-service hydro units need refurbishing once in a while, and their capacity can be increased a little in the process at low cost. Similar capacity increases can be achieved on some steam units.*

## Power and Fuel Supply

TVA continued work on nuclear power plants to meet future baseload power demands and on the Raccoon Mountain Pumped Storage Plant for additional peaking power. New capacity under construction or on order will increase system capacity to about 48 million kilowatts by 1986 under present schedules.

Four oil-burning combustion turbine units near the Gallatin Steam Plant were placed in commercial operation on July 1, 1975. The units provide a total of 325,200 kilowatts to assist in meeting peak loads.

During the year TVA revised nuclear plant construction schedules to reflect the

longer lead times being experienced at plants throughout the country. Some delays involve changes in regulatory and design requirements and some arise from slow delivery of materials. Many, however, center around the regulatory process, which permits licensing proceedings to be unnecessarily protracted by opponents of nuclear power. A little more than a year was added to the schedule for the proposed Hartsville and Phipps Bend plants, and almost two years were added to the proposed Yellow Creek Nuclear Plant.

Public hearings on the environmental impact of the proposed Hartsville Nuclear Plants were completed in December, and a

Limited Work Authorization was issued in April permitting TVA to begin preliminary work. The start of full construction must await issuance of construction permits following public hearings on the radiological health and safety aspects of the plants.

TVA's nuclear program will require a large supply of nuclear fuel in the years ahead. In securing part of this fuel supply, TVA since 1971 has invested about \$45 million in exploration for uranium deposits or acquisition of interest in uranium reserves in Colorado, Michigan, Montana, New Mexico, South Dakota, Texas, Utah, and Wyoming. Mining is expected to begin at three sites in the next three years. That

\$45 million is about two percent of TVA's current capital investment in nuclear power plants.

Unlike the previous year, there was an ample coal supply during 1976. The coal supply pinch loosened quickly after the coal miners' strike in late 1974 and at the end of fiscal 1976 TVA's coal stockpiles amounted to almost 15 million tons.

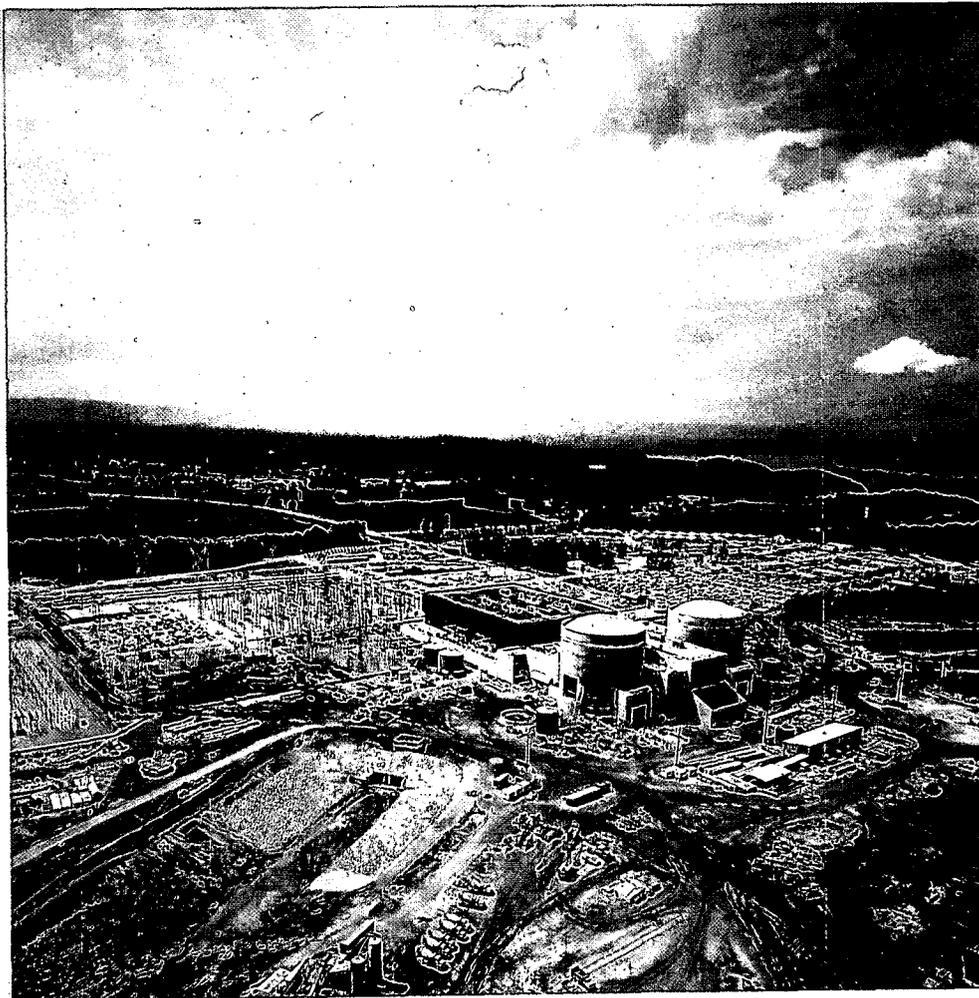
For several years the control of sulfur dioxide emissions from coal-burning power plants has been one of the most difficult problems in America's efforts toward clean air. The Environmental Protection Agency

(EPA) has interpreted the Clean Air Act standards for ground-level sulfur dioxide concentrations as requiring continuous control of stack emissions. For TVA and other power suppliers with existing plants designed to use high-sulfur coal this posed several problems—including considerable added cost to consumers, potentially decreased reliability, and economic hardships for some localities now supplying coal to TVA.

TVA developed an alternative control system, involving much less added cost, that would achieve equivalent air quality at ground level. It tried to win the approval of

pollution control agencies for this alternative approach, and ultimately challenged EPA's interpretation of the Clean Air Act in court. These efforts, however, were unsuccessful. As a result, additional expensive sulfur dioxide control measures will be required, with corresponding increases in electric bills.

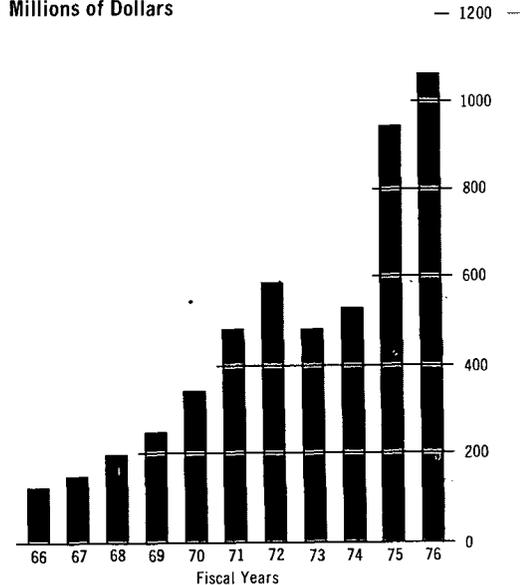
The TVA system includes 12 coal-fired steam plants. Three of these plants are meeting the continuous sulfur dioxide emission limits, while five others can probably meet them with coal treatment plants or some blend of present coal supplies and lower sulfur coal. At the end of the year TVA,



The next TVA nuclear plant scheduled for service is Sequoyah, near Chattanooga, Tenn.

### CONSTRUCTION EXPENDITURES\*

Millions of Dollars



\*Includes allowance for funds used during construction

EPA, and state pollution control agencies were discussing possible approaches for these five plants as well as for the four other coal-fired plants which face the most restrictive sulfur dioxide limits.

Toward the end of the fiscal year TVA was preparing to ask for bids on new supplies of coal to replace contracts expiring between 1977 and 1981 and on greater quantities of low-sulfur coal to be burned—or to be blended with other available coals—as an alternative for achieving compliance with the emission limitations.

TVA spent more than \$100 million on air quality protection facilities at steam plants during 1976, primarily for new or modified electrostatic precipitators to increase the efficiency of fly ash removal. This work has been underway for some time and is nearing completion.



*Watts Bar Nuclear Plant near Spring City, Tenn., is the third of seven TVA nuclear plants under construction or on order at the end of 1976.*

## Financing

The major share of funds for financing new power facilities came from the sale of power bonds and notes, which during the year provided a net increase in borrowings of \$745 million.

Three 25-year bond issues totaling \$800 million were sold to the Federal Financing Bank (FFB) during the year at interest costs from 8.175 percent to 8.485 percent. Short-term notes held by the FFB decreased by \$55 million during the year, from \$635 million to \$580 million. The

outstanding note to the U.S. Treasury, which serves primarily to provide month-to-month financing flexibility, remained at \$150 million. At June 30 outstanding indebtedness of \$4,405 million consisted of \$2,075 million in bonds held by the public (\$100 million of which matured on July 1, 1976), \$1,600 million in bonds held by the FFB, \$580 million in notes held by the FFB, and the \$150 million Treasury note.

Short-term notes were issued to the FFB bimonthly at interest rates ranging

from 4.675 percent to 6.886 percent and averaging 5.694 percent.

In November 1975 the TVA Act was amended to increase the amount of revenue bonds TVA might have outstanding at any one time from \$5 billion to \$15 billion. Such additional financing will be used to provide facilities needed to continue to supply the electric power requirements of the region.

# Rates

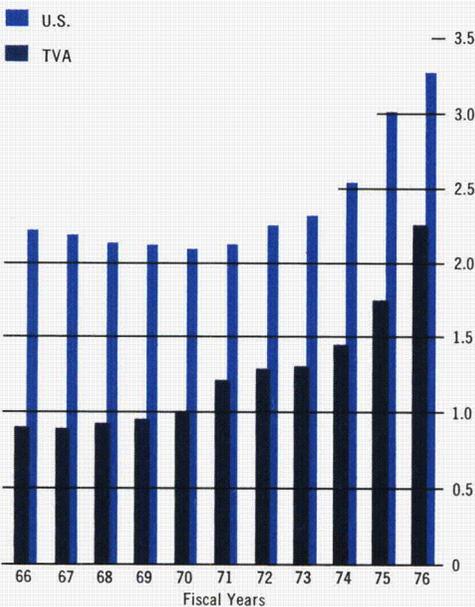
Charges paid by the consumers of TVA power remained relatively steady during fiscal 1976. Under the January 1975 rate adjustment monthly charges for electricity continued to reflect increases and decreases in TVA's cost of fuel and purchased power.

The amount the average residential customer paid for electricity during the year was 2.26 cents per kilowatt-hour, up one-half cent from the average the year before. The national average residential rate was about 3.3 cents per kilowatt-hour; this advantage of about one cent per kilowatt-hour has continued since 1970.

Higher electric utility rates nationwide, which have been made necessary because of increased fuel costs, plant costs, and money costs, have prompted various groups and individuals to propose a variety of changes in rate structures. The suggested changes frequently differ substantially in purpose and design, depending on the particular interests of the respective groups. Some of the proposals would abandon the cost of service concept in favor of various social goals and, in so doing, would

## AVERAGE RESIDENTIAL RATE

Cents per Kilowatt-hour



cause some customers to subsidize others.

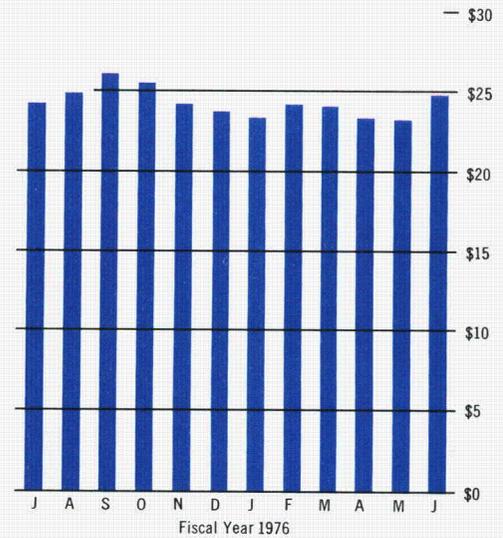
As part of its continuing review and study of its rates, TVA filed a draft environmental impact statement on policies relating to electric rates with the Council on Environmental Quality in August 1975 and made it available to the public.

In addition, TVA conducted Valley-wide public hearings to obtain the views of consumers and other interested parties concerning alternative rate structures. The hearings produced a wide diversity of opinions on how rate structures should be handled.

So far, most evaluations of pricing methods and proposals have been based on limited data. TVA does not believe that a commitment to one of the proposed alternative rate structures should be made as long as so little is known about what the actual impacts would be. TVA and others are involved in various studies to find out more precisely when and how customers actually make use of electricity and to examine the possible impacts of proposed alternatives. In addition to its own research, TVA is participating in a nationwide study of electricity pricing techniques being conducted by the Edison Electric Institute and the Electric Power Research Institute (EPRI) for the National Association of Regulatory Utility Commissioners.

## MONTHLY RESIDENTIAL BILL

For 1000 Kilowatt-hours, R-2 Rate



*This chart shows the effect of the portion of the January 1975 rate adjustment that provides for monthly charges to reflect changes in the cost of fuel and purchased power. It assumes use of a constant 1,000 kilowatt-hours per month (which is somewhat less than the average monthly residential use). Actual use—and therefore actual bills—fluctuate with weather and other conditions.*

# Energy Conservation

TVA has devoted a great deal of effort over the years to advocating the wise use of electricity and the conservation of natural resources. TVA helps consumers use electricity more efficiently to conserve energy resources and save money.

As a part of this continuing effort, during the year TVA began a home insulation research and demonstration program designed to further promote the efficient use of electricity and to demonstrate to consumers how they can reduce unnecessarily high electric bills with insulation and other forms of home weatherproofing. To show the real savings that can be achieved by eliminating waste from poor insulation, the program includes demonstrations in which assistance is provided for weatherproofing and insulating a limited number of electrically heated homes of low-income families. Information about the electricity use and savings from this program will be gathered and analyzed, and the data developed will be available for use throughout the region.

TVA has developed the Super Saver Electric Home program for new home construction as part of the effort to keep consumers' home operating costs down and conserve the Nation's energy. TVA advises builders and home-buyers on the specifications suggested for these homes and helps distributors of TVA power to publicize them. A Super Saver home meets all HUD minimum property standards and has these recommended energy-saving features: an electric heat pump for room heating and air-conditioning, insulation meeting certain standards, reduced window area with double-glazing or storm sashes, and other measures to resist heat loss from space or water heating. The additional cost of Super Saver features is moderate, particularly in relation to costs for new home construction, and should be recovered by the homeowner in energy costs within a reasonable time. At the end of the year several hundred homes using Super Saver features were built or being built in the region.

A booklet which describes the features of the Super Saver electric home is

available from TVA or the distributors of TVA power.

TVA encourages the use of the electric heat pump on new homes or for homeowners installing new central heating and air conditioning. The electric heat pump uses the natural heat contained in winter air for home heating; in the Tennessee Valley it can cut home heating costs in half compared to resistance heating. More and more distributors are participating in TVA's certified electric heat pump installation program, which is an attempt to encourage heat pump acceptance by fostering proper installation and service.

The benefits of electric heat pumps are apparently becoming widely understood. Five years ago, about 5,000 electric heat pumps per year were being installed in the Valley; during calendar year 1976 it is expected that about 15,000 units will be installed. Nearly 10 percent (almost 70,000)

of residential electric heat customers are using them now. These customers are saving an estimated 490 million kilowatthours of electricity per year.

TVA actively attempts to reach people who want to save energy conscientiously and lower their electric bills. This includes the dissemination of materials produced for radio, television, and printed media, with the assistance of the distributors of TVA power. TVA personnel continued their training of students, educators, and other interested people in the safe and efficient use of electric energy, and a strong effort is being continued to inform people in the Valley about the future of energy supply.

Tennessee designated June as Energy Conservation Month. TVA and distributors of TVA power in the state helped organize and carry out activities to get the need for conservation across to more people, primarily through additional publicity.



*Among the guidelines for Super Saver electric homes is a minimum floor insulation value of R-19, attainable with 6-1/2" of glass fiber batts or 5-1/4" of rock wool.*



# Research and Development

Each year lends new emphasis to TVA's program of power-related research and development. TVA's program of power-related research and development is designed to further the objective of providing an adequate and reliable supply of power in an environmentally sound manner at the lowest feasible cost. Rising operating costs and the imperative need to use national energy resources wisely make research more urgent than ever.

TVA uses a multifaceted approach to accomplish this objective, recognizing that it must coordinate its efforts with the large-scale energy and environmental research underway nationwide. Currently available and emerging technologies are evaluated for their potential in the TVA power system; TVA determines if further research is warranted inhouse or if research planned by other organizations will yield the necessary knowledge. Inhouse projects include those

undertaken by TVA alone as well as those in which other agencies participate and provide funds. As part of its participation in major national programs, TVA contributed \$8 million and technical expertise to the industry-supported EPRI, whose work involves research of vital interest to the Nation's electric consumers.

In 1976, over \$34 million was spent on power-related research and development activities in TVA. Of the total, \$27 million was funded by TVA; EPRI, ERDA, and EPA contributed a total of \$7 million for cooperative research projects carried out by TVA. The major part of these cooperative programs involved pollution control studies, resource conservation, and reclamation.

TVA continued to participate in the demonstration Clinch River Breeder Reactor Project to be built at Oak Ridge, Tennessee. This full-scale prototype plant, sponsored by the U.S. Government and the electric utility industry with principal management control by ERDA, represents a vital step in the development of the Nation's energy future. TVA believes the breeder reactor will enable the country's electric systems to bridge the gap in power sources between the present and the next century when, it is hoped, more advanced concepts—such as nuclear fusion—will become available. Breeders, by using plentiful uranium-238, produce more nuclear fuel than they consume, assuring a steady supply of fuel for the Nation's nuclear power reactors.

Increased research and development funds have been committed in the areas of air and water quality and to meet the urgent need for advanced energy systems, including the need for improved coal-burning methods and the development of clean fuels from coal. For example, TVA plans to allocate up to \$4 million to study the feasibility of a fluidized-bed combustion demonstration plant and to prepare siting studies, cost estimates, and preliminary designs. A determination of whether TVA will construct a full-scale plant will be made following completion of the study.



*TVA experimenters at Muscle Shoals found promising results in using warm water—simulating water discharged from power plants—to heat and cool a greenhouse. A larger demonstration greenhouse will be operated at Browns Ferry, along with other experimental uses of warm water from the plant.*

A \$54 million limestone wet scrubber, a demonstration facility to remove sulfur oxides from stack gases, is nearing completion on unit 8 at Widows Creek Steam Plant; operation is expected in June 1977. Two other scrubbers of differing designs are being tested by TVA's plants, using outside funding, as are a number of other studies on the treatment and use of scrubber waste products.

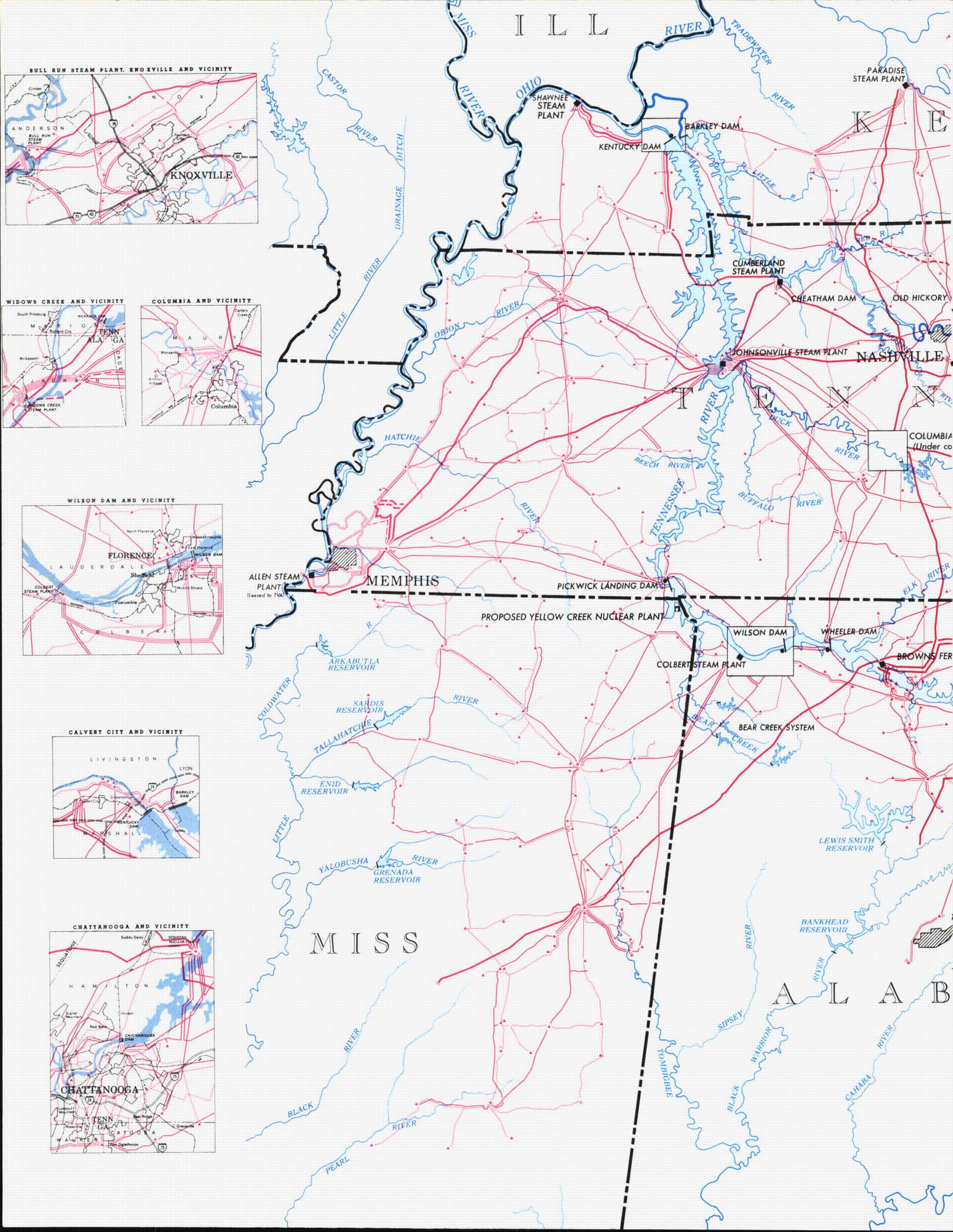
Promising methods of removing particulate matter from stack gases are being examined. TVA is helping to develop economical answers to fly ash removal problems posed by the use of low-sulfur coal. An industry-TVA cooperative design study and pilot-plant testing of an advanced concept for electrostatic precipitation, which controls particulate matter in stack gases, was started during the year and should be completed during fiscal 1977.

TVA is participating with ERDA and the University of Tennessee in the construction and operation of a solar house near the university's Knoxville campus. The house will be used to study the feasibility of residential solar heating and cooling in the TVA area. Several TVA facilities are being equipped with solar water heaters and the new visitors' center at Land Between The Lakes will have a solar-assisted heating and air conditioning system. TVA believes that solar energy is a prevalent resource that should be fully utilized, but that solar-electric power generation is a very young technology with many unsolved difficulties and that it will not be feasible for this area in the near future. If the cost of conventional energy sources continues to rise, it is likely that useful applications of solar energy can be found in heating and cooling buildings, providing hot water, processing agricultural products, or in other special uses. TVA is actively studying these approaches and the many problems yet to be resolved. Further research is underway to determine the "backup" or supplementary load requirements presented by the hypothetically widespread use of solar heating and cooling in the Valley.

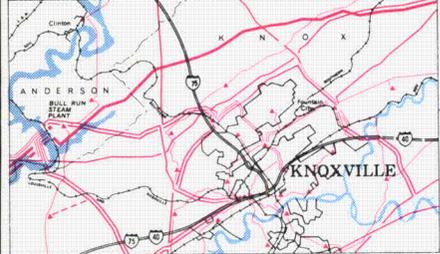
Studies continue on economical uses

of heat discharged from power plants. Heat, in the form of warmed water from power plant condensers, can be used to grow fish commercially, to extend the growing season for crops, to control the climate of greenhouses, and in other ways. TVA and other agencies are cooperating in experiments to test some of these ideas at TVA facilities.

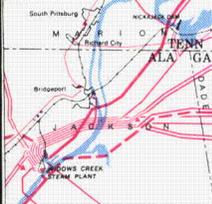
Since 1965 TVA has included provisions in its coal contracts requiring its coal suppliers to reclaim disturbed areas, and all of the states in the area now have reclamation laws applying to current mining. Yet many "orphan" mines remain that were abandoned before reclamation laws were adopted. During 1976 TVA began work on a five-year "orphan" mine reclamation project in cooperation with state agencies in Alabama, Kentucky, Tennessee, and Virginia. Subject to continued Federal funding, this demonstration ultimately will involve 80,000 acres plus 6,700 acres of haul roads.



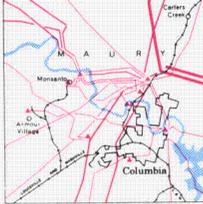
BULL RUN STEAM PLANT, KNOXVILLE AND VICINITY



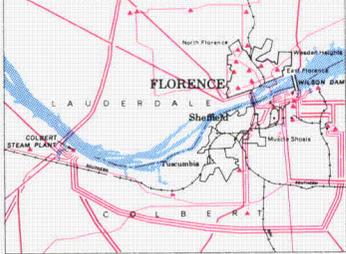
WIDOWS CREEK AND VICINITY



COLUMBIA AND VICINITY



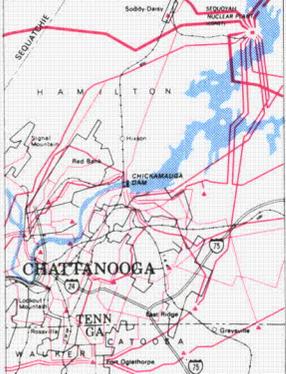
WILSON DAM AND VICINITY



CALVERT CITY AND VICINITY



CHATTANOOGA AND VICINITY



I L L

K E

OHIO RIVER

LITTLE RIVER

OHIO RIVER

OBION RIVER

HATCHIE RIVER

MEMPHIS

MISSISSIPPI RIVER

M I S S

A L A B

BLACK RIVER

PEARL RIVER

SHAWNEE STEAM PLANT

KENTUCKY DAM

BARKLEY DAM

CUMBERLAND STEAM PLANT

CHEATHAM DAM

JOHNSONVILLE STEAM PLANT

NASHVILLE

COLUMBIA (Under co

ALLEN STEAM PLANT (leased to TVA)

PICKWICK LANDING DAM

PROPOSED YELLOW CREEK NUCLEAR PLANT

COLBERT STEAM PLANT

WILSON DAM

WHEELER DAM

BROWNS FER

ARKATULLA RESERVOIR

SARDIS RESERVOIR

TALLAHATCHE RIVER

END RESERVOIR

YALOBUSHA RIVER

GRENADA RESERVOIR

BEAR CREEK SYSTEM

BEAR CREEK

LEWIS SMITH RESERVOIR

BANKHEAD RESERVOIR

WARWICK RIVER

SIPSEY RIVER

CAHABA RIVER

TOMBIGHE RIVER

WARWICK RIVER

CAHABA RIVER

PARADISE STEAM PLANT

OLD HICKORY

COLUMBIA (Under co

BROWNS FER

LEWIS SMITH RESERVOIR

BANKHEAD RESERVOIR

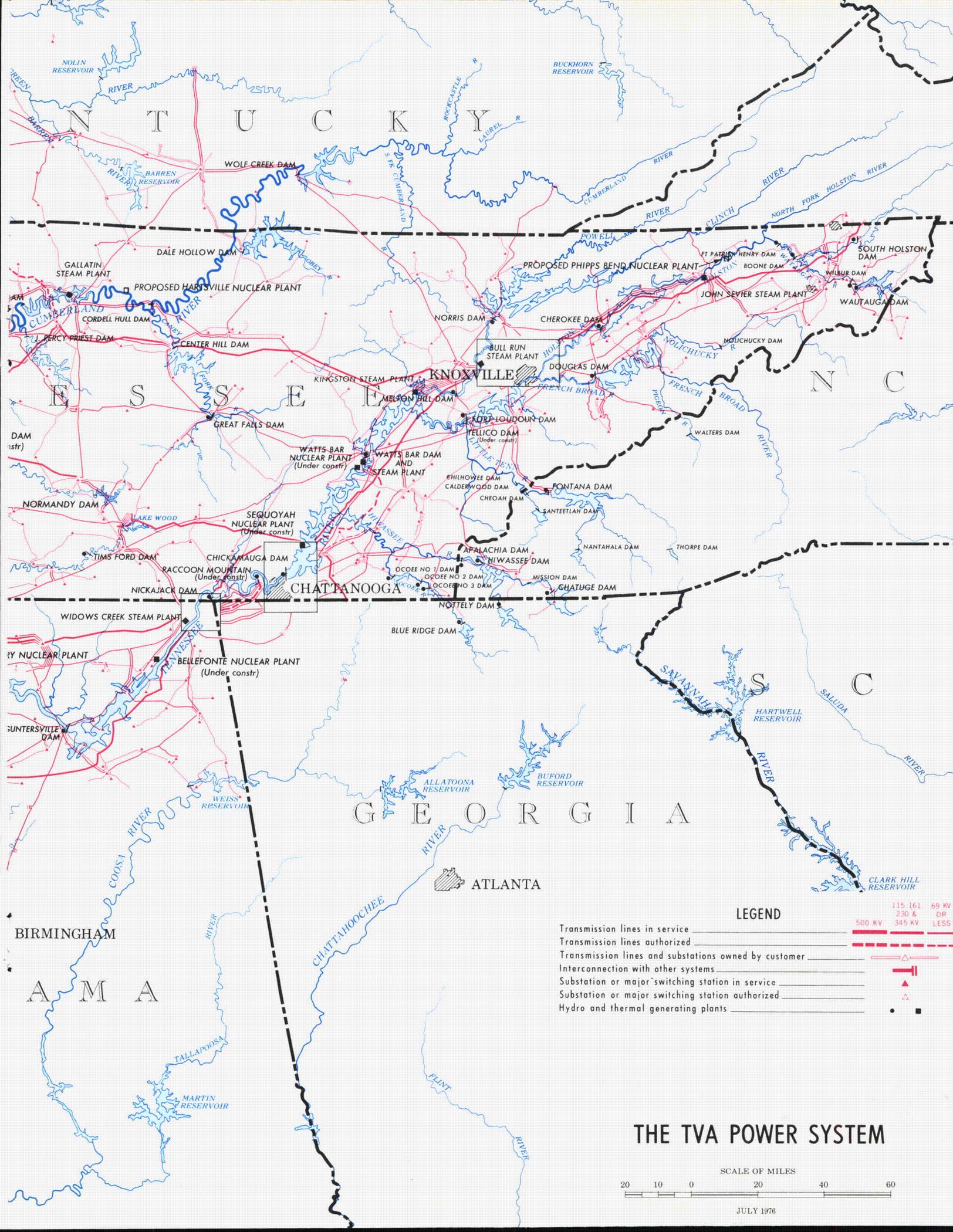
WARWICK RIVER

SIPSEY RIVER

CAHABA RIVER

WARWICK RIVER

CAHABA RIVER



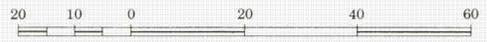
**LEGEND**

- Transmission lines in service
- Transmission lines authorized
- Transmission lines and substations owned by customer
- Interconnection with other systems
- Substation or major switching station in service
- Substation or major switching station authorized
- Hydro and thermal generating plants

115, 161, 69 KV  
230 & OR  
500 KV 345 KV LESS

**THE TVA POWER SYSTEM**

SCALE OF MILES



JULY 1976

# Financial Statements

*TENNESSEE VALLEY AUTHORITY: A corporation wholly owned by the United States of America*

## NET INCOME AND RETAINED EARNINGS—POWER PROGRAM

For the Years Ended June 30, 1976 and 1975

	1976		1975	
	kWh	Amount	kWh	Amount
	(Thousands)			
<b>Operating Revenues</b>				
Sales of electric energy				
Municipalities and cooperatives	66,536,938	\$1,057,392	64,468,095	\$ 737,203
Federal agencies	21,609,793	300,057	19,389,244	182,523
Industries	19,941,736	303,551	21,822,437	227,637
Electric utilities	97,131	1,921	115,803	1,541
Total outside sales	108,185,598	1,662,921	105,795,579	1,148,904
Interdivisional	532,853	8,013	637,607	6,663
Total sales of electric energy	108,718,451	1,670,934	106,433,186	1,155,567
Rents		20,819		20,200
Discounts and penalties		53		293
Other miscellaneous revenues		701		231
Total operating revenues		1,692,507		1,176,291
<b>Operating Expenses</b>				
Production				
Fuel		731,304		455,384
Power purchased and interchanged, net		219,198		135,320
Other		211,011		160,047
Transmission		24,634		22,216
Customer accounts		600		534
Demonstration of power use		1,373		1,277
Administrative and general		48,620		34,004
Payments in lieu of taxes		48,370		36,847
Social security taxes		6,719		5,187
Provision for depreciation		121,942		110,322
Total operating expenses		1,413,771		961,138
Operating income		278,736		215,153
<b>Other Income and Deductions</b>				
Interest income		65		63
Allowance for funds used (construction and nuclear fuel); note 2		139,997		117,353
Other, net		340*		232*
Total other income and deductions		139,722		117,184
Income before interest charges		418,458		332,337
<b>Interest Charges</b>				
Interest on long-term debt		259,735		183,626
Other interest expense; note 2		32,096		44,802
Amortization of long-term debt discount, expense, and premium, net; note 2		575		548
Total interest charges		292,406		228,976
<b>NET INCOME</b>		126,052		103,361
<b>Return on appropriation investment; note 5</b>		65,056		71,372
Increase in retained earnings reinvested		60,996		31,989
<b>Retained earnings reinvested at beginning of period</b>		898,407		866,418
Retained earnings reinvested at end of period		\$ 959,403		\$ 898,407

The notes on pages 22, 23, 24, and 25 are an integral part of the financial statements.

\*Deduct

## BALANCE SHEETS

June 30, 1976 and 1975

### ASSETS

	Power program		All programs	
	1976	1975	1976	1975
	<i>(Thousands)</i>			
<b>Property, Plant, and Equipment</b> substantially all at original cost				
Completed plant				
Multipurpose dams; note 1	\$ 492,413	\$ 491,054	\$1,070,469	\$1,017,155
Single-purpose dams	72,628	66,115	72,628	66,115
Steam production plants	2,229,552	2,158,152	2,229,552	2,158,152
Nuclear production plants	552,357	512,653	552,357	512,653
Other electric plant	1,670,031	1,550,672	1,670,031	1,550,672
Other plant	—	—	185,061	175,338
	<u>5,016,981</u>	<u>4,778,646</u>	<u>5,780,098</u>	<u>5,480,085</u>
Less accumulated depreciation and depletion; note 2	1,458,872	1,344,468	1,615,627	1,490,074
Completed plant, net	<u>3,558,109</u>	<u>3,434,178</u>	<u>4,164,471</u>	<u>3,990,011</u>
Construction and investigations in progress; note 3	2,470,896	1,714,179	2,588,257	1,835,750
Nuclear fuel	242,047	183,835	242,047	183,835
Less accumulated amortization; note 2	14,758	14,758	14,758	14,758
Nuclear fuel, net	<u>227,289</u>	<u>169,077</u>	<u>227,289</u>	<u>169,077</u>
Total property, plant, and equipment	<u>6,256,294</u>	<u>5,317,434</u>	<u>6,980,017</u>	<u>5,994,838</u>
<b>Current Assets</b>				
Cash	13,915	153,601	59,600	194,933
Accounts receivable	146,398	129,519	157,324	137,662
Inventories, principally at average cost	377,465	273,239	389,818	289,077
Total current assets	<u>537,778</u>	<u>556,359</u>	<u>606,742</u>	<u>621,672</u>
<b>Deferred Charges</b>				
Unamortized debt expense; note 2	784	833	784	833
Mine development costs	8,909	2,198	8,909	2,198
Total deferred charges	<u>9,693</u>	<u>3,031</u>	<u>9,693</u>	<u>3,031</u>
<b>Total Assets</b>	<u>\$6,803,765</u>	<u>\$5,876,824</u>	<u>\$7,596,452</u>	<u>\$6,619,541</u>

The notes on pages 22, 23, 24, and 25 are an integral part of the financial statements.



## NET EXPENSE AND ACCUMULATED NET EXPENSE— NONPOWER PROGRAMS

For the Years Ended June 30, 1976 and 1975

	<u>1976</u>	(Thousands)	<u>1975</u>
<b>Water Resources Development</b>			
Navigation operations	\$ 6,616		\$ 6,441
Flood control operations	6,338		5,891
Recreation development	2,864		2,535
Regional water quality management	1,824		1,329
Fisheries and waterfowl resources development	661		629
Preliminary surveys and engineering	183		187
Total expense of water resources development	<u>18,486</u>		<u>17,012</u>
<b>Fertilizer Development</b>			
Research and development	<u>7,165</u>		<u>6,409</u>
Fertilizer introduction; note 2			
Fertilizer industry demonstrations	2,134		1,994
Farm test demonstrations outside the Valley	856		782
Net expense of fertilizer introduction	<u>2,990</u>		<u>2,776</u>
Developmental production			
Cost of products distributed	<u>40,810</u>		<u>37,241</u>
General expenses			
Loss or gain* on retirements of manufacturing plant and equipment, net	4,065		115*
Gain on sale of phosphate reserves, net	366*		317*
Administrative and general	605		560
Other	1,276		392
Total general expenses	<u>5,580</u>		<u>520</u>
Total production expense	<u>46,390</u>		<u>37,761</u>
Less transfers and sales of products			
Transfers to other TVA programs, at market prices	34,320		38,998
Direct sales	1,314		1,313
Total transfers and sales	<u>35,634</u>		<u>40,311</u>
Expense or income*, net, of developmental production	10,756		2,550*
Net expense of fertilizer development	<u>20,911</u>		<u>6,635</u>
<b>General Resources Development</b>			
Agricultural projects	1,612		1,566
Waste heat utilization	265		235
Forest and wild land resources development	1,669		1,514
Strip mine reclamation demonstrations	473		313
Tributary area development	3,125		1,991
Interagency health services demonstrations	168		160
Regional economic studies	710		601
Townlift community improvement	706		788
Human resources development	786		771
Minerals resources projects	302		287
Environmental quality projects	461		319
Net expense of general resources development	<u>10,277</u>		<u>8,545</u>
<b>Land Between The Lakes Operations</b>	<u>2,839</u>		<u>2,500</u>
<b>Valley Mapping and Remote Sensing</b>	<u>547</u>		<u>454</u>
<b>Other Expense, Net</b>	<u>964</u>		<u>62</u>
NET EXPENSE	54,024		35,208
<b>Accumulated net expense at beginning of period</b>	<u>659,233</u>		<u>624,025</u>
<b>Accumulated net expense at end of period</b>	<u>\$713,257</u>		<u>\$659,233</u>

The notes on pages 22, 23, 24, and 25 are an integral part of the financial statements.

\*Deduct

# CHANGES IN FINANCIAL POSITION

For the Years Ended June 30, 1976 and 1975

	Power program		All programs	
	1976	1975	1976	1975
	(Thousands)			
<b>Source of Funds</b>				
Program sources				
Net power income; page 17	\$ 126,052	\$ 103,361	\$ 126,052	\$ 103,361
Add items not requiring funds; note a	16,404*	1,059	16,404*	1,059
Funds from power operations	109,648	104,420	109,648	104,420
Sale of power facilities	2,197	1,375	2,197	1,375
Funds from power program; note b	111,845	105,795	111,845	105,795
Net expense of nonpower programs; page 20			54,024*	35,208*
Add items not requiring funds; note a			11,900	7,247
Funds used in nonpower operations			42,124*	27,961*
Sale of nonpower facilities			895	1,167
Funds used in nonpower programs			41,229*	26,794*
Debt sources				
Long-term bonds				
Issues	800,000	800,000	800,000	800,000
Redemptions	—	50,000*	—	50,000*
Short-term notes				
Issues	2,495,000	2,070,000	2,495,000	2,070,000
Redemptions	2,550,000*	1,955,000*	2,550,000*	1,955,000*
Total debt sources	745,000	865,000	745,000	865,000
Other sources				
Congressional appropriations	298	139	100,025	77,400
Property transfers	260	429	347	767
Total other sources	558	568	100,372	78,167
<b>Total source of funds</b>	<b>\$ 857,403</b>	<b>\$ 971,363</b>	<b>\$ 915,988</b>	<b>\$1,022,168</b>
<b>Disposition of Funds</b>				
Expended for plant and equipment, excluding allowance for funds used	\$ 925,500	\$ 826,831	\$ 986,285	\$ 869,681
Less:				
Depreciation and amortization of nuclear fuel charged to construction and clearing accounts	2,447	6,202	4,516	8,312
Cost of removing retired facilities and salvage from retained materials	764*	2,764	918*	2,404
	923,817	817,865	982,687	858,965
Payments to U.S. Treasury; note 5				
Return on appropriation investment	—	71,372	—	71,372
Repayment of appropriation investment	—	20,000	13	20,027
	—	91,372	13	91,399
Requirement for payments to U.S. Treasury; note 5				
Return on appropriation investment	65,056	—	65,056	—
Repayment of appropriation investment	20,000	—	20,000	—
	85,056	—	85,056	—
Unamortized debt discount and expense and other deferred charges				
Mine and mill development cost	7,216	1,693	7,216	1,693
Short-term debt discount	—	13,901*	—	13,901*
Debt expense	16	16	16	16
	7,232	12,192*	7,232	12,192*
Changes in working capital (increase or decrease*)				
Cash	139,686*	70,878	135,333*	83,746
Accounts receivable	16,879	35,082	19,662	33,304
Inventories	104,226	144,558	100,741	152,959
	18,581*	250,518	14,930*	270,009
Less other current liabilities (excluding short-term debt)	140,121	176,200	144,070	186,013
	158,702*	74,318	159,000*	83,996
<b>Total disposition of funds</b>	<b>\$ 857,403</b>	<b>\$ 971,363</b>	<b>\$ 915,988</b>	<b>\$1,022,168</b>

The notes on pages 22, 23, 24, and 25 are an integral part of the financial statements.

\*Deduct

## Notes to Changes in Financial Position:

### a. Items not requiring funds:

	Power		Nonpower	
	1976	1975	1976	1975
	(Thousands)			
Provisions for depreciation	\$121,942	\$110,322	\$ 8,194	\$7,669
Provisions for depletion	231	210	7	10
Amortization of nuclear fuel charged to operations	—	7,053	—	—
Loss or gain* on retirements and disposals of property, plant, and equipment, net	340	232	3,699	432*
Amortization of long-term debt discount, premium, and expense; and deferred charges	1,080	595	—	—
Allowance for funds used (construction and nuclear fuel)	139,997*	117,353*	—	—
	<u>\$ 16,404*</u>	<u>\$ 1,059</u>	<u>\$11,900</u>	<u>\$7,247</u>

### b. Net power proceeds (see note 6) may be derived as follows:

	Year ended June 30	
	1976	1975
	(Thousands)	
Funds from power program	\$111,845	\$105,795
Add back interest charges	291,831	228,428
Net power proceeds	<u>\$403,676</u>	<u>\$334,223</u>

\*Deduct

The notes on pages 22, 23, 24, and 25 are an integral part of the financial statements.

## NOTES TO FINANCIAL STATEMENTS

**1. Allocation of cost of multipurpose projects**—Section 14 of the TVA Act requires TVA's Board of Directors to allocate the cost of completed multipurpose projects, subject to the approval of the President of the United States. The cost of facilities installed exclusively for a single purpose is

assigned directly to that purpose; the cost of multiple-use facilities is allocated among the various purposes served.

The total investment of \$1,070,469,000 in completed multipurpose dams at June 30, 1976, is classified as follows:

	Investment		Total
	Direct	Multiple-use	
	(Thousands)		
Power	\$315,115	\$177,298	\$ 492,413
Navigation	151,803	137,284	289,087
Flood control	61,846	144,542	206,388
Recreation	824	40,576	41,400
Tributary area development	20	41,161	41,181
Total	<u>\$529,608</u>	<u>\$540,861</u>	<u>\$1,070,469</u>

Depreciation and depletion—Straight-line depreciation is provided for substantially on a composite basis. Rates of depreciation are derived from engineering studies of useful life and are reviewed each year. Depletion of coal land and land rights and phosphate land and mineral rights is provided on a unit of production basis.

Allowance for funds used—The practice of capitalizing an allowance for funds used during construction and during the fabrication of nuclear fuels is followed in the power program. The rate is established at the beginning of each 6-month period on the basis of the cost of borrowings during the preceding 12 months. Rates used were 8.0 percent and 7.5 percent, respectively, for the two six-month periods during 1976 and 8.5 percent for each of the two six-month periods during 1975.

**2. Summary of significant accounting policies**—Power accounts are kept in accordance with the uniform system prescribed for electric utilities by the Federal Power Commission.

Plant additions and retirements—Additions to plant are recorded at cost, which includes material, labor, overhead, and allowance for funds used. The costs of generation including amortization of nuclear fuel, less credit for the fair value of energy generated during preliminary opera-

tions prior to commercial acceptance, are also included in the recorded cost of steam and nuclear generating plants. Except for chemical plant, plant retirements (including original cost and removal cost less salvage) are charged against appropriate accumulated depreciation accounts. Because of the experimental nature of fertilizer development, losses on early retirement of chemical plant are included in current year operations. Also see note 9.

Repairs and maintenance—The cost of current repairs and minor replacements is charged to appropriate operating expense and clearing accounts, and the cost of renewals and betterments is capitalized.

Nuclear fuel amortization—The amortization of nuclear fuel is provided on a unit of production basis. Rates are established to amortize the costs over the useful life.

## NOTES TO FINANCIAL STATEMENTS, continued

Operating revenues and energy costs—Revenues from the sale of electric energy, including amounts resulting from the application of an adjustment addendum providing for monthly billing charges to reflect increases or decreases in fuel and purchased power costs, are recorded only when billed. Costs of fuel consumed and of purchased power are reflected in operating expenses as incurred. About \$88.8 million of these costs recorded in fiscal year 1975 were used in calculating the adjustment to power billings for July and August 1975; and about \$112.7 million of these costs recorded in fiscal year 1976 were used in calculating the adjustment to power billings for July and August 1976.

Borrowing expenses—Expenses, discounts, and premiums on power borrowings are amortized on a straight-line basis over the term of the related securities. Amortization of discount on short-term notes is charged to other interest expense.

Research and development—Research and development costs are expensed as incurred (approximately \$18,738,000 in 1976 and \$16,475,000 in 1975) except for those costs which relate to specific power program capital projects.

Sales of fertilizer—Sales of fertilizer materials are not made on a commercial basis, but are made to organizations collaborating in an experimental and educational program aimed at improving the manufacture, distribution, and use of fertilizers.

**3. Construction projects, commitments, and rental expenses**—The construction budgets for the transition quarter (July 1-September 30, 1976) and fiscal year 1977 are \$264,642,000 and \$1,211,835,000, respectively, for power projects and \$18,853,000 and \$68,944,000, respectively, for multipurpose and nonpower projects. Substantial commitments have been incurred for these projects.

The total rentals charged to power operating expenses and other operating clearing accounts for the years ending June 30, 1976 and 1975, amounted to approximately \$13,843,000 and \$11,986,000, respectively. At June 30, 1976, the aggregate minimum gross rental commitments of TVA under all noncancelable leases for the periods shown are as follows:

Year	Amount (Thousands)
1977	\$12,443
1978	12,180
1979	12,121
1980	12,026
1981	10,985
1982-86	39,722
1987-91	16,142
1992-96	14,236
Thereafter	318

Minimum gross rental commitments include rentals paid under agreements with the City of Memphis, Tennessee, which provide that (1) TVA sells to the City all the power and energy requirements of its electric distribution system, and (2) the City leases to TVA the Thomas H. Allen steam-electric generating plant with an installed capacity of 990,000 kilowatts. Each agreement is for a term of 20 years, beginning January 1, 1965. The lease agreement provides for annual rental payments of \$6,900,000 and grants TVA an option to buy the plant for \$2,000,000 at the end of the lease term.

**5. Payments to the U.S. Treasury**—Section 15d of the TVA Act requires the payment from net power proceeds of a return on the net appropriation investment in power facilities plus repayments of such investment, beginning with fiscal year 1961. The amount of return payable during each year is based on the appropriation investment as of the beginning of that year and the computed average interest rate payable by the U.S. Treasury on its total marketable public obligations as of the same date. The repayment schedule calls for payment of not less than \$10 million for each of the first five years (1961-1965), \$15 million for each of the next five years (1966-1970), and \$20 million for each year thereafter until a total of \$1 billion shall have been repaid. The payments required by Section 15d may be deferred under certain circumstances for not more than two years.

Required payments have been made to June 30, 1975, amounting to \$757,782,000 as a return on the appropriation investment and \$225,000,000 as a repayment, a total of \$982,782,000.

**4. Appropriation investment**—Changes in appropriation investment during the years ended June 30, 1976 and 1975, were as follows:

	Power program		All programs	
	1976	1975	1976	1975
	(Thousands)			
Congressional appropriations, net	\$ 54	\$ 123	\$ 100,025	\$ 77,400
Transfers of property from other Federal agencies	260	429	347	767
	<u>314</u>	<u>552</u>	<u>100,372</u>	<u>78,167</u>
Less repayments to General Fund of the U.S. Treasury	—	20,000	13	20,027
Increase or decrease* for the period	314	19,448*	100,359	58,140
Balance, beginning of period	995,800	1,015,248	2,364,054	2,305,914
Balance, end of period	<u>\$996,114</u>	<u>995,800</u>	<u>\$2,464,413</u>	<u>\$2,364,054</u>

\*Deduct

Beginning July 1, 1976, there will be a 3-month transition quarter to effect the change in the U.S. Government fiscal year from a 12-month period ending June 30 to one ending September 30. An appropriation for the transition quarter (July-September 1976) of \$30,550,000 was made as of July 1, 1976, by Public Law 94-180, approved December 26, 1975. An appropriation of \$125,930,000 was made by Public Law 94-355, approved July 12, 1976, for the fiscal year beginning October 1, 1976.

## NOTES TO FINANCIAL STATEMENTS, continued

Section 15d of the TVA Act was amended in April 1976 by Public Law 94-273, Fiscal Year Adjustment Act, which changed the date for payments to the U.S. Treasury from June 30 to September 30 each fiscal year. At June 30, 1976, \$65,056,000 for the return on the appropriation investment and \$20,000,000 for the repayment was recorded in accounts payable. In addition, Public Law 94-274, Fiscal Year Transition Act, requires that TVA make payments for the period July 1, 1976, through September 30, 1976. For this period the amounts to be paid will be \$16,333,000 as a return on the appropriation investment at the computed average interest rate of 6.559 percent and \$5,000,000 as a repayment. The total payments due September 30, 1976, will be \$106,389,000.

In addition to the payments from net power proceeds, \$13,000 of nonpower proceeds was paid to the U.S. Treasury in 1976 under the provisions of Section 26 of the TVA Act. This brought the total payments from nonpower proceeds to \$41,667,000.

Prior to 1961, under then existing legislation, TVA paid to the Treasury \$185,059,000 of power proceeds. In addition to the repayments indicated on page 19, \$65,072,000 of bonds sold to the Treasury and Reconstruction Finance Corporation in fiscal years 1939-1941 have been fully repaid from power proceeds. Section 26 of the TVA Act provides for annual payments to the Treasury of any power or nonpower proceeds not needed for the operation of dams and reservoirs, the conduct of the power program, and the manufacture and distribution of fertilizers.

**6. Borrowing authority**—Section 15d of the TVA Act authorizes TVA to issue bonds, notes, and other evidences of indebtedness up to a total of \$15 billion outstanding at any one time to assist in financing its power program. Debt service on these obligations, which is payable solely from TVA's net power proceeds, has precedence over the payment to the U.S. Treasury described in note 5. Issues outstanding on June 30, 1976, consist of the following:

						(Thousands)
Long-term debt						
4.40%	1960	Series A,	due	November 15, 1985		\$ 50,000
4-5/8%	1961	Series A,	due	July 1, 1986		50,000
4-1/2%	1962	Series A,	due	February 1, 1987		45,000
5.70%	1967	Series A,	due	May 15, 1992		70,000
6-3/8%	1967	Series B,	due	November 1, 1992		60,000
8-1/4%	1969	Series B,	due	October 15, 1994		100,000
9%	1970	Series A,	due	March 15, 1995		100,000
9-1/4%	1970	Series B,	due	June 15, 1995		50,000
7.30%	1971	Series B,	due	October 1, 1996		150,000
7%	1972	Series A,	due	January 1, 1997		150,000
7.35%	1972	Series B,	due	May 1, 1997		150,000
7.35%	1972	Series C,	due	July 1, 1997		150,000
7.40%	1972	Series D,	due	October 1, 1997		150,000
7.35%	1973	Series A,	due	January 1, 1998		100,000
7.35%	1973	Series B,	due	April 1, 1998		150,000
7-3/4%	1973	Series C,	due	July 1, 1998		150,000
7.70%	1973	Series D,	due	October 1, 1998		100,000
8.05%	1974	Series A,	due	January 1, 1999		100,000
8.10%	1974	Series B,	due	April 1, 1999		100,000
8.50%	1974	Series C,	due	October 31, 1979 (FFB)		300,000
8.05%	1975	Series A,	due	January 31, 1990 (FFB)		200,000
8.70%	1975	Series B,	due	March 31, 2000 (FFB)		100,000
8.35%	1975	Series C,	due	May 31, 1988 (FFB)		200,000
8.47%	1975	Series D,	due	July 31, 2000 (FFB)		200,000
8.485%	1975	Series E,	due	October 31, 2000 (FFB)		300,000
8.175%	1976	Series A,	due	February 28, 2001 (FFB)		300,000
Total long-term debt						<u>3,575,000</u>
Short-term debt						
U.S. Treasury						150,000
Federal Financing Bank (FFB)						580,000
Long-term debt due July 1, 1976						<u>100,000</u>
Total short-term debt						<u>830,000</u>
						<u>\$4,405,000</u>

**7. Retirement plan**—TVA has a contributory retirement plan which covers substantially all of its salaried employees. The cost of currently accruing benefits is funded currently. The cost of the plan to TVA was \$24,892,000 in 1976 and \$20,782,000 in 1975, including amortization of unfunded prior service costs over a period of 30 and 31 years, respectively. The total pension fund assets as of June 30, 1975, the latest actuarial valuation date, exceeded the actuarially computed value of vested benefits of the plan which were calculated on the basis of an eight percent interest factor which is considered representative of current market conditions. The rate was changed from that used in the prior year (five percent) in order to more properly relate the calculation of vested benefits to the market value of fund assets.

**8. Litigation**—A class action suit, filed in state court on April 4, 1975, and removed to the United States District Court for the Middle District of Tennessee, challenged as illegal and unconstitutional TVA's method of implementing that portion of its January 1, 1975, adjustment addendum covering changes in TVA's costs of fuel and pur-

chased power. Plaintiff contended that proration of the monthly amounts is required. On August 13, 1976, the court entered summary judgment on defendants' motion dissolving an injunction previously issued by the state court and dismissing the action. The court's opinion upholds the constitutionality of and the statutory authority for the adjustment addendum procedure and finds it to be "a pragmatic, logical, and economically justified method" of complying with the mandates of the TVA Act.

Suit was filed on February 18, 1976, in the United States District Court for the Eastern District of Tennessee by three individuals and two organizations to enjoin further construction of the Tellico Dam project on the grounds that the reservoir clearing and impoundment of the lower Little Tennessee River were illegal and in violation of the Endangered Species Act of 1973, in that these activities would modify or destroy the habitat of the snail darter or otherwise jeopardize the continued existence of this fish, which was listed as an endangered species effective November 9, 1975. A preliminary injunction was denied, and, after the trial on the merits, the action was dismissed. The District Court upheld

## NOTES TO FINANCIAL STATEMENTS, continued

TVA's position that the Endangered Species Act did not prevent completion of the Tellico project, which was about 75 percent complete at the time the fish was listed as endangered. Plaintiffs appealed to the United States Court of Appeals for the Sixth Circuit and moved for an order enjoining all construction pending appeal. That motion was granted on July 26, 1976, and the case was assigned for oral argument in the October 1976 session. On TVA's motion for reconsideration, the injunction was temporarily stayed on July 28, 1976, and modified on August 2, 1976, to allow continuation of construction of the project and only enjoin closure of the dam pending appeal. In the opinion of TVA's counsel, the decision of the District Court is correct and that the Endangered Species Act does not prevent completion of the Tellico project or closure of the dam.

On October 20, 1975, TVA filed suit against Westinghouse Electric Corp. in the United States District Court for the Eastern District of Tennessee. The suit arises from Westinghouse's repudiating in major part

certain contracts for the sale of nuclear fuel to TVA for the Sequoyah and Watts Bar Nuclear Plants. Westinghouse bases its repudiation on the doctrine of "commercial impracticability" found in Uniform Commercial Code § 2-615. TVA brought the action seeking, in addition to injunctive relief, a declaratory judgment as to the continuing validity, effectiveness, and enforceability of these contracts; in the alternative the action requests the court to adopt an allocation plan for the nuclear fuel presently under Westinghouse's control which is fair and reasonable to all Westinghouse customers as of September 8, 1975, the date of the repudiation. The case was transferred and consolidated for discovery with similar cases brought by other utilities to the Eastern District of Virginia under 28 U.S.C. § 1407. Discovery is underway with production of documents having been nearly completed and depositions just begun.

On April 20, 1976, a suit was filed in the United States District Court for the Middle District of Tennessee seeking to enjoin TVA

from carrying out, at the site of its Hartsville Nuclear Plant on the Cumberland River, activities which have been authorized by the Nuclear Regulatory Commission and seeking a declaratory judgment that construction of the plant outside the Tennessee River Valley is illegal. The plaintiffs have abandoned a challenge to the validity of the Nuclear Regulatory Commission's order authorizing limited site preparation, leaving the one issue of whether TVA has the authority to construct power generating facilities outside the Tennessee River Valley. The case is set for trial on December 9, 1976. In the opinion of TVA's counsel plaintiffs' position has no merit.

9. **Contingency**—In May 1976, certain chemical facilities (having a net book value of \$5,607,000 at June 30, 1976) ceased being utilized in the fertilizer development program. While negotiations for the disposition of such facilities are presently underway, no determination of the net realizable value of the facilities and the associated loss, if any, which may be sustained can be made at this time.

### COOPERS & LYBRAND

CERTIFIED PUBLIC ACCOUNTANTS

IN PRINCIPAL AREAS  
OF THE WORLD

To the Board of Directors of  
Tennessee Valley Authority:

We have examined the financial statements of the TENNESSEE VALLEY AUTHORITY at June 30, 1976 and 1975 and for the years then ended which appear on pages 16 to 25 herein. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly:

- (1) the financial position of the Authority at June 30, 1976 and 1975, and the results of operations and changes in financial position of its several programs for the years then ended; and
- (2) the assets and liabilities of the Authority at June 30, 1976 and 1975, relating to the power program, and the results of operations and changes in financial position of that program for the years then ended,

all in conformity with generally accepted accounting principles applied on a consistent basis.

COOPERS & LYBRAND

New York, August 25, 1976.

# Operating Statistics

TENNESSEE VALLEY AUTHORITY: A corporation wholly owned by the United States of America

## POWER EARNINGS

(Millions)

OPERATING REVENUES	1976	1975	1974	1973	1972
Sales of electric energy					
Municipalities and cooperatives	\$1,057.4	\$ 737.2	\$556.1	\$476.3	\$415.3
Federal agencies	300.1	182.5	121.5	103.2	73.3
Industries	303.6	227.6	179.8	144.7	124.3
Electric utilities	1.9	1.6	1.2	.8	6.3
Interdivisional	8.0	6.7	5.0	4.0	3.4
Total sales of electric energy	1,671.0	1,155.6	863.6	729.0	622.6
Rents and other miscellaneous revenues	21.5	20.7	20.0	20.3	19.2
Total operating revenues	1,692.5	1,176.3	883.6	749.3	641.8
<b>OPERATING EXPENSES</b>					
Production	1,161.5	750.8	494.2	408.7	325.6
Transmission	24.6	22.2	20.8	18.9	17.8
Customer accounts	.6	.5	.5	.5	.4
Demonstration of power use	1.4	1.3	1.3	1.3	1.2
Administrative and general	48.6	34.0	29.9	27.4	24.0
Payments in lieu of taxes	48.4	36.8	31.1	27.3	25.7
Social security taxes	6.7	5.2	4.6	3.8	3.2
Depreciation	122.0	110.3	97.1	89.5	83.4
Other	—	—	—	—	—
Total operating expenses	1,413.8	961.1	679.5	577.4	481.3
Operating income	278.7	215.2	204.1	171.9	160.5
<b>Other Income and Deductions</b>	139.7	117.2	85.4	73.8	51.9
Income before interest charges and extraordinary item	418.4	332.4	289.5	245.7	212.4
<b>Interest Charges</b>	292.4	229.0	183.4	139.3	100.3
Income before extraordinary item	126.0	103.4	106.1	106.4	112.1
<b>Extraordinary Item</b>	—	—	—	—	—
Net Income	\$ 126.0	\$ 103.4	\$106.1	\$106.4	\$112.1
<b>NET POWER PROCEEDS FROM OPERATIONS</b>					
Income before interest charges and extraordinary item	\$ 418.4	\$ 332.4	\$289.5	\$245.7	\$212.4
Add back noncash items	16.9*	.5	12.1	16.0	31.8
Total	\$ 401.5	\$ 332.9	\$301.6	\$261.7	\$244.2

\*Deduct

## FISCAL YEARS

<u>1971</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>
\$379.2	\$285.5	\$222.2	\$197.2	\$172.0	\$158.2	\$136.8	\$118.2	\$110.6	\$ 98.3
61.9	59.4	63.6	78.9	83.9	84.0	82.4	100.7	100.2	101.7
125.0	106.0	92.2	84.2	79.6	71.5	67.1	59.7	52.4	47.9
10.1	7.6	7.3	8.6	10.1	7.9	4.8	3.1	1.2	.3
3.1	3.0	2.8	2.7	3.1	3.0	3.0	2.8	2.6	2.3
<u>579.3</u>	<u>461.5</u>	<u>388.1</u>	<u>371.6</u>	<u>348.7</u>	<u>324.6</u>	<u>294.1</u>	<u>284.5</u>	<u>267.0</u>	<u>250.5</u>
18.7	18.1	15.2	12.1	2.4	2.2	1.9	1.9	1.8	1.6
<u>598.0</u>	<u>479.6</u>	<u>403.3</u>	<u>383.7</u>	<u>351.1</u>	<u>326.8</u>	<u>296.0</u>	<u>286.4</u>	<u>268.8</u>	<u>252.1</u>
306.1	246.1	210.3	191.1	187.8	170.4	139.9	134.3	129.6	116.3
16.9	15.1	14.3	13.9	12.9	12.4	12.2	12.0	11.8	11.0
.4	.3	.3	.2	.2	.2	.2	.3	.3	.2
1.2	1.1	1.0	1.0	.9	.8	.8	.8	.8	.8
22.0	18.0	15.6	14.4	13.3	12.1	11.5	10.9	10.2	9.4
20.0	16.1	14.5	13.1	11.9	10.5	9.1	8.2	7.3	6.7
2.9	2.4	2.2	1.8	1.7	1.2	1.0	1.0	.9	.8
80.0	75.1	71.6	70.7	65.7	62.6	59.1	56.8	52.8	52.1
—	—	—	—	—	—	—	—	—	.1
<u>449.5</u>	<u>374.2</u>	<u>329.8</u>	<u>306.2</u>	<u>294.4</u>	<u>270.2</u>	<u>233.8</u>	<u>224.3</u>	<u>213.7</u>	<u>197.4</u>
148.5	105.4	73.5	77.5	56.7	56.6	62.2	62.1	55.1	54.7
48.2	31.6	16.0	8.1	3.7	5.2	3.9	4.7	6.8	6.8
196.7	137.0	89.5	85.6	60.4	61.8	66.1	66.8	61.9	61.5
77.7	62.4	38.8	26.5	19.7	13.9	11.1	8.6	6.8	5.3
<u>119.0</u>	<u>74.6</u>	<u>50.7</u>	<u>59.1</u>	<u>40.7</u>	<u>47.9</u>	<u>55.0</u>	<u>58.2</u>	<u>55.1</u>	<u>56.2</u>
—	—	—	10.3*	—	—	—	—	—	—
<u>\$119.0</u>	<u>\$ 74.6</u>	<u>\$ 50.7</u>	<u>\$ 48.8</u>	<u>\$ 40.7</u>	<u>\$ 47.9</u>	<u>\$ 55.0</u>	<u>\$ 58.2</u>	<u>\$ 55.1</u>	<u>\$ 56.2</u>
\$196.7	\$137.0	\$ 89.5	\$ 85.6	\$ 60.4	\$ 61.8	\$ 66.1	\$ 66.8	\$ 61.9	\$ 61.5
31.9	43.5	55.6	62.6	62.0	57.4	55.2	52.1	46.3	47.3
<u>\$228.6</u>	<u>\$180.5</u>	<u>\$145.1</u>	<u>\$148.2</u>	<u>\$122.4</u>	<u>\$119.2</u>	<u>\$121.3</u>	<u>\$118.9</u>	<u>\$108.2</u>	<u>\$108.8</u>

## NET POWER ASSETS

(Millions)

NET ASSETS	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Completed plant	\$5,017.0	\$4,778.6	\$4,061.9	\$3,820.5	\$3,404.4
Less accumulated depreciation	<u>1,458.9</u>	<u>1,344.4</u>	<u>1,242.4</u>	<u>1,156.2</u>	<u>1,075.4</u>
Net completed plant	3,558.1	3,434.2	2,819.5	2,664.3	2,329.0
Construction in progress	2,470.9	1,714.2	1,552.0	1,318.6	1,294.3
Nuclear fuel	227.3	169.0	129.9	93.1	63.9
Inventories	377.4	273.2	128.7	140.8	109.3
Other current assets less other current liabilities	290.6*	47.6*	22.6	17.4*	26.3*
Deferred charges, net	<u>17.3</u>	<u>11.2</u>	<u>23.9</u>	<u>15.0</u>	<u>11.5</u>
Total	<u>\$6,360.4</u>	<u>\$5,554.2</u>	<u>\$4,676.6</u>	<u>\$4,214.4</u>	<u>\$3,781.7</u>
<b>DERIVED FROM</b>					
U.S. Treasury funds, gross	\$1,471.1	\$1,470.9	\$1,470.3	\$1,469.9	\$1,470.0
Less Treasury funds repaid	<u>475.1</u>	<u>475.1</u>	<u>455.1</u>	<u>435.1</u>	<u>415.2</u>
Net U.S. Treasury funds	996.0	995.8	1,015.2	1,034.8	1,054.8
Long-term debt	3,575.0	2,875.0	2,125.0	1,775.0	1,225.0
Short-term notes payable to U.S. Treasury	150.0	150.0	100.0	100.0	100.0
Short-term debt payable to others	680.0	635.0	570.0	480.0	630.0
Advances and contributions	—	—	—	.9	.9
Retained earnings	<u>959.4</u>	<u>898.4</u>	<u>866.4</u>	<u>823.7</u>	<u>771.0</u>
Total	<u>\$6,360.4</u>	<u>\$5,554.2</u>	<u>\$4,676.6</u>	<u>\$4,214.4</u>	<u>\$3,781.7</u>

Note: In all years, the amounts for "U.S. Treasury funds, gross" include the full \$65.1 million of bonds issued by TVA to the Treasury and to the RFC, and the amounts for "Less Treasury funds repaid" include the amounts redeemed. All of these bonds were redeemed by June 30, 1956.

\*Deduct

## AT JUNE 30

<u>1971</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>
\$3,317.9	\$3,202.9	\$2,977.3	\$2,900.7	\$2,792.5	\$2,602.6	\$2,466.8	\$2,335.2	\$2,236.3	\$2,084.1
<u>998.0</u>	<u>924.5</u>	<u>856.0</u>	<u>789.3</u>	<u>727.2</u>	<u>671.9</u>	<u>614.3</u>	<u>563.8</u>	<u>514.1</u>	<u>463.9</u>
2,319.9	2,278.4	2,121.3	2,111.4	2,065.3	1,930.7	1,852.5	1,771.4	1,722.2	1,620.2
822.4	481.9	386.4	216.3	150.0	203.5	220.6	259.0	247.7	288.0
41.5	24.8	13.2	—	—	—	—	—	—	—
83.1	37.5	44.2	51.5	44.9	32.4	39.1	33.3	32.8	35.7
34.9*	16.6	2.2	3.6	23.8	7.3	8.4	5*	17.8*	15.8*
<u>10.0</u>	<u>6.8</u>	<u>6.9</u>	<u>5.1</u>	<u>3.3</u>	<u>2.5</u>	<u>1.4</u>	<u>1.1</u>	<u>1.0</u>	<u>1.0</u>
<u>\$3,242.0</u>	<u>\$2,846.0</u>	<u>\$2,574.2</u>	<u>\$2,387.9</u>	<u>\$2,287.3</u>	<u>\$2,176.4</u>	<u>\$2,122.0</u>	<u>\$2,064.3</u>	<u>\$1,985.9</u>	<u>\$1,929.1</u>

\$1,466.4	\$1,463.5	\$1,462.0	\$1,461.0	\$1,455.2	\$1,455.1	\$1,454.7	\$1,454.4	\$1,454.0	\$1,453.5
<u>395.2</u>	<u>375.2</u>	<u>360.1</u>	<u>345.1</u>	<u>330.1</u>	<u>315.1</u>	<u>300.1</u>	<u>290.1</u>	<u>280.1</u>	<u>270.1</u>
1,071.2	1,088.3	1,101.9	1,115.9	1,125.1	1,140.0	1,154.6	1,164.3	1,173.9	1,183.4
675.0	675.0	375.0	275.0	215.0	145.0	145.0	145.0	145.0	145.0
100.0	100.0	100.0	100.0	100.0	100.0	95.0	85.0	50.0	—
680.3	321.0	352.7	250.0	202.2	140.0	80.0	35.0	—	—
.8	.8	.7	.7	.7	.7	.7	.6	.6	.6
<u>714.7</u>	<u>660.9</u>	<u>643.9</u>	<u>646.3</u>	<u>644.3</u>	<u>650.7</u>	<u>646.7</u>	<u>634.4</u>	<u>616.4</u>	<u>600.1</u>
<u>\$3,242.0</u>	<u>\$2,846.0</u>	<u>\$2,574.2</u>	<u>\$2,387.9</u>	<u>\$2,287.3</u>	<u>\$2,176.4</u>	<u>\$2,122.0</u>	<u>\$2,064.3</u>	<u>\$1,985.9</u>	<u>\$1,929.1</u>

## SYSTEM INPUT, SYSTEM OUTPUT

(Millions of kilowatthours)

SYSTEM INPUT	1976	1975	1974	1973	1972
System generation					
Hydro					
TVA plants	14,606.8	17,176.0	17,485.3	18,141.5	15,915.2
ALCOA plants	2,048.3	2,393.4	2,408.0	2,623.2	2,119.7
Cumberland plants	2,541.7	3,380.7	3,643.0	3,693.1	3,257.7
Total hydro	19,196.8	22,950.1	23,536.3	24,457.8	21,292.6
TVA coal-fired plants	81,764.8	71,699.4	84,084.1	84,384.0	73,439.8
TVA nuclear plants	(100.1)	7,429.0	1,947.6	—	—
Combustion turbine plants	1,119.9	506.8	291.7	253.9	71.1
Total net generation	101,981.4	102,585.3	109,859.7	109,095.7	94,803.5
Purchased	4,952.3	5,276.4	1,046.7	670.3	266.1
Interchange received	11,373.7	8,150.0	8,520.9	7,288.0	7,075.4
Total input	<u>118,307.4</u>	<u>116,011.7</u>	<u>119,427.3</u>	<u>117,054.0</u>	<u>102,145.0</u>
<b>SYSTEM OUTPUT</b>					
Sales					
Municipalities and cooperatives	66,536.9	64,468.1	64,182.5	63,822.0	57,820.3
Federal agencies	21,609.8	19,389.3	17,388.1	17,112.5	12,501.8
Industries	19,941.7	21,822.4	23,790.1	21,864.7	19,592.0
Electric utilities	97.1	115.8	122.2	92.1	539.7
Total outside sales	108,185.5	105,795.6	105,482.9	102,891.3	90,453.8
Interdivisional	532.9	637.6	661.8	581.3	636.6
Total sales	108,718.4	106,433.2	106,144.7	103,472.6	91,090.4
Returned to ALCOA*	1,844.8	1,718.8	1,849.5	1,820.3	1,857.6
Interchange delivered	4,666.1	4,738.0	8,408.2	8,202.7	5,998.1
Losses	3,078.1	3,121.7	3,024.9	3,558.4	3,198.9
Total output	<u>118,307.4</u>	<u>116,011.7</u>	<u>119,427.3</u>	<u>117,054.0</u>	<u>102,145.0</u>
Generating capacity, June 30—kilowatts	27,071,480	26,726,630	23,319,030	21,892,480	19,880,420
Area peak load—kilowatts	20,381,000	18,633,000	18,611,000	18,888,000	16,664,000
Monthly billing demands, 12 months—megawatts**	210,753	206,833	205,730	197,137	178,179

\*In return for energy delivered to the TVA system from the ALCOA plants.

\*\*The sum of the monthly billing demands of power sold by TVA.

## FISCAL YEARS

<u>1971</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>
12,733.6	12,313.2	11,595.4	15,187.8	13,317.9	11,024.4	14,615.5	13,255.3	12,844.7	15,651.3
1,811.7	1,779.3	1,813.3	2,283.8	1,868.9	1,777.1	2,163.0	2,044.4	1,783.1	2,432.5
<u>2,737.1</u>	<u>2,447.2</u>	<u>1,579.2</u>	<u>3,361.6</u>	<u>2,555.3</u>	<u>1,338.0</u>	<u>2,023.6</u>	<u>1,532.6</u>	<u>1,699.0</u>	<u>2,370.8</u>
17,282.4	16,539.7	14,987.9	20,833.2	17,742.1	14,139.5	18,802.1	16,832.3	16,326.8	20,454.6
74,332.1	76,144.6	75,600.9	69,619.4	68,114.0	67,941.9	55,651.7	56,535.5	52,221.6	44,575.9
—	—	—	—	—	—	—	—	—	—
<u>18.3</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
91,632.8	92,684.3	90,588.8	90,452.6	85,856.1	82,081.4	74,453.8	73,367.8	68,548.4	65,030.5
593.2	459.2	4.3	—	79.7	23.7	—	—	—	—
<u>8,889.6</u>	<u>8,141.8</u>	<u>7,354.8</u>	<u>5,156.2</u>	<u>5,141.0</u>	<u>2,676.9</u>	<u>2,765.4</u>	<u>3,041.2</u>	<u>2,643.8</u>	<u>2,225.5</u>
<u>101,115.6</u>	<u>101,285.3</u>	<u>97,947.9</u>	<u>95,608.8</u>	<u>91,076.8</u>	<u>84,782.0</u>	<u>77,219.2</u>	<u>76,409.0</u>	<u>71,192.2</u>	<u>67,256.0</u>
55,534.6	53,692.9	49,008.2	44,575.0	40,705.9	37,783.5	32,161.3	27,848.1	25,530.4	22,815.2
11,773.5	13,069.6	14,826.9	18,801.8	20,226.3	20,638.2	20,391.9	25,361.8	25,211.4	25,891.3
21,278.3	22,012.6	20,568.1	19,213.4	18,589.8	16,765.1	15,773.7	14,077.4	12,228.4	10,950.7
<u>1,407.3</u>	<u>1,273.7</u>	<u>1,300.5</u>	<u>1,462.1</u>	<u>1,768.1</u>	<u>1,150.1</u>	<u>769.8</u>	<u>441.8</u>	<u>181.5</u>	<u>65.2</u>
89,993.7	90,048.8	85,703.7	84,052.3	81,290.1	76,336.9	69,096.7	67,729.1	63,151.7	59,722.4
<u>653.9</u>	<u>673.5</u>	<u>670.2</u>	<u>667.8</u>	<u>796.6</u>	<u>768.4</u>	<u>764.1</u>	<u>720.7</u>	<u>666.2</u>	<u>598.8</u>
90,647.6	90,722.3	86,373.9	84,720.1	82,086.7	77,105.3	69,860.8	68,449.8	63,817.9	60,321.2
1,846.7	1,847.5	1,756.2	1,863.5	1,688.1	1,694.7	1,638.5	1,865.7	2,049.4	1,962.7
5,049.4	5,379.7	6,808.5	6,204.9	4,614.3	3,430.6	3,490.4	3,839.0	3,441.2	3,278.2
<u>3,571.9</u>	<u>3,335.8</u>	<u>3,009.3</u>	<u>2,820.3</u>	<u>2,687.7</u>	<u>2,551.4</u>	<u>2,229.5</u>	<u>2,254.5</u>	<u>1,883.7</u>	<u>1,693.9</u>
<u>101,115.6</u>	<u>101,285.3</u>	<u>97,947.9</u>	<u>95,608.8</u>	<u>91,076.8</u>	<u>84,782.0</u>	<u>77,219.2</u>	<u>76,409.0</u>	<u>71,192.2</u>	<u>67,256.0</u>
19,828,380	19,422,480	18,239,280	18,202,090	18,111,860	17,149,500	14,675,615	13,353,615	12,711,215	11,998,660
16,745,000	16,797,000	15,017,000	15,266,000	14,634,000	14,263,000	12,801,000	12,218,000	12,124,000	10,889,000
176,610	174,030	163,861	160,932	157,203	145,557	133,691	126,046	119,112	110,882

## CUSTOMER STATISTICS

In the following tables, the sales and related statistics for TVA and for the local distributors have been combined to portray total sales to ultimate customers.

### Ultimate Customers

<u>JUNE</u>	<u>TOTAL</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL AND INDUSTRIAL</u>	<u>FEDERAL AGENCIES</u>	<u>OUTDOOR LIGHTING</u>
1976	2,521,956	2,248,475	270,532	11	2,938
1975	2,458,822	2,192,972	263,056	11	2,783
1974	2,401,581	2,139,476	259,417	11	2,677
1973	2,325,134	2,068,150	254,423	11	2,550
1972	2,236,153	1,987,724	245,965	11	2,453
1971	2,158,423	1,919,208	236,687	11	2,517
1970	2,096,544	1,863,578	230,654	11	2,301
1969	2,047,338	1,817,982	227,179	11	2,166
1968	1,994,065	1,769,141	222,870	11	2,043
1967	1,946,594	1,726,382	218,257	11	1,944
1966	1,895,082	1,679,342	213,927	11	1,802
1965	1,840,791	1,630,547	208,533	10	1,701
1964	1,589,238	1,408,899	178,821	9	1,509
1963	1,547,451	1,371,450	174,675	9	1,317
1962	1,489,367	1,320,950	167,141	9	1,267

### Electricity Sales—Millions of kilowatthours

<u>FISCAL YEAR</u>	<u>TOTAL</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL AND INDUSTRIAL</u>	<u>FEDERAL AGENCIES</u>	<u>OUTDOOR LIGHTING</u>
1976	104,925	31,985	49,884	22,143	913
1975	102,778	31,785	50,117	20,027	849
1974	102,618	30,602	53,125	18,050	841
1973	99,670	30,637	50,557	17,694	782
1972	87,333	27,474	46,005	13,138	716
1971	85,930	27,291	45,553	12,427	659
1970	86,380	26,835	45,200	13,743	602
1969	82,111	24,449	41,610	15,497	555
1968	80,600	22,174	38,448	19,470	508
1967	77,708	19,945	36,276	21,023	464
1966	73,649	18,736	33,087	21,407	419
1965	67,050	16,501	29,043	21,156	350
1964	66,149	15,069	24,722	26,082	276
1963	61,861	14,026	21,729	25,878	228
1962	58,669	12,492	19,499	26,490	188

### Revenue from Electric Sales—Thousands of dollars

<u>FISCAL YEAR</u>	<u>TOTAL</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL AND INDUSTRIAL</u>	<u>FEDERAL AGENCIES</u>	<u>OUTDOOR LIGHTING</u>
1976	1,978,805	724,011	915,431	308,071	31,292
1975	1,448,320	559,439	672,806	189,187	26,888
1974	1,138,887	442,644	545,319	126,544	24,380
1973	992,421	398,253	465,323	107,154	21,691
1972	860,669	352,116	412,374	76,685	19,494
1971	796,426	332,544	381,299	65,010	17,573
1970	667,418	277,153	312,574	62,459	15,232
1969	576,589	231,391	265,294	66,323	13,581
1968	539,668	206,112	239,740	81,669	12,147
1967	492,374	177,055	217,543	87,026	10,750
1966	464,555	168,902	199,281	86,981	9,391
1965	418,705	151,007	174,808	85,344	7,546
1964	397,474	138,555	149,638	103,503	5,778
1963	374,020	131,323	135,315	102,722	4,660
1962	351,808	120,226	123,974	103,991	3,617

## Residential Statistics

FISCAL YEAR	AVERAGE ANNUAL USE	AVERAGE ANNUAL BILL	AVERAGE RATE
1976	14,370kWh	\$325.35	2.26¢
1975	14,540	255.92	1.76
1974	14,480	209.37	1.45
1973	15,080	196.07	1.30
1972	14,040	179.92	1.28
1971	14,400	175.53	1.22
1970	14,560	150.39	1.03
1969	13,600	128.71	.95
1968	12,668	117.74	.93
1967	11,680	103.68	.89
1966	11,294	101.81	.90
1965	10,831	99.12	.92
1964	10,818	99.47	.92
1963	10,406	97.43	.94
1962	9,553	91.94	.96

Notes: 1. The City of Memphis ceased to be a regular distributor of TVA power in 1958 and its customer statistics are excluded beginning in fiscal year 1959. The City again became a regular distributor January 1, 1965, and its customers' statistics are included thereafter.

2. Federal agencies include only TVA's direct service and interdivisional sales.

3. To avoid overstating the number of customers in the region, the number of Outdoor Lighting customers excludes the customers who supplement regular service with the special outdoor lighting fixture. Only public street lighting and athletic field lighting customers are counted. However, the energy sales and revenue figures under Outdoor Lighting do include data for the special fixtures.

## FUEL STATISTICS

Fuel Burned	FISCAL YEARS				
	1976	1975	1974	1973	1972
<b>Steam plants</b>					
Coal—tons	37,158,293	33,139,949 <sup>6</sup>	37,367,286 <sup>1,3</sup>	35,412,573 <sup>4,5</sup>	31,893,192
Oil—gallons	13,762,479	14,447,738	11,816,450	9,247,951	9,966,613
Gas—MCF	—	—	9,207,045	10,976,396	18,712,421
Total fuel expense	\$699,978,978	\$435,157,927	\$327,662,665	\$267,648,942	\$213,031,932
Coal expense per ton	\$18.715	\$12.993	\$8.611	\$7.425	\$6.471
Oil expense per gallon	\$ .333	\$ .316	\$ .247	\$ .141	\$ .122
Gas expense per MCF	—	—	\$ .325	\$ .311	\$ .291
<b>Nuclear plants</b>					
Total fuel expense	\$118,052 <sup>9</sup>	\$7,109,516	—	—	—
<b>Gas turbine plants</b>					
Oil—gallons	102,083,371	47,090,948	26,854,964	18,382,686	3,452,990
Gas—MCF	—	—	443,725	911,478	515,784
Total fuel expense	\$31,206,773	\$13,116,621 <sup>7</sup>	\$4,676,032	\$2,436,855	\$581,553
Oil expense per gallon	\$ .306	\$ .278	\$ .167	\$ .114	\$ .110
Gas expense per MCF	—	—	\$ .431	\$ .369	\$ .392
<b>Fuel Ratios</b>					
<b>Steam plants</b>					
Fuel expense per kWh generation—mills	8.561	6.069	3.927	3.351	2.910
Btu per kWh net generation	9,960	9,880	9,770	9,770	9,710
Cents per million Btu burned	85.91	61.41	40.18	34.29	29.96
Btu per pound of coal fired	10,940	10,660	10,760	10,840	10,820
<b>Gas turbine plants</b>					
Fuel expense per kWh net generation—mills	27.864	25.879	16.033	9.596	8.171
Btu per kWh net generation	12,640	12,950	14,510	13,830	14,297
Cents per million Btu burned	220.39	199.86	110.51	69.38	57.15
<b>Nuclear plants</b>					
Fuel expense per kWh net generation—mills	—	1.525	—	—	—
Btu per kWh net generation	—	10,570	—	—	—
Cents per million Btu burned	241.02 <sup>9</sup>	14.42	—	—	—
<b>Coal received</b>					
Tons	40,907,840	36,717,599 <sup>8</sup>	34,060,316 <sup>2</sup>	40,155,580 <sup>5</sup>	34,021,932
Mine cost plus transportation	\$767,163,347	\$539,980,917	\$290,693,725	\$298,831,623	\$219,486,704
Cents per million Btu	85.68	68.89	39.69	34.44	29.73

1. Includes 44,464 tons of petroleum coke costing \$449,838, which is estimated at 14,160 Btu per pound.
2. Includes 111,045 tons of petroleum coke costing \$1,193,630.
3. Does not include 291,537 tons burned during initial operation of unit 2 of Cumberland Steam Plant.
4. Does not include 2,096,524 tons burned during initial operation of Cumberland Steam Plant.
5. Coal burned and coal receipts include 10,044 tons of petroleum coke costing \$79,873.86, which is estimated at 14,200 Btu per pound.
6. Includes 62,006 tons of petroleum coke costing \$673,924, which is estimated at 13,780 Btu per pound.
7. Includes \$47,054 amortization for Allen Gas Turbine Plant pipeline cost.
8. Includes 14,693 tons of petroleum coke costing \$197,689.
9. Cost of fuel oil fired for auxiliary steam and testing of emergency generators.