

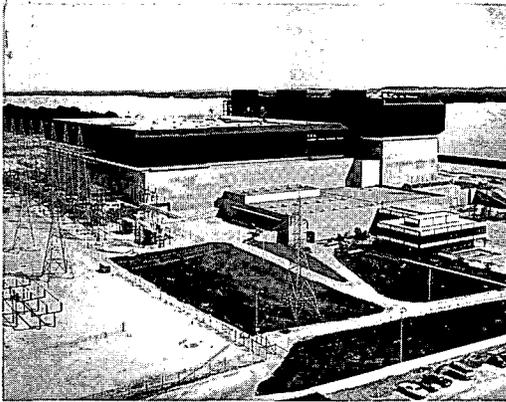
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POWER ANNUAL REPORT
TENNESSEE VALLEY AUTHORITY
1973

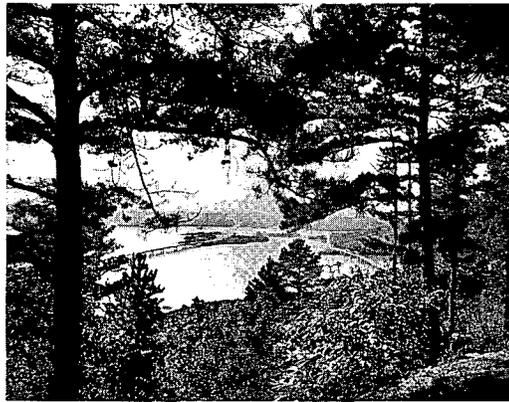
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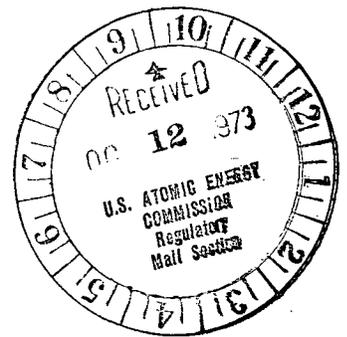
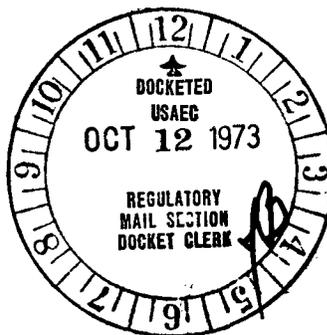
*A year of
promise*



*A year of
challenge*



*A year of
reflection*



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7545



Sequoyah Nuclear Plant

Cover: 1973 was a year of

promise

emerging nuclear power supply
breeder reactor demonstration
research projects

challenge

environmental concerns
fuel availabilities
rising costs

reflection

the economic and social
benefit of electricity in
the past 40 years

TENNESSEE VALLEY AUTHORITY

A Corporation Wholly Owned by the United States of America

Board of Directors / Aubrey J. Wagner, Chairman
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William L. Jenkins, Member

General Manager / R. Lynn Seeber
General Counsel / Robert H. Marquis
Comptroller / Kenneth D. Hatcher
Manager of Power / James E. Watson

1973 POWER ANNUAL REPORT for the fiscal year ended June 30

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.

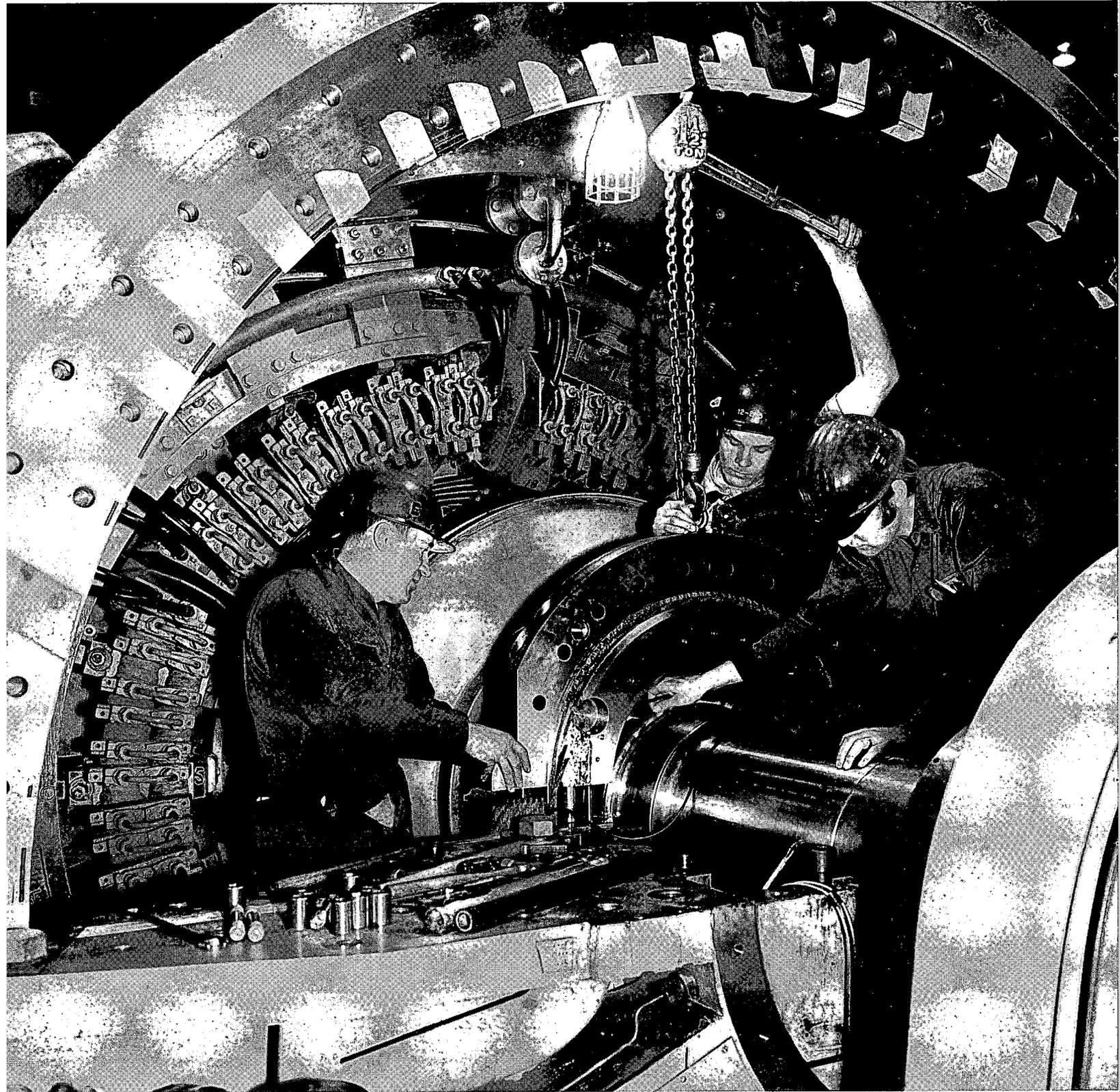
The production and sale of electric power are part of TVA's resource development program. TVA supplies power at wholesale to 160 municipal and cooperative electric systems which in turn distribute power to more than 2.3 million customers in parts of seven states. TVA also serves directly 48 industrial customers with large or unusual power requirements and several Federal atomic, aerospace, and military installations.

Financially, the power program is separate from other activities. 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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With advancing technology, generating unit capacity has increased to 1,300,000 kilowatts, the size of the two generating units at the Cumberland Steam Plant.

1973 MEANT PROGRESS, BUT QUESTIONS CONTINUE

The Tennessee Valley region's use of electricity grew significantly during the year, producing a 14 percent increase in TVA power sales. In addition to the normally expected rise in power demands, this included some growth that began again after unusual weather and economic conditions of the previous two years. The 1973 increase in power sales amounted to more than 12 billion kilowatt-hours, largest in TVA's history except for the extraordinary increases resulting from specialized national defense demands of the 1950's.

This growth in 1973 underscores the need for answers to several serious questions TVA faces in providing an adequate and reliable future power supply for the region. There have been delays in getting nuclear power plants into operation, resulting in many respects from the numerous changes in regulations which require additional and more conservative safeguards. These delays mean higher costs, and lower margins of generating capacity to meet the region's projected power demands over the next two years. TVA is making every effort to get these nuclear units into operation, without sacrificing environmental safety and plant reliability.

There are questions in fuel supply as well. Coal is the principal fuel used in TVA power generation, and supplies were adequate in 1973. But coal costs continued to rise, and the national issue of how to deal best with surface mining and reclamation poses an element of uncertainty about future coal supplies. There are more immediate uncertainties about fuel oil, needed for boiler start-up and gas turbine opera-

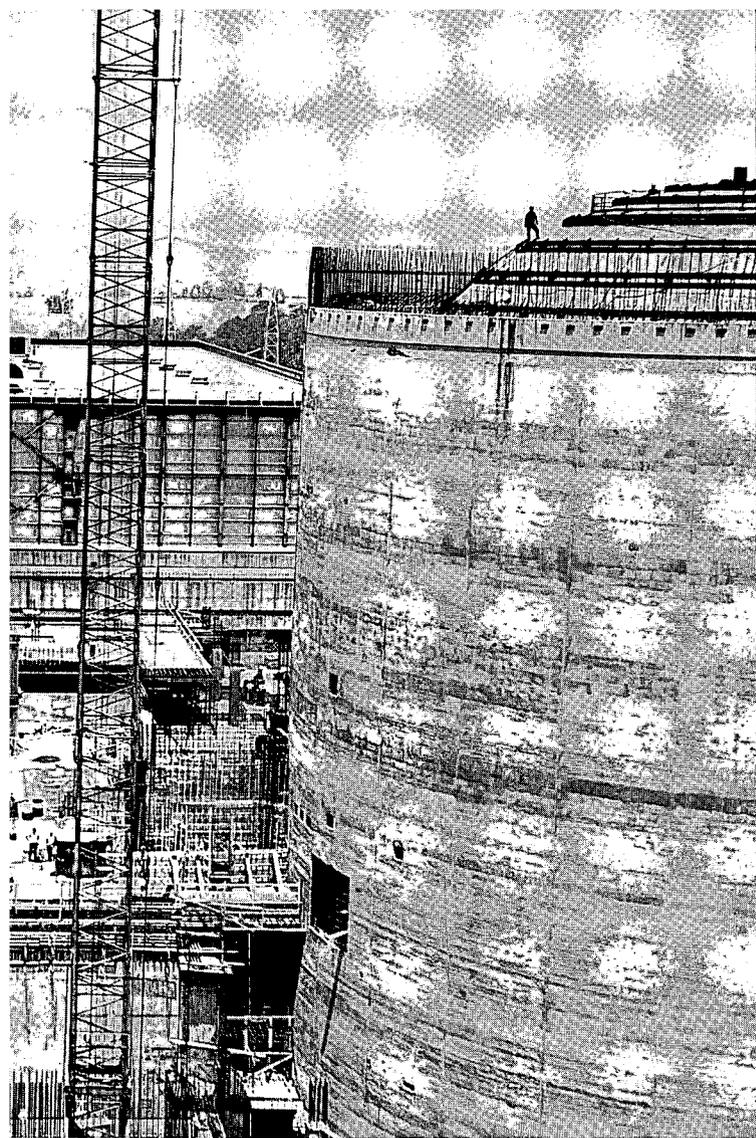
tions. Natural gas, which has been a small but significant part of TVA's fuel supply for power generation, is no longer available under present national fuels policies. To meet these problems, TVA is seeking additional sources for both fossil fuels and uranium.

During the year TVA urged air pollution control agencies in the three states where it has coal-fired power plants to accept TVA's alternate control strategy for sulfur dioxide emissions. TVA pointed out that it would be literally impossible to meet the fixed emission limits and compliance schedules which had been proposed. Instead, it proposed and offered evidence of the successful use of an alternate strategy for limiting emissions as necessary to avoid unacceptable ground-level concentrations during the occasional periods when normal dispersion of sulfur dioxide does not occur. TVA believes this approach offers the only feasible way to meet ambient air quality standards for sulfur dioxide by the proposed deadline.

Broad, national research efforts must provide many of the future answers to the questions involved in power supply and environmental protection. TVA is participating in both the nuclear breeder reactor demonstration project, which is to be built on the TVA system, and the new Electric Power Research Institute organized to provide large-scale national support for research and development programs. In 1973 James E. Watson of TVA was elected chairman and chief executive officer of EPRI.

These challenges can be met, and a reliable supply of electricity for the Tennessee Valley region can be assured. But time seems to be closing fast on the decisions necessary to avoid great shortages of power. The current fiscal year and the next appear to be critical in terms of the need for timely decisions by governments, power suppliers, concerned environmentalists, and the public to define and support workable energy policies, and to establish the priority and magnitude of the many research tasks to be undertaken.

	1973	1972
Kilowatt-hours sold, billions	103.5	91.1
Revenue, millions	\$749.3	\$641.8
Net income, millions	\$106.4	\$112.1
Repayment and dividend to the U. S. Treasury, millions	\$ 73.8	\$ 75.8
Average annual residential use, kilowatt-hours	15,080	14,040
Average residential cost per kilowatt-hour, cents	1.30	1.28
Number of electrically heated homes, June	743,000	680,000
Region's peak power load, kilowatts	18,888,000	16,664,000
Coal burned, millions of tons	35.4	31.9
Hydro generation, billions of kilowatt-hours	24.5	21.3
Construction expenditures, millions	\$407.7	\$538.2
Taxes and payments in lieu of taxes by TVA and the distributors, millions	\$ 56.3	\$ 53.5



THE REGION'S POWER NEEDS GREW GREATLY

With increasing industrial requirements, a record number of new customers, colder winter and warmer summer months, and greater use by the Atomic Energy Commission contributing to the magnitude of growth, 1973 sales reached an all-time maximum, topping 100 billion kilowatt-hours for the first time.

Use of electricity by the major classes of customers increased greatly over the previous year when power needs had been slowed somewhat by the effect of the recession and a warmer-than-normal winter.

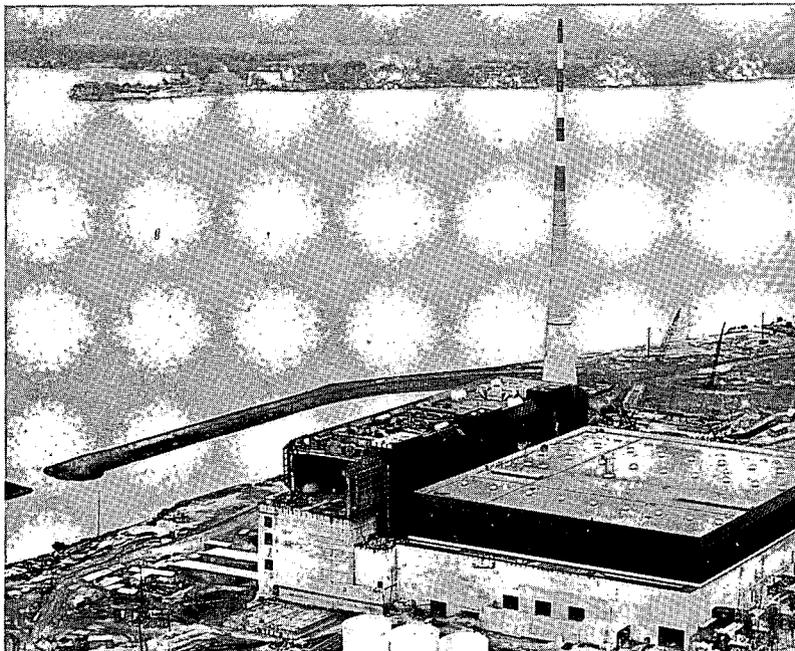
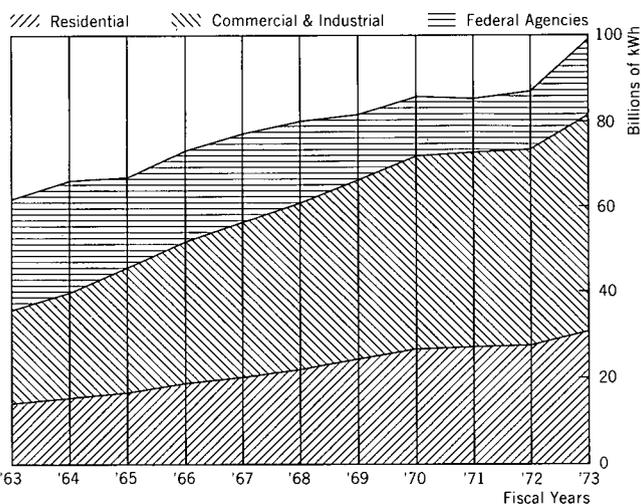
Power deliveries in fiscal 1973 increased 10 percent to municipalities and cooperatives, 12 percent to the large industries which TVA serves directly, and 35 percent to Federal agencies. Overall, purchases of TVA electricity grew by 14 percent.

Sales

	Millions of kilowatt-hours	
	1973	1972
Municipalities and cooperatives	63,822	57,820
Industries	21,865	19,592
Federal agencies, including interdivisional	17,694	13,138
Electric utilities	92	540
Total	103,473	91,090

A workman's silhouette against the sky is an indication of the size of Sequoyah's unit 1 reactor containment vessel and the surrounding concrete cylinder.

Sales to Ultimate Customers by TVA and Distributors



REVENUES IMPROVED, BUT COSTS INCREASED MORE

Revenues of \$749.3 million were \$107.5 million better than the previous year. The revenue growth was due largely to the increased use of electricity and in part to a 9 percent rate adjustment effective in January 1973.

Revenues

	Millions	
	1973	1972
Municipalities and cooperatives	\$476.3	\$415.3
Industries	144.7	124.3
Federal agencies, including interdivisional	107.2	76.7
Electric utilities	0.8	6.3
	\$729.0	\$622.6
Rents	20.3	19.2
Total	\$749.3	\$641.8

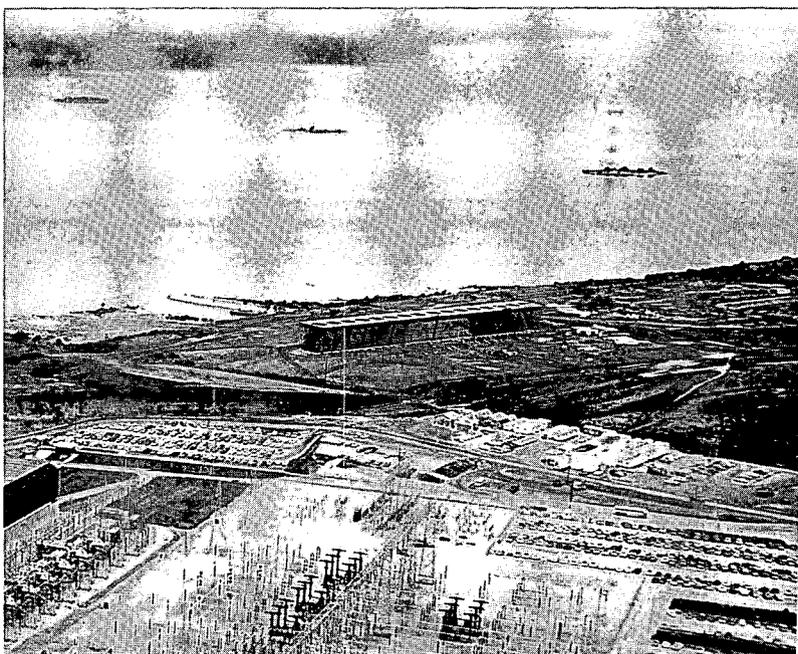
Despite greater revenues and the production savings allowed by record hydro generation, cost increases caused net income to drop by \$5.7 million.

The increase in retained earnings of \$52.6 million for the year was 7 percent of revenue. After deduct-

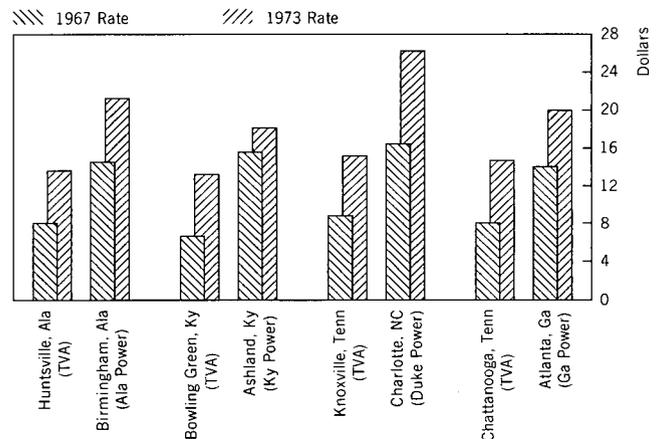
ing the \$20 million capital repayment to the U. S. Treasury on appropriations previously invested in the power system, the resulting amount of \$32.6 million was only 4.4 percent of operating revenues. This amount, together with depreciation accruals, was reinvested to help finance construction of the additional power facilities needed to meet customers' power demands. (See page 18.)

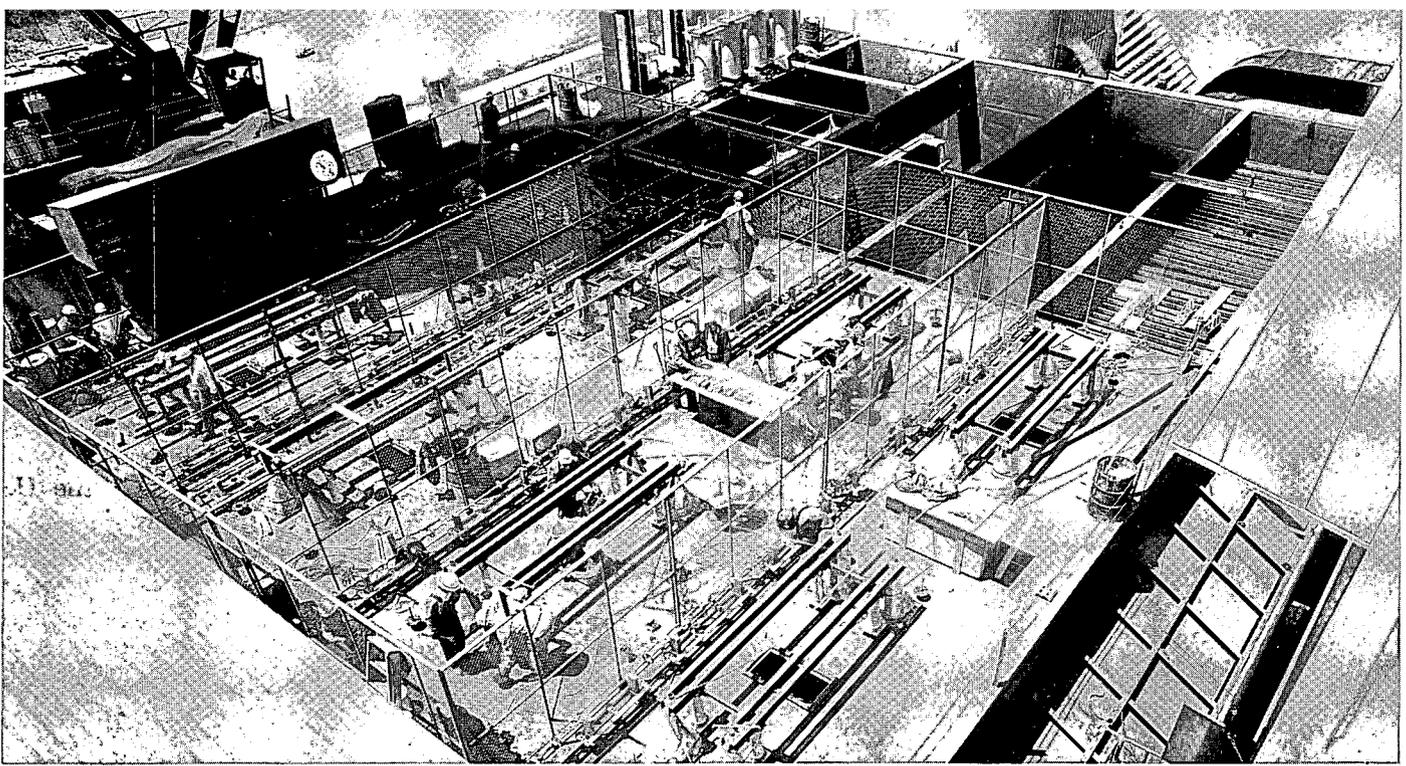
The prospects of achieving adequate earnings in the next fiscal year — 1974 — have been considerably lessened by foreboding cost increases. However, fiscal year 1974 began without a rate adjustment in view of the flexibility provided by TVA's quarterly review of revenues and costs.

This view of the Browns Ferry Nuclear Plant shows construction continuing on units 2 and 3, construction underway on the plant's cooling towers (to the right), and the 500-kV transmission line river crossing (right background).



Comparison of Residential Rates with Neighboring Cities (Monthly Cost—1,000 kWh)





Coal-fired generating units are being backfitted with higher efficiency electrostatic precipitators to capture a greater

amount of the flyash byproduct. The program will further improve air quality around the plants.

PUTTING TECHNOLOGY TO WORK IN THE '70'S AND BEYOND

The adequacy of power supply is becoming an overriding concern to the Nation's electric systems, as they must meet continuing pressures of uncertain fuel availabilities, rising prices, environmental standards, and construction delays.

For the Tennessee Valley region, TVA is responding to these pressures through demonstration projects, through support of expanded research, and with technologies that already have been developed.

AIR QUALITY: One of the TVA-developed technologies is a proven and safe alternative to state standards for sulfur dioxide (SO_2) emissions. It is an operations procedure to assure that ambient, or ground-level, SO_2 standards will be met, and the air where people breathe and plants grow will be kept safe.

TVA's alternate plan entails increasing the height of plant stacks where necessary, the use of SO_2 monitors around the plants, a meteorological technician to keep abreast of weather conditions, a com-

puterized system for determining when the plant's SO_2 emissions would be too high, and a procedure for reducing emissions when necessary.

With this plan, ground-level concentrations of SO_2 can be accurately predicted and generation reductions can be initiated or lower sulfur fuels can be burned to the extent necessary to assure ambient standards will not be exceeded. The plan is feasible because only during a small percentage of the time do weather conditions cause ground-level concentrations to exceed ambient standards.

In contrast, state emission standards for SO_2 would limit at all times the amount of this gas which could be emitted from the top of the stack at TVA's coal-fired steam plants. The problem presented by these standards is that there is currently no feasible way TVA could operate its plants to meet the standards. There are not sufficient quantities of low sulfur oil, natural gas, or low sulfur coal available to substantially reduce SO_2 emissions at TVA plants, nor are there reliable SO_2 removal systems commercially available. Even if TVA could do so, the cost of meeting state emission standards would be over ten times the cost of TVA's alternate plan.

TVA presented its five-year, \$270-million program of air quality improvement at hearings before the Alabama, Kentucky, and Tennessee air pollution control agencies, the three states in which TVA operates coal-fired plants. In addition to the SO_2

control plan, the program includes upgrading or replacing flyash collection equipment at all plants which are not now in compliance with the strict particulate emission standards recently established.

When this program is completed, all TVA plants will be in compliance with state standards for particulate and ambient SO₂ levels, although on some generating units it will take some two years longer than state timetables for installing new flyash collection equipment.

TVA's alternate SO₂ control plan appears to be gaining acceptance. As the fiscal year ended, Tennessee had taken steps to amend its standards so that SO₂ controls other than continuous emission limitations could be allowed. Alabama also was considering similar amendments to its standards as a reasonable method for maintaining the quality of air at ground level. Kentucky standards originally included similar provisions.

TVA hopes that its sulfur dioxide and particulate control methods will be accepted by the states and the Environmental Protection Agency, so that it may continue to provide electricity to the region's customers at a reasonable price and improve the quality of the region's air.

WATER QUALITY: Construction began on six mechanical-draft cooling towers to supplement the diffuser discharge system at the Browns Ferry Nuclear Plant in order to comply with Alabama's more recent water temperature standards. In complying with these standards, the temperature of the water in the river at the plant will be raised no more than five degrees, nor exceed a maximum temperature of 86 degrees from the addition of heat by the plant. (Water in the river at this location, however,

naturally exceeds 86 degrees at some periods during summer months.)

In condensing the steam exhausted by the turbine in a generating plant, the heat picked up by the condenser cooling water withdrawn from a natural water body must be dissipated to the environment by returning it to the water body or by use of auxiliary cooling facilities. The original design of the system at Browns Ferry included large diffuser pipes which discharged the heated water through thousands of holes in the pipes laid across the bottom of the river channel. In this system, the discharged heated water mixes rapidly with the cooler, overflowing river water. However, this system will not meet the stringent standards adopted by Alabama.

If the state holds to these standards, the \$43-million cooling towers will be needed to meet current water temperature limitations at this site. It is estimated that the towers will be operated some 28 percent of the time to supplement the diffuser pipe system. And the cost of operating cooling towers is a significant expense.

TVA has undertaken many water quality studies and pollution investigations over the years. Using a well-equipped laboratory, extensive "before-and-after" monitoring is done throughout the region to detect any changes in water quality — annually, some 70,000 water quality analyses are made in the lab and in the field.

At TVA steam plants, it has been determined that no apparent harm to fish life is resulting from the warm water being discharged from the plant's condenser cooling system. In fact, the warm water discharge basins are some of the region's most popular fishing spots. But there is a need to know what limits

Six cooling towers, costing \$43 million, are being added at the Browns Ferry Nuclear Plant to supplement the originally-designed condenser cooling water discharge system.

Operation of the cooling towers will be necessary at times to comply with state water quality standards.



should be placed on lake temperature increases in order to protect the water ecology.

TVA and the Environmental Protection Agency have planned a large experimental facility at the Browns Ferry Nuclear Plant to study the effects of increased water temperature on aquatic life. A series of channels, simulating natural streams, will be stocked with various species of fish and supplied with water flowing at different temperatures. This will allow biologists to study long-term effects of heated water on fish life, reproduction, and food supplies under scientifically-controlled conditions. It is hoped that water temperature limitations can then be established by objective, rather than subjective, guidelines.

Experiments are underway by TVA also to determine beneficial uses of heated water from power plants — such as greenhouse and field production of high-value crops, commercial fish production, and heating and cooling for livestock and poultry raising.

ages: where seams lie close to the surface, it usually makes more complete use of the coal resource; it is more economical than others means; in some cases, it makes available a resource which would otherwise be unavailable; and in terms of the miner's safety, it is highly preferred over deep mining.

Such advantages, however, can be offset by severe disadvantages if strip-mined lands are abandoned. Stripped scars on the landscape are long in healing naturally, and meanwhile, the bare earth and exposed coal wastes can open the way to erosion and acid pollution of streams.

But strip-mined land can be reclaimed effectively in time, as TVA has demonstrated.

In the 1950's when TVA was becoming a large user of coal needed to fuel newly-built steam units to serve the region's growing power requirements, it supported efforts for state regulation of strip mining. But effective laws were slow in coming, partly because the need for reclamation and practi-



If left unattended, scarred earth resulting from the strip-mining of coal (left) can cause environmental harm. Strip-mined land, however, can be effectively reclaimed (right).



In some cases, reclamation has returned stripped land into assets, for use as nature trails, airplane landing strips, industrial sites, and the like.

LAND RECLAMATION: Coal is still “king fuel” for the TVA power system — which has 75 percent of its installed capacity in coal-fired generating units. About half of the coal delivered to TVA to feed the units is produced by strip mining, a method that uses earthmoving equipment to strip overlying earth and rock from shallow coal seams so the coal can be dug from open pits.

This method of coal recovery has many advant-

cal techniques for achieving it were not widely recognized. Earlier, in the mid-40's, TVA foresters had encouraged mining firms and landowners to reclaim disturbed land voluntarily, but results were discouraging.

In 1965, TVA began including reclamation requirements in its contract awards for strip-mined coal. Over the years, as experience has indicated where changes and improvements were needed, the require-

ments have been strengthened. The states, too, with a growing awareness of the problem, have adopted reclamation laws.

Present TVA contract requirements include approval of a mining and reclamation plan before strip-mined coal can be considered for a contract award. Other requirements include water runoff and erosion control measures, immediate revegetation with grasses through hydraulic seeding, and appropriate planting of trees and shrubs for the planned land use after mining. Part of the coal payment is diverted to an escrow account until satisfactory reclamation is completed. Surface mining is prohibited in designated wilderness or scenic areas, and anywhere that adequate reclamation cannot be obtained.

Although about half of the coal received by TVA is strip mined, TVA's purchases represent only about 15 percent of all the coal stripped in the states of its major coal purchases. If this strip-mined coal were not available to TVA, which has contract reclamation provisions, the supply simply would become available to other purchasers.

Since strip-mined coal is a much needed fuel nationally, and a vital one in maintaining electric power service to the Valley region, it would seem prudent to uncover this resource expeditiously, then reclaim the disturbed land for useful purposes.

BREEDER DEMONSTRATION: With fuel uncertainties posing threats to energy growth, the development of the nuclear breeder reactor could mean the difference between adequate and inadequate supplies of electricity later in this century. Liquid metal fast breeder reactor technology appears to have the best potential for meeting the Nation's future electrical energy requirements in an economical and environmentally acceptable manner.

A major advancement toward achieving the benefits of this technology has come with the organization of the Breeder Reactor Corporation and the Project Management Corporation for getting a breeder demonstration plant underway. The project was organized jointly by TVA, Commonwealth Edison Company of Chicago, and AEC, and with participation by the entire electric industry.

The proposed breeder plant will have a capacity of about 400,000 kilowatts. It will be built on the TVA system near Oak Ridge, Tennessee, with construction beginning toward the end of 1974 and taking about five years. Some \$250 million of the total estimate of \$700 million for this national effort

has been pledged by private, municipal, and cooperative power systems throughout the Nation.

In terms of recognizing that all fuel reserves — oil, gas, coal, and uranium — are limited, the breeder's key advantage lies in its ability to more fully utilize the potential energy available from uranium. The non-fissionable isotope, U-238, represents over 99 percent of natural uranium, but only very small portions of it can be converted to useful fuel in today's generation of light-water-reactors. These reactors rely primarily on the fissioning of U-235 for their operation.

The breeder, however, converts more U-238 into fissionable plutonium than can a light-water-reactor. The breeder, by making efficient use of plutonium from today's reactors, can thereby extend uranium reserves for centuries.

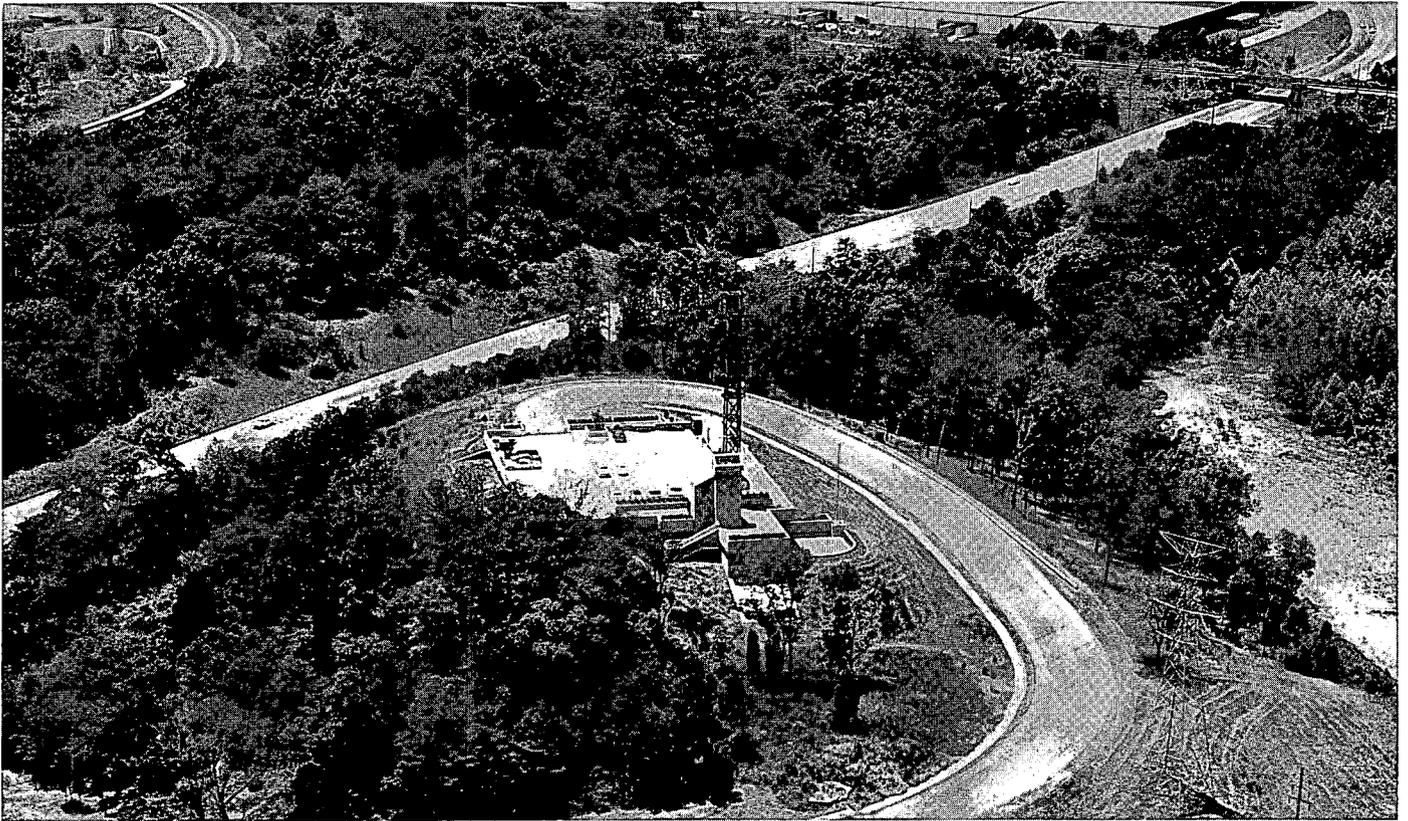
A primary objective of the breeder demonstration is to show that a relatively large breeder reactor power plant can be designed, built, operated, and maintained in a utility system framework. It is a demonstration from which to expect at least partial solution to the Nation's energy problems.

RESEARCH PROJECTS: Many different sources of energy are under investigation in efforts to expand alternatives and make some of today's supplies more attractive, economically and environmentally.

Along with the breeder demonstration, TVA believes that major research emphasis should be placed on finding ways to assure coal's continued use by power systems — through converting it to a clean-burning fuel or through development of methods to remove its gaseous byproducts after combustion. Domestic reserves of coal will last for centuries, but to a large extent coal's usefulness will depend on research to make it a clean and relatively economical fuel.

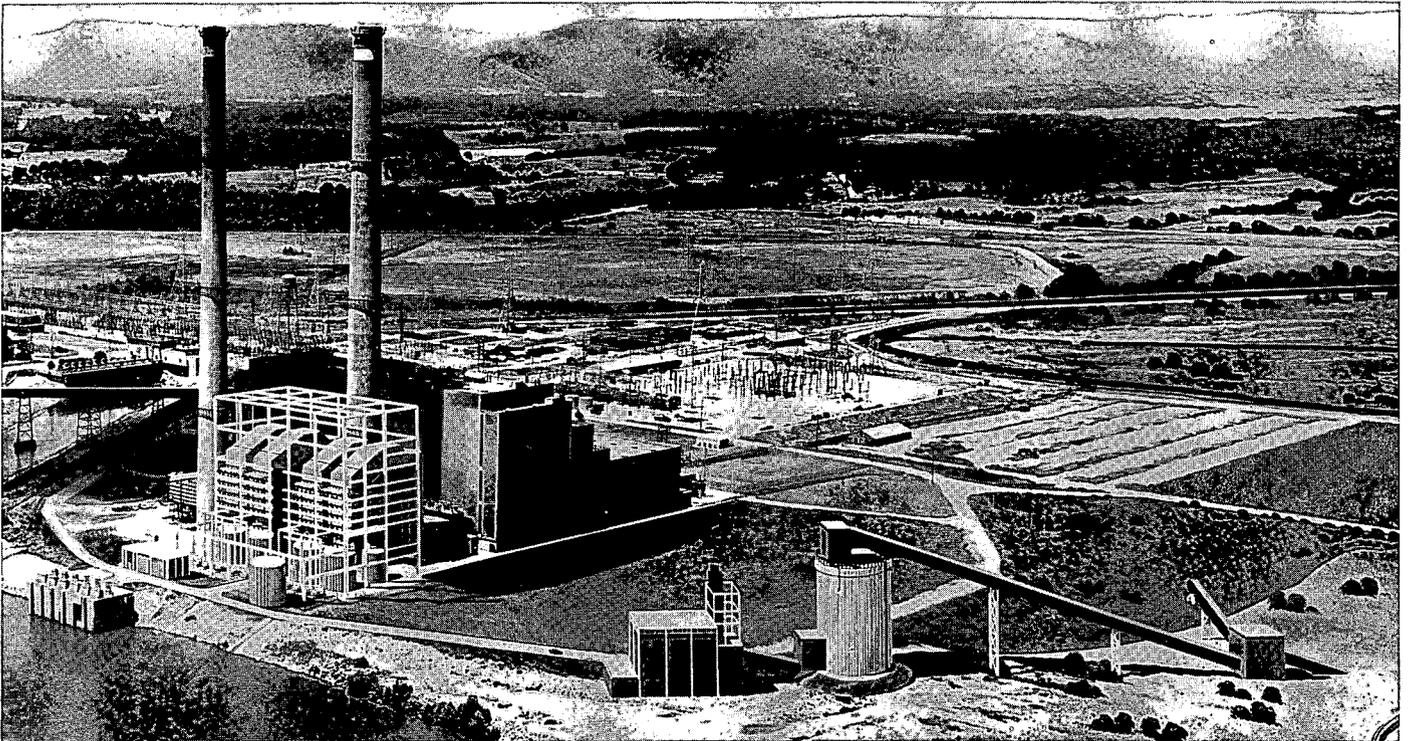
During the year, TVA was an instrumental supporter in getting the Electric Power Research Institute (EPRI) organized and functioning. Backed by the electric utility industry, EPRI will undertake a greatly expanded research program. One of its initial tasks is to align research priorities with the Nation's needs.

The chemistry involved in removing sulfur dioxide from steam plant stack gas is well developed, but engineering problems in getting removal equipment to work satisfactorily on large generating units continue to thwart removal efforts. In a major test toward the advancement of technology for controlling



A new Power System Control Center is nearing completion. Its sophisticated equipment will improve efficiency in con-

trolling the flow of power from generating plants and over transmission lines throughout the system.



A full-scale test scrubber has been drawn onto this photo of Widows Creek unit 8. In a major test of this facility, TVA

will seek to advance technology for controlling sulfur dioxide emissions.

SO₂ emissions, TVA is equipping the 550,000-kilowatt unit 8 at Widows Creek Steam Plant in northeast Alabama with a full-scale test scrubber. Estimated to cost \$42 million, the test installation should determine whether or not scrubbers are yet effective and acceptable. TVA also is conducting studies, in cooperation with the Environmental Protection Agency, to compare the feasibility of various processes of SO₂ removal.

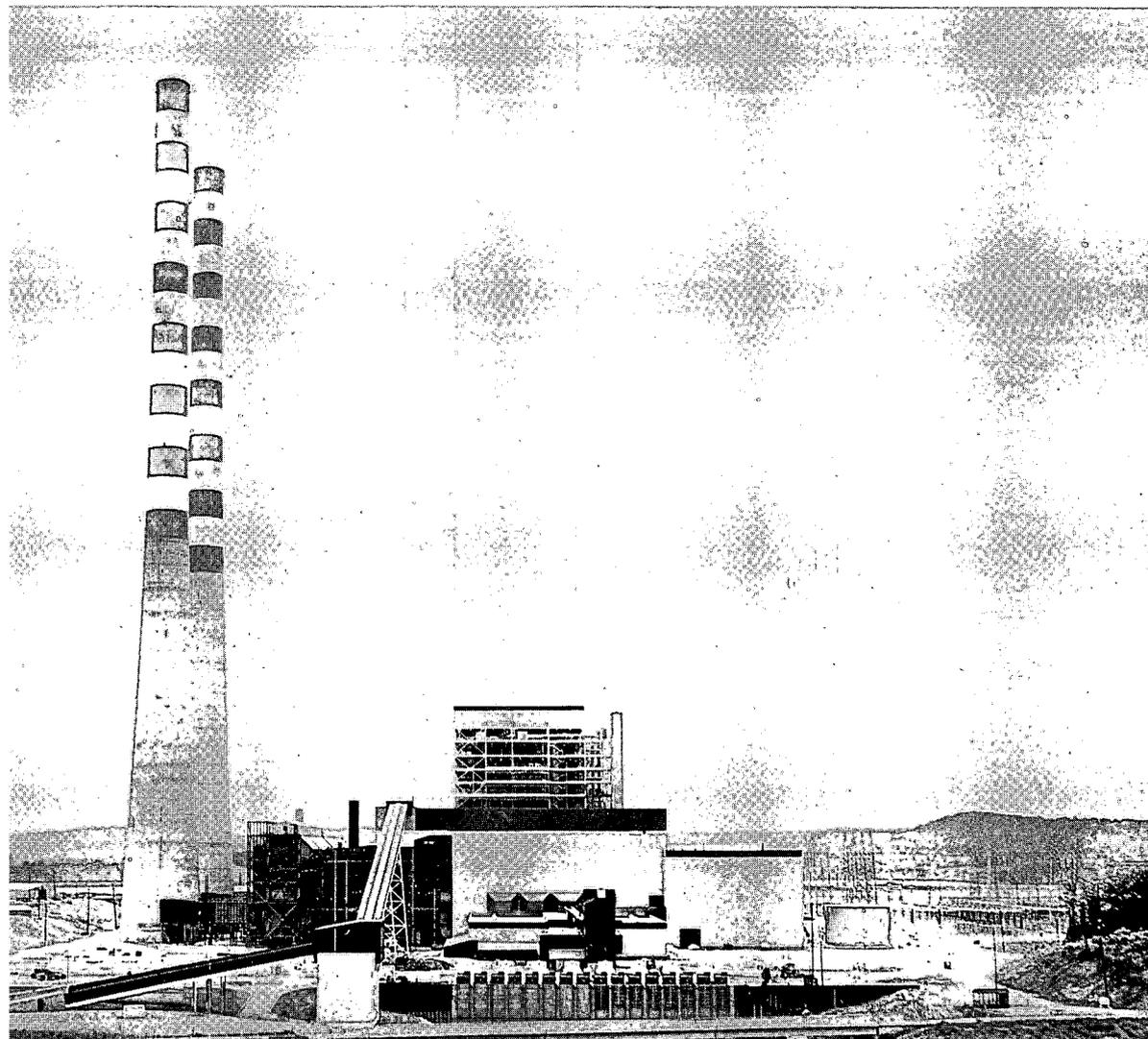
CONTROL CENTER: Discovering and putting into practice advanced technologies that will lower costs and improve system efficiencies and reliability is a continuing TVA effort. The Power System Control Center, near completion on the Chickamauga Dam Reservation near Chattanooga, Tennessee, is an example.

From the control center, the entire power system — all generation and transmission facilities — will be constantly monitored, controlled, and activated as necessary. Although man is in charge, computer

technology is his ally — solving in less than a second a mathematical problem it would take a man 40 hours to do. For example, every five minutes the computer will “read” the generation — determining the need for a generation change and sending control signals to the generating plants to bring about the required change — in order to select the most economical power source.

The high-speed digital data systems will constantly bring in data from strategic points on the power system. From the data, the computer will monitor line flows, breaker status, generator status, make contingency studies, and perform numerous other tasks. Communications between the human coordinator and the computer will be through use of a cathode ray tube, similar to a color TV set, and a “light pen.”

When the center is completed around July 1974, it will be one of the most modern and sophisticated in the Nation.



Currently the last coal-fired generating plant planned for the TVA system because of cost and environmental considerations, Cumberland's unit 1 began commercial operation and unit 2 began test operation during the year.

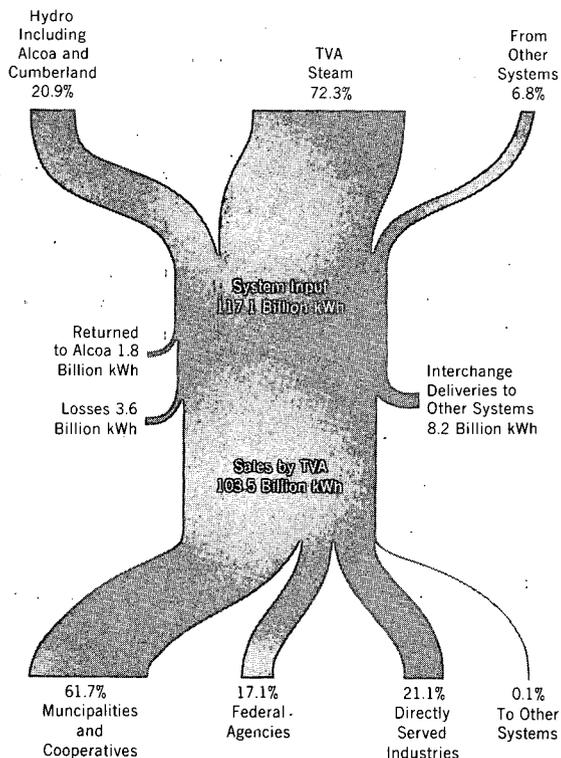
RECORD GENERATION AND SYSTEM INPUT ESTABLISHED TO MEET REGION'S NEEDS

The benefits derived from TVA's multipurpose dams were a highlight of the year. Foremost was the flood control capability provided by the dams when heavy spring rains pushed streams above flood stage. In March at Chattanooga, the most vulnerable location on the river for flood losses, control of the river cut the flood crest by more than 17 feet and held losses to an estimated \$35 million, compared to about \$500 million which would have resulted if the river control system were not available.

The navigable waterway created by TVA dams carried record barge traffic, and hydroelectric plants generated record amounts of electricity.

While annual generation normally is about 18 billion kilowatt-hours for the hydroelectric system,

Source and Disposition of Electric Energy—Fiscal Year 1973



generation in 1973 was 24.5 billion kilowatt-hours, topping the previous year's record by 15 percent.

But even with excellent hydro, production at fossil-fired plants had to be increased 15 percent over the previous year to meet the region's increased power requirements. Steam plant generation was 84.4 billion kilowatt-hours and gas turbine generation was 0.3 billion kilowatt-hours.

Steam plants burned 37.5 million tons of coal, including the burn during initial operation of the Cumberland Plant, 5.6 million tons more than in 1972. Deliveries of the fuel remained steady during the year and stockpiles at the plants were maintained at adequate levels. Coal requirements of 30-43 million tons annually are anticipated throughout this decade for steam plant generation.

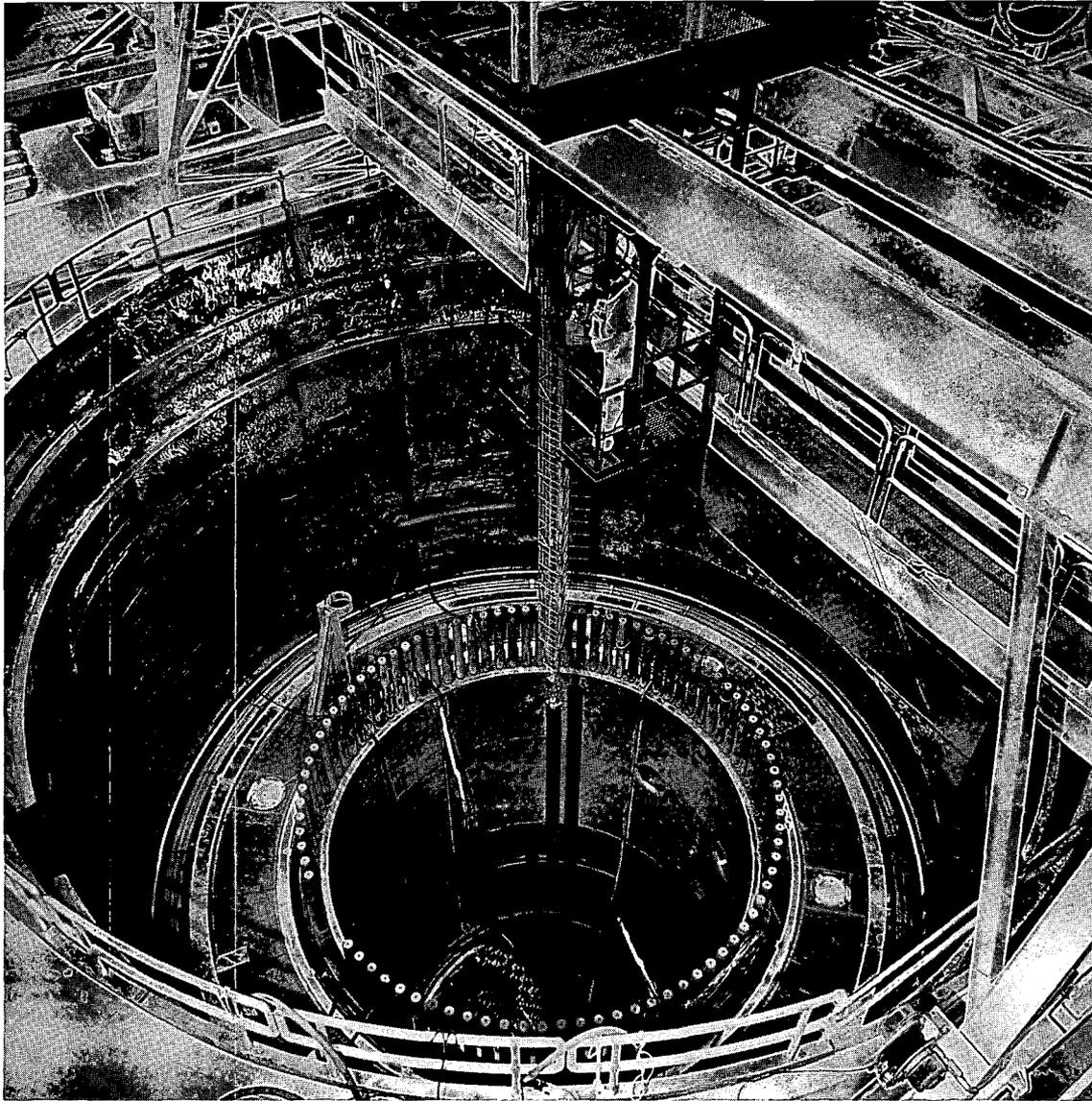
TVA purchases coal from mines within and near the Valley region, a coal that has a relatively high sulfur content. Test-burning of low-sulfur western coal at the Johnsonville Steam Plant increased particulate emissions and cut the plant's capacity up to 30 percent. Although the use of local coal would not meet proposed SO₂ emission standards, it can be used if control strategies for protecting the air at ground level are acceptable alternatives. TVA steam plant boilers were designed specifically to burn this type of coal efficiently.

The cost per ton of coal burned in 1973 was \$7.46, up 95 cents from the previous year, adding \$34 million to the overall fuel bill. Fuel expense, mostly for coal, increased more than four cents per million Btu, to 34.29 cents.

The Allen and Colbert Gas Turbine Plants were instrumental in helping to meet power loads; in addition to supplying power during peak demands, the turbines were operated at times to help meet high base loads and to fill in for equipment undergoing maintenance or repair. The turbines' fuel cost is high, but their function is important in maintaining adequate electricity supply and system reliability.

The climbing fuel cost trend should be offset somewhat with the coming operation of TVA's nuclear power plants. While the fuel cost is not likely to turn downward in the foreseeable future, its rate of increase should be slowed to some extent.

Nuclear fuel loading for Browns Ferry unit 1 began in June, when the unit received an AEC operating license. When loading is completed, the unit will undergo test operation comparable to the start-up of all new generating units. This first nuclear unit on the TVA system, and one of the largest in



Uranium dioxide fuel has been loaded into the reactor core of unit 1 at the Browns Ferry Nuclear Plant. After start-up testing, the unit is expected to be producing power for the region before the end of calendar 1973.

the Nation, is expected to go into full commercial operation before the end of calendar 1973.

The initial fuel supply for each of TVA's nuclear plants was ordered at the same time the plant equipment was ordered. In order to provide for an assured future supply of economical uranium, TVA has entered into contracts under which it has acquired or has an option to acquire mineral rights in certain properties on which uranium has been or may be found.

The TVA system recorded new peak power loads during the year; an all-time maximum load in the region occurred in January 1973 and an all-time maximum generation peak occurred in July 1972. The value of seasonal exchanges of power between neighboring systems is pointed out by these peaks. While TVA's peak demand occurs in winter because

of the vast amount of electric home heating in the region, power systems to the south and west experience their peak demands in summer because of heavy air conditioning demands. Through seasonal exchanges, the capacity on the TVA system and the other systems is more fully utilized year-round for greater efficiency and economy.

Summer peaks — FY 1973

Total generation	*17,009,000 kilowatts, 5 p.m., July 18, 1972
Tennessee Valley region load	15,276,000 kilowatts, 3 p.m., July 26, 1972

Winter peaks — FY 1973

Total generation	16,883,000 kilowatts, 6 p.m., January 29, 1973
Tennessee Valley region load	*18,888,000 kilowatts, 8 a.m., January 12, 1973

*alltime maximums through June 30



A new road is being cut to the construction site of the Watts Bar Nuclear Plant. Each new power plant site is selected with careful consideration being given its social and environmental impacts, and the regional development plans for the location.

The transmission system was increased by 340 miles of line, 164 miles of it operating at 500-kV. Sixteen new substations were placed in service and power capability was increased in 18 others already in service. A major effort is made to blend transmission facilities into their surroundings as unobtrusively as possible.

A 345-kV interconnection with Illinois Power Company, Union Electric, and Central Illinois Public Service Corporation was established at the Shawnee Steam Plant. This interconnection was made by jointly installing a 500/345-kV transformer bank at the plant to connect TVA's 500-kV system with the companies' 345-kV systems.

THE REGION'S USE OF POWER INCREASES, SPURRED BY HOMES AND INDUSTRY

More homes, more industries, increased average home use, increased industrial requirements, greater AEC requirements, a colder winter, and perhaps the beginning of energy substitution — all of them during the year were significant to the growth in the use of electricity in the region.

Average home use of electricity jumped more than a thousand kilowatt-hours, to 15,080. The increase was due mostly to a much colder winter than the previous one, some 17 percent colder. Over one-third of all homes in the region are electrically heated, and more than half are partially or completely air conditioned. Thus weather, as well as the high saturations of electric home appliances, has an effect on home use.

The average cost per kilowatt-hour of residential use increased slightly, to 1.30 cents, but it remains about half of the national average. Higher costs of providing power are at the heart of the increases. Fuel, money, and environmental costs, in particular, are causing rates to trend upward. To maintain the self-supporting power program, sufficient revenues must be taken in to cover these and other costs by an adequate margin.

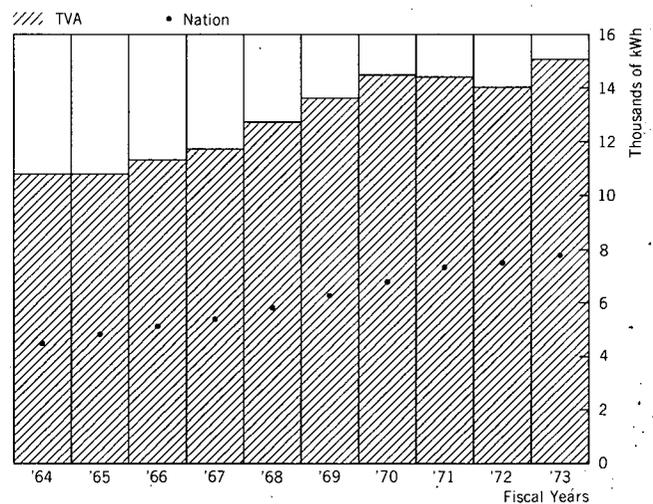
The beginning of energy substitution has been noted. With current forecasts of future gas and oil shortages, together with their climbing prices, a move to substitute electricity for these fossil fuels may be underway, and consumers may be leaning more toward electricity as their choice for new uses of energy. And as electric systems are called on to supply an increasing proportion of national energy requirements, they have a unique ability to make good use of otherwise impractical fuel sources — coal and uranium.

With the prospect of falling fuel supplies, conservation of all types of energy is a wise and timely consumer movement. TVA and the distributors for a long time have offered advice to all power customers, their architects, contractors, and engineers on efficient ways to install and use electric equip-

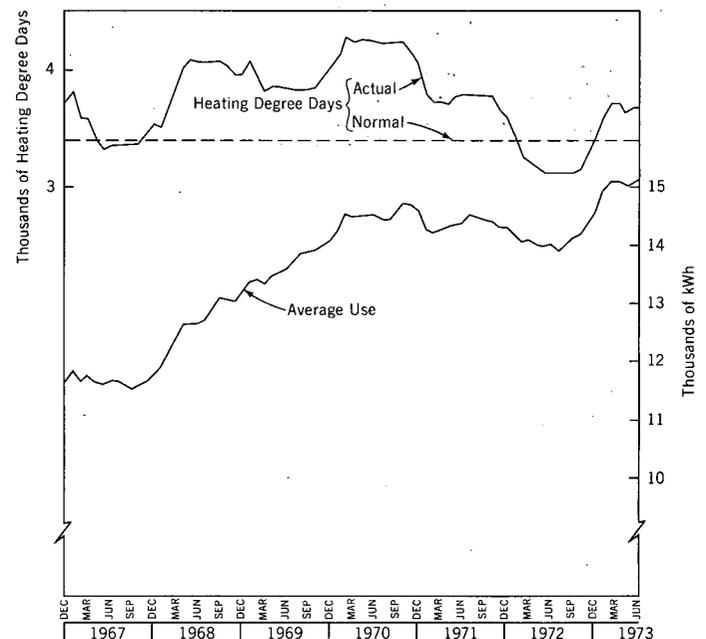
ment and appliances. The consumer information effort, ranging from the proper selection, use, and care of a kitchen appliance to fully adequate home and building insulation, seeks to improve energy conservation and save the customer money on his power bill. Industrial customers are encouraged to conserve energy and save power costs by improving the power factor in their plants. And because it is twice as efficient as any other heating system, the heat pump is strongly encouraged for use in new housing and commercial buildings.

The number of residential customers increased by 80,000, the largest numerical increase for any

Average Residential Use

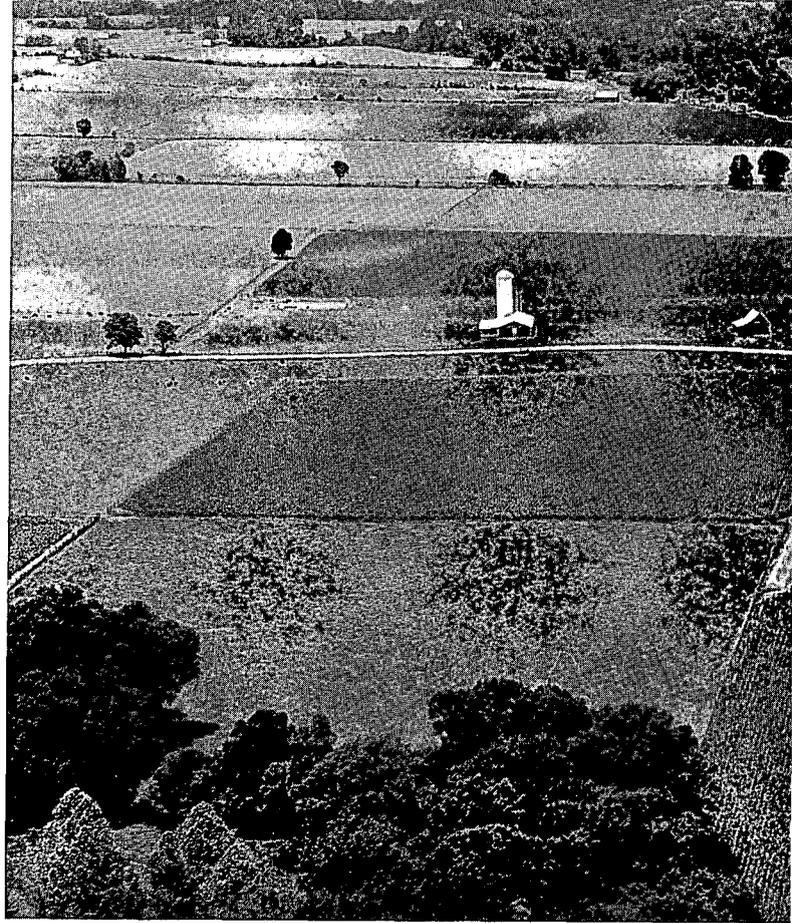


Residential Average Use and Effects of Weather in Valley Region

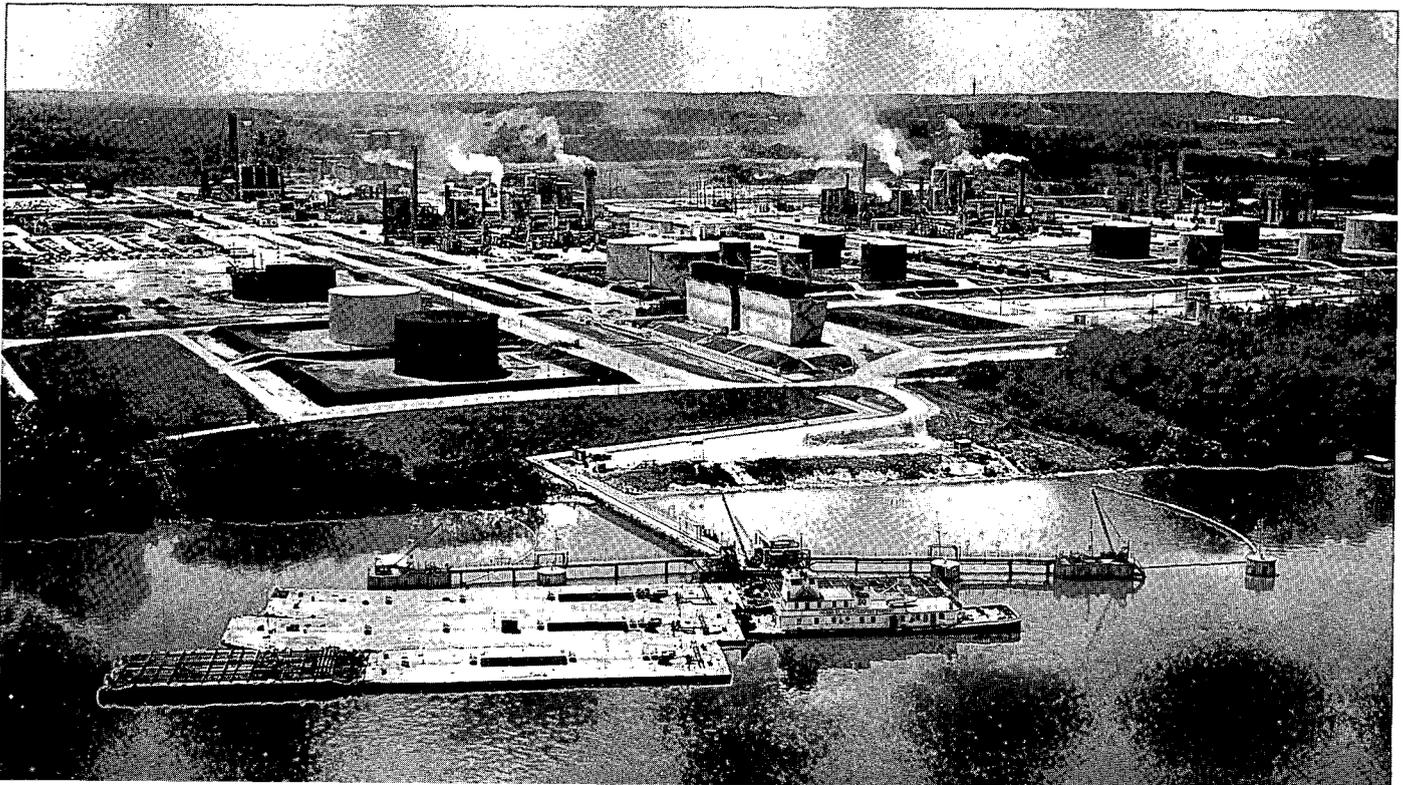




Consumers are being advised how they can conserve energy and save money on their electric bills by installing adequate insulation.



An industry served directly by TVA, the Amoco Chemical Company's plant at Decatur, Alabama, makes good use of the navigable Tennessee River. This petrochemical complex serves the synthetic fiber industry with intermediate raw materials. Basic chemicals are received by barge, and products and byproducts are shipped out by barge, rail, and truck.



Patterns of farmland, sun, and sky typify much of the rural scenery in the region. Resource development tools — fertilizer, forests, flood control, land management, electricity — have been interlaced to bring many improvements and greater profits to the region's farms, even as the region has progressed to a predominantly manufacturing economy.



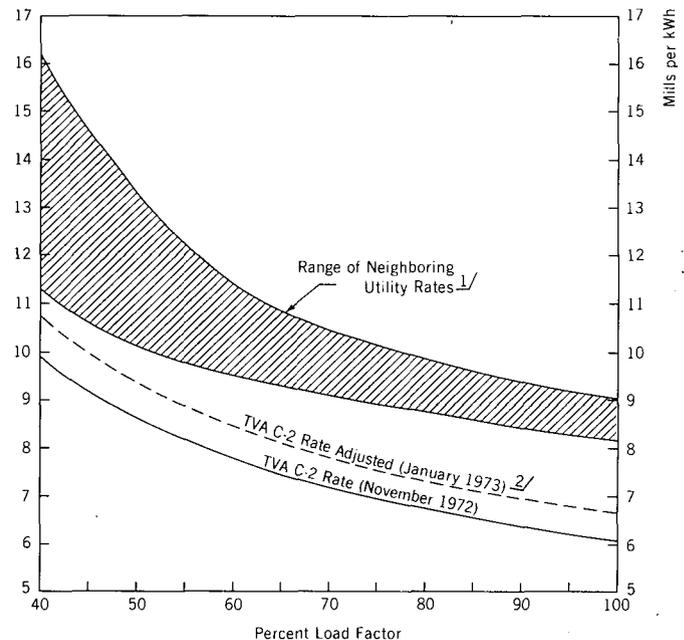
recent year. The increase reflects in part the home-buying age reached by post-World War II babies and the region's ability to hold its people and attract others because of growing job opportunities.

In calendar 1972, 484 new industrial plants or expansions were announced for the region supplied with TVA power, involving an estimated investment of \$568 million by industries and creating some 34,500 new jobs. The industrial pace was much improved over 1971, and for the period of January-June, 1973, estimates of new and expanded industries in the region show an accelerating pace.

The commercial and industrial use of power in the region (sales by TVA directly and by the distributors) increased 10 percent. Power availability and relatively low industrial rates seem to be two important factors in the region's high levels of industrial use.

Electricity use by Federal agencies, mainly AEC, increased almost 5 billion kilowatt-hours. The additional power requirements by AEC are needed for enriching the uranium used to fuel the Nation's nuclear power plants. AEC has contracted to increase its power purchases in steps, to reach a total of 3,165,000 kilowatts in 1976, subject to the availability of power from scheduled new generating units. AEC's maximum power use under the contracts in fiscal 1973 was 1,940,000 kilowatts.

Comparison of Industrial Rates with Neighboring Systems (20,000 kW Load)



^{1/} Includes escalators as reported October 1972.
^{2/} Includes 16c/kWh and 0.32 mills/kWh.

CONSTRUCTION PROGRAM PLANNED TO MEET POWER GROWTH

To plan new capacity, to get the new capacity ordered, sited, built, and into operation in time to serve the additional power loads it was scheduled for, is a tall order and a lengthy process. Yet, the region's social and economic well-being depends on having the power available when it is needed.

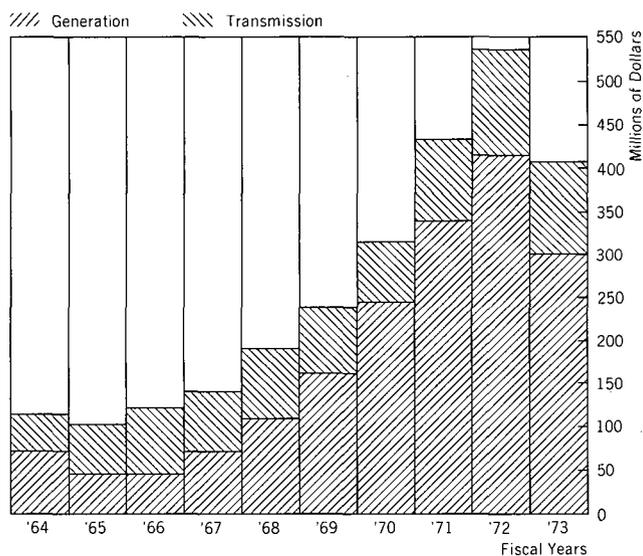
TVA plans to meet the challenge of new power supply with its largest construction program ever, nearly doubling its installed capacity between now and 1982. Most of the capacity now in service, and most of it being built and planned is aligned with the Nation's greatest potential fuel resources. Of the 21.9 million kilowatts of capacity in service at June 30, 75 percent of it is coal-fired; and of the 19.2 million kilowatts planned for service, some 85 percent is nuclear-fueled.

Construction expenditures in 1973 were \$407.7 million, most of it for generating plant. The cost of plant capacity planned for service between now and 1982 will require an estimated investment of more than \$4.5 billion for the region's future power supply.

Power Plant Projects

	Total capacity (megawatts)	Scheduled operation (calendar years)
Cumberland Steam Plant (Unit 2)	1,300	1973
Browns Ferry Nuclear Plant	3,456	1973-1975
Raccoon Mountain Pumped- Storage Project	1,530	1974-1975
Sequoyah Nuclear Plant	2,441	1975-1976
Watts Bar Nuclear Plant	2,540	1978
Nuclear Plant Proposed for Bellefonte Site	2,664	1979-1980
Additional Capacity on Order	5,280	1980-1982

Construction Expenditures



SELF-SUPPORTING POWER PROGRAM HAS BORROWINGS INCREASE

New power facilities are financed largely from borrowings made through the sale of power bonds and notes, and in part from power revenues remaining after covering operating and other costs.

During the year, power bonds were sold in July, October, January, and April, and short-term notes were sold each month. The interest cost of the four bond issues were 7.39, 7.41, 7.39, 7.39 percent; interest cost on notes advanced throughout the year from a low of 4.48 percent in July 1972 to a high of 8.09 percent in June 1973. The average interest cost of the twelve notes issued was 6.02 percent.

The amount of borrowings outstanding increased by \$400 million. At June 30, TVA had \$2,355 million in bonds and notes outstanding. (See note 6 to the Financial Statements.)

The Federal appropriations invested in the power system are being repaid, and a dividend is also being paid annually on the remaining unrepaid appropriations. Payments to the U. S. Treasury totaled \$73.8 million, \$2 million less than in 1972 in part because

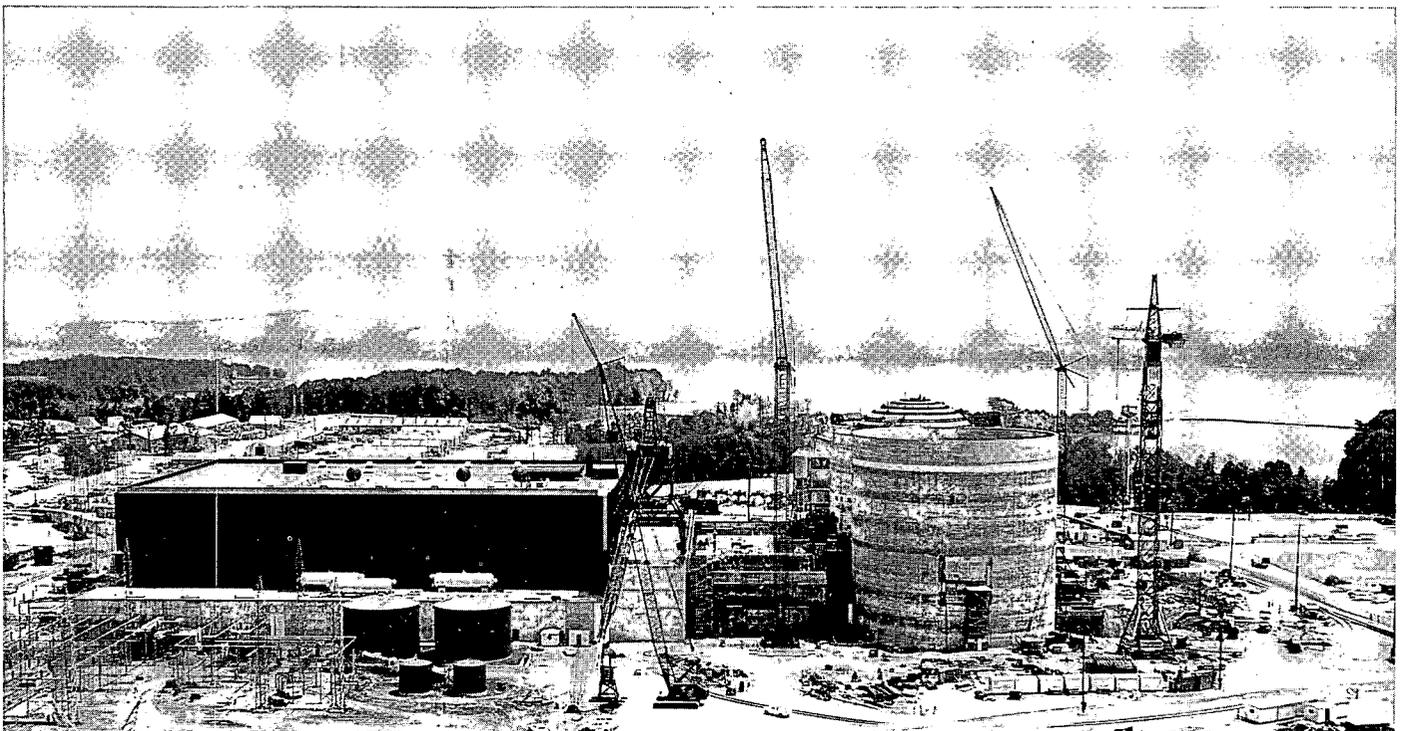
of a lower Treasury interest rate. TVA paid \$53.8 million as a dividend on the Government appropriations invested in the power system and repaid \$20 million as a reduction of appropriation investment.

The dividend is determined each year by applying the Government's average interest rate payable on marketable Treasury securities at the beginning of the fiscal year to the Government's net appropriation investment in TVA facilities at the same date. For 1973, the average interest rate was 5.099 percent, compared to 5.21 percent the previous year. Next year's dividend will be more than \$63 million because the average interest rate on Treasury securities has increased to 6.129 percent.

TVA has now paid more than a billion dollars into the Treasury from proceeds of the power program.

Under the TVA Bond Resolution, bondholders have first call on net power proceeds. These are defined as proceeds from operations and from the sale of facilities. They increased by \$17.7 million over 1972.

Construction continues on the Sequoyah Nuclear Plant. The plant's two generating units will add 2.4 million kilowatts to the region's power supply.



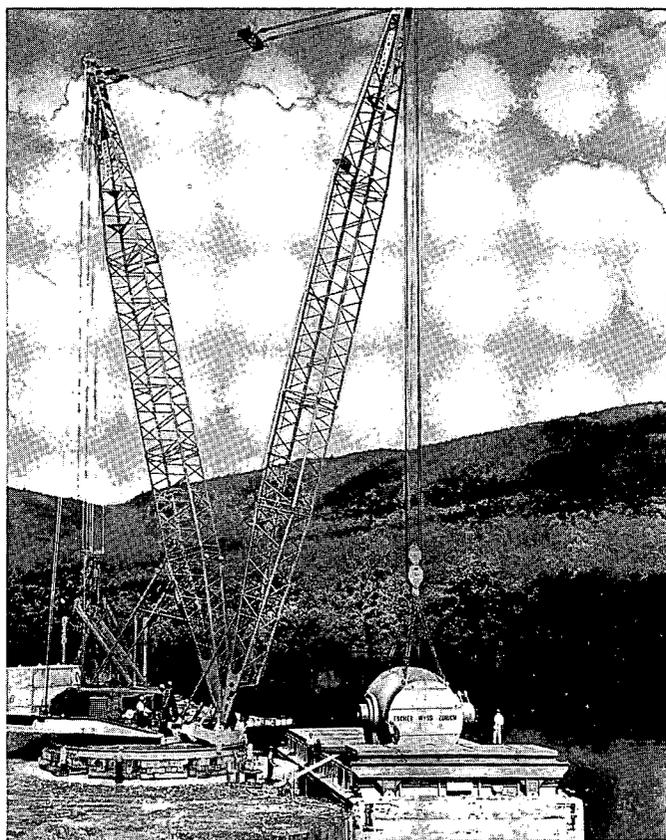
PAYMENTS IN LIEU OF TAXES GROW WITH REVENUES

Payments by TVA to state and local governments in lieu of taxes represent 5 percent of revenues during the preceding year, excluding revenue from sales to Federal agencies. Since property of the Federal government normally is not subject to state and local taxes, the TVA Act provides this formula for making payments in lieu of taxes. These payments by TVA will continue to increase as revenues increase.

TVA paid \$27.3 million in 1973, \$1.6 million more than the previous year. The amount is divided among the various states involved, under a formula that takes into account both the value of TVA property in each state and TVA revenues from customers in each state. So that counties do not suffer tax losses when TVA acquires power property and reservoir lands allocable to power, they receive amounts equal to the former county and district taxes paid on this purchased power property. The rest of each state's share, after county payments, goes to the state government.

The distributors of TVA power also pay taxes or tax equivalents to state and local governments. Their payments in 1973 were \$29 million. The combined TVA-distributor payments of \$56.3 million were about 6.3 percent of their combined operating revenue, excepting TVA's revenue from Federal agencies. The percentage is about the same as the average paid by neighboring utilities to state and local governments.

The amount paid by TVA in lieu of taxes to Tennessee is greater than the amount paid by any other taxpayer, and TVA pays one of the largest amounts in Alabama. Many of the distributors of TVA power make the largest tax payments in their communities.



The first of four 195-ton spherical inlet valves has arrived at the Raccoon Mountain Pumped-Storage Project. The valves will direct the flow of water in and out between the mountaintop lake and the river a thousand feet below.

Net Power Proceeds

Source	Fiscal years	
	1973	1972
	(thousands)	
Proceeds from operations		
Income before interest charges	\$245,751	\$212,464
Add back noncash items	15,952	31,759
	<u>261,703</u>	<u>244,223</u>
Proceeds from sale of facilities	665	480
Total	<u>\$262,368</u>	<u>\$244,703</u>
Disposition		
Interest on borrowings	\$139,041	\$100,168
Return on appropriations	53,785	55,810
Repayment of appropriations	20,000	20,000
Invested in power assets	49,542	68,725
Total	<u>\$262,368</u>	<u>\$244,703</u>



THE GRAPHS ON THIS PAGE DEPICT SOME OF THE ELECTRICAL GROWTH THAT HAS OCCURRED IN THE 80,000-SQUARE-MILE TENNESSEE VALLEY REGION IN TVA'S FORTY YEARS

It has been forty years of rapid change in the Valley region. From a predominantly agricultural economy to a predominantly manufacturing one.

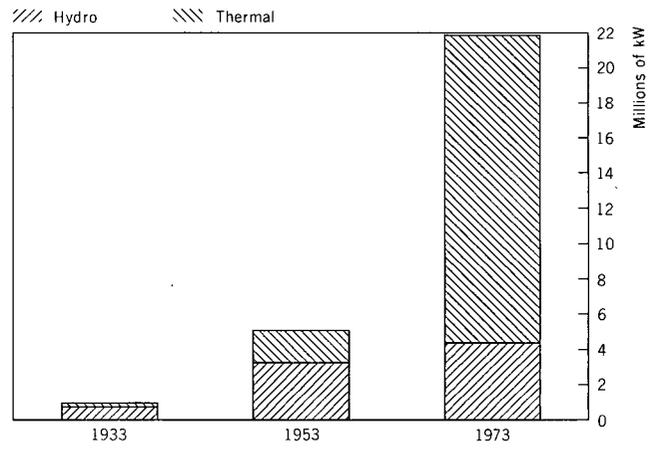
From bare subsistence by too many families to adequate living standards opened broadly. From take-home pay that was less than half the national average to incomes more closely aligned with those of other workers in the Nation. From ravaging floods to a river system that regulates heavy streamflows and provides navigation and hydroelectric power as well. From worn-out farmlands to fertilized pastures and revitalized soils.

From cut-over forests to great stands of timber. From a kerosene lamp and hand-drawn well water to electric appliance servants and the all-electric home. From a harsh environment to one that is far more livable and being made better.

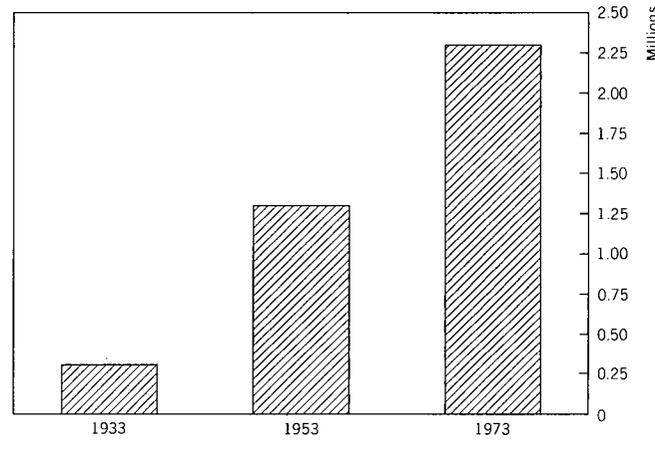
All along the way, a significant key to the region's remarkable resource development in forty years has been cooperation in TVA's programs by state and local governments, agencies, and citizen groups. People in partnership have brought progress of a meaningful, enduring kind to their lives.

BACKGROUND PHOTO: Norris Dam, begun in 1933 as TVA's first project, played a major role 40 years later in the March 1973 flood control operation. The spillway discharge shown here was to recover storage capacity in the reservoir after the flood crest had passed downstream.

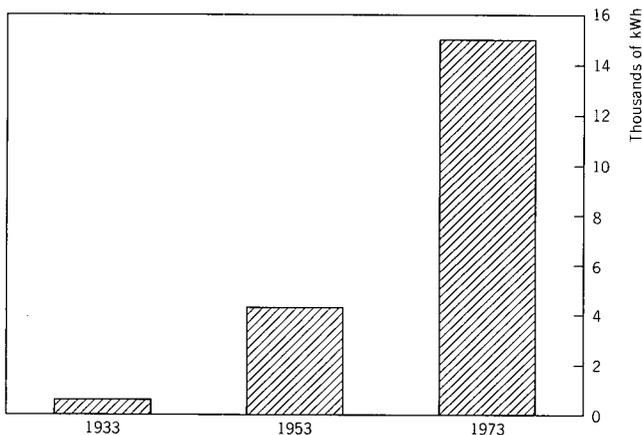
Generating Capacity in the Region



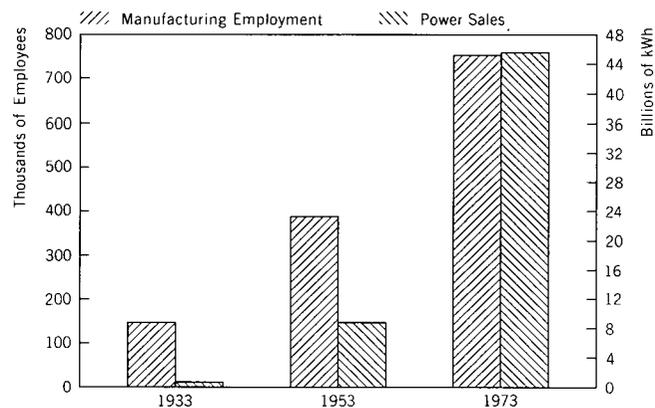
Number of Electric Customers



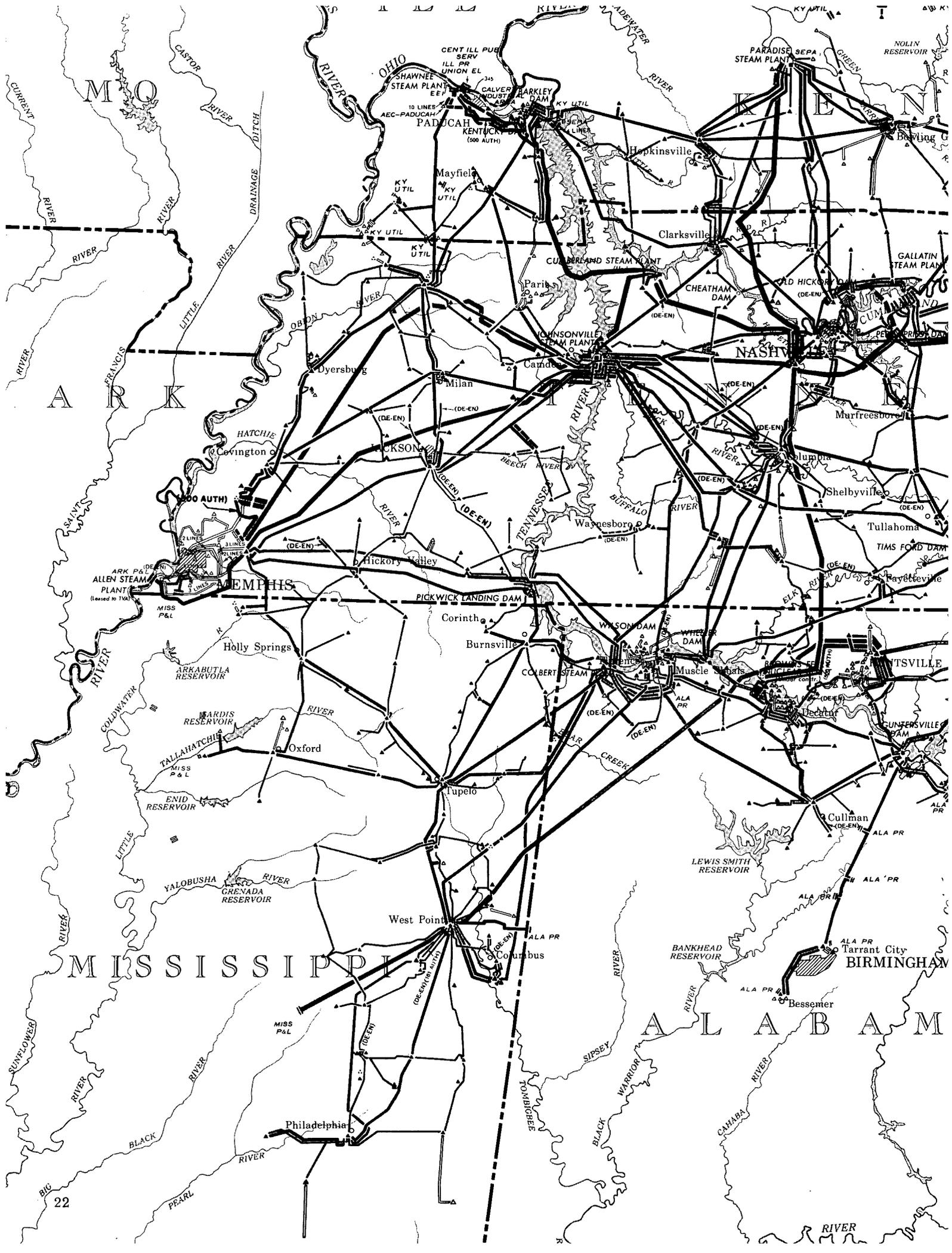
Average Residential Use

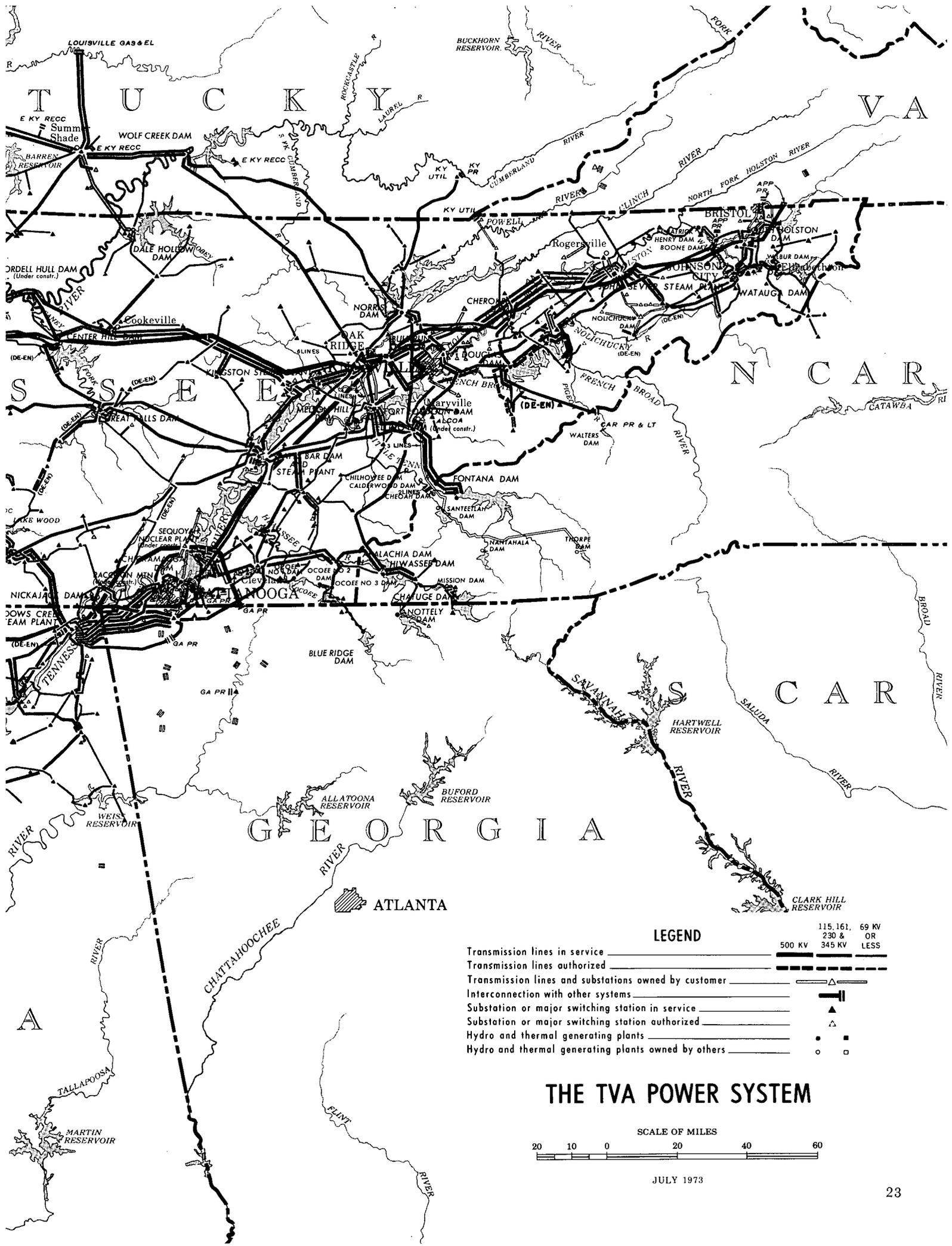


Industrial Use



Note: Some graph statistics are estimates based on historical data.

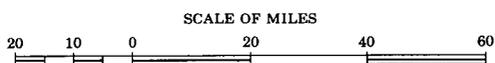




LEGEND

Transmission lines in service		115, 161, 69 KV
Transmission lines authorized		230 & 345 KV OR LESS
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		
Hydro and thermal generating plants owned by others		

THE TVA POWER SYSTEM



JULY 1973

FINANCIAL STATEMENTS

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

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 TENNESSEE VALLEY AUTHORITY at June 30, 1973 and 1972 and for the years then ended which appear on pages 25 to 32 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, 1973 and 1972, 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, 1973 and 1972, 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 24, 1973.

NET INCOME AND RETAINED EARNINGS – POWER PROGRAM

For the Years Ended June 30, 1973 and 1972

	1973		1972	
	kWh	Amount	kWh	Amount
	(Thousands)			
Operating Revenues				
Sales of electric energy				
Municipalities and cooperatives	63,822,013	\$476,354	57,820,337	\$415,349
Federal agencies	17,112,478	103,166	12,501,761	73,255
Industries	21,864,681	144,732	19,591,953	124,308
Electric utilities	92,169	791	539,724	6,250
Total outside sales	102,891,341	725,043	90,453,775	619,162
Interdivisional	581,272	3,988	636,631	3,429
Total sales of electric energy	103,472,613	729,031	91,090,406	622,591
Rents		20,349		19,272
Total operating revenues		749,380		641,863
Operating Expenses				
Production		408,765		325,567
Transmission		18,921		17,779
Customer accounts		498		442
Demonstration of power use		1,272		1,158
Administrative and general		27,379		24,031
Payments in lieu of taxes		27,310		25,726
Social security taxes		3,816		3,210
Provision for depreciation		89,468		83,399
Total operating expenses		577,429		481,312
Operating income		171,951		160,551
Other Income and Deductions				
Interest income		25		54
Allowance for funds used (construction and nuclear fuel); note 2		73,357		52,023
Other, net		418		164*
Total other income and deductions		73,800		51,913
Income before interest charges		245,751		212,464
Interest Charges				
Interest on long-term debt		111,399		69,028
Other interest expense; note 2		27,642		31,140
Amortization of long-term debt discount, expense, and premium, net; note 2		289		172
Total interest charges		139,330		100,340
NET INCOME		106,421		112,124
Payment of return on appropriation investment; note 5		53,785		55,810
Increase in retained earnings		52,636		56,314
Retained earnings at beginning of period		771,050		714,736
Retained earnings at end of period		\$823,686		\$771,050

*Deduct.

The notes on pages 31 and 32 are an integral part of the financial statements.

BALANCE SHEETS

June 30, 1973 and 1972

ASSETS

	Power program		All programs	
	1973	1972	1973	1972
	(Thousands)			
Property, Plant, and Equipment, substantially all at original cost				
Completed plant				
Multipurpose dams; note 1	\$ 489,435	\$ 488,644	\$1,014,358	\$1,010,967
Single-purpose dams	65,736	66,876	65,736	66,876
Steam production plants	1,944,471	1,713,992	1,944,471	1,713,992
Other electric plant	1,320,837	1,134,849	1,320,837	1,134,849
Other plant	—	—	164,522	150,457
	<u>3,820,479</u>	<u>3,404,361</u>	<u>4,509,924</u>	<u>4,077,141</u>
Less accumulated depreciation and depletion; note 2	<u>1,156,187</u>	<u>1,075,425</u>	<u>1,288,784</u>	<u>1,201,213</u>
	2,664,292	2,328,936	3,221,140	2,875,928
Construction and investigations in progress; note 3	1,318,645	1,294,367	1,386,808	1,359,775
Nuclear fuel in process of fabrication	<u>93,090</u>	<u>63,860</u>	<u>93,090</u>	<u>63,860</u>
Total property, plant, and equipment	<u>4,076,027</u>	<u>3,687,163</u>	<u>4,701,038</u>	<u>4,299,563</u>
Current Assets				
Cash	63,356	50,763	110,082	86,835
Accounts receivable	71,333	61,170	79,241	70,453
Inventories, principally at average cost	<u>140,772</u>	<u>109,323</u>	<u>146,473</u>	<u>114,565</u>
Total current assets	<u>275,461</u>	<u>221,256</u>	<u>335,796</u>	<u>271,853</u>
Deferred Charges				
Unamortized debt discount and expense; note 2	14,478	11,034	14,478	11,034
Other	<u>600</u>	<u>647</u>	<u>600</u>	<u>647</u>
Total deferred charges	<u>15,078</u>	<u>11,681</u>	<u>15,078</u>	<u>11,681</u>
Total assets	<u>\$4,366,566</u>	<u>\$3,920,100</u>	<u>\$5,051,912</u>	<u>\$4,583,097</u>

The notes on pages 31 and 32 are an integral part of the financial statements.

LIABILITIES

	Power program		All programs	
	1973	1972	1973	1972
	(Thousands)			
Proprietary Capital				
Appropriation investment; note 4				
Total congressional appropriations	\$1,383,332	\$1,383,558	\$2,637,824	\$2,573,274
Transfers of property from other				
Federal agencies	21,517	21,305	53,701	53,358
	1,404,849	1,404,863	2,691,525	2,626,632
Less repayments to General Fund of				
the U. S. Treasury; note 5	370,059	350,059	411,674	391,645
Appropriation investment	1,034,790	1,054,804	2,279,851	2,234,987
Retained earnings of power program;				
page 25	823,686	771,050	823,686	771,050
Accumulated net expense of nonpower				
programs; page 29	—	—	582,536*	538,136*
Total proprietary capital	1,858,476	1,825,854	2,521,001	2,467,901
Long-Term Debt; note 6	1,775,000	1,225,000	1,775,000	1,225,000
Short-Term Notes; note 6	580,000	730,000	580,000	730,000
Other Current Liabilities				
Accounts payable	115,146	102,047	125,654	110,719
Employees' accrued leave	12,871	11,300	23,033	20,977
Payrolls accrued	6,104	12,278	8,255	14,879
Interest accrued	17,972	12,558	17,972	12,558
Total other current liabilities	152,093	138,183	174,914	159,133
Deferred Credits				
Unamortized debt premium; note 2	96	165	96	165
Contributions in Aid of Construction	901	898	901	898
Commitments; note 3				
Total liabilities	\$4,366,566	\$3,920,100	\$5,051,912	\$4,583,097

*Deduct.

NET EXPENSE AND ACCUMULATED NET EXPENSE – NONPOWER PROGRAMS

For the Years Ended June 30, 1973 and 1972

	1973	1972
	(Thousands)	
Water Resources Development		
Navigation operations		
Studies and investigations	\$ 975	\$ 823
Operation and maintenance of facilities	4,985	4,926
Total expense of navigation operations	<u>5,960</u>	<u>5,749</u>
Flood control operations		
Studies and investigations	1,166	899
Operation and maintenance of facilities	3,930	3,914
Local flood control improvements	7	68
Total expense of flood control operations	<u>5,103</u>	<u>4,881</u>
Recreation projects		
Recreation resources development	682	736
Operation and maintenance of facilities	1,785	1,498
Total expense of recreation projects	<u>2,467</u>	<u>2,234</u>
Regional water quality management	1,563	1,545
Fisheries and waterfowl resources development	494	338
Preliminary surveys and engineering (including in 1973, \$2,065,000 related to abandoned projects)	2,526	547
Total expense of water resources development	<u>18,113</u>	<u>15,294</u>
Fertilizer and Munitions Development		
Developmental production		
Cost of products distributed	26,912	23,090
General expenses		
Loss on retirements of manufacturing plant and equipment, net	71	3,533
Loss or adjustments* on disposal of spare parts from inventory, net	41*	105
Loss or gain* on sale of phosphate reserves, net	134*	9
Other general expenses	1,059	1,431
Total general expenses	<u>955</u>	<u>5,078</u>
Total production expense	<u>27,867</u>	<u>28,168</u>
Less transfers and sales of products		
Transfers to TVA programs, at market prices		
Fertilizer industry demonstrations	19,748	14,974
Farm test demonstrations	345	280
Agricultural projects	169	178
Other	61	37
	<u>20,323</u>	<u>15,469</u>
Direct sales	70	146
Total transfers and sales	<u>20,393</u>	<u>15,615</u>
Net expense of developmental production	<u>7,474</u>	<u>12,553</u>
Fertilizer introduction		
Fertilizer industry demonstrations		
Fertilizers used	19,748	14,974
Educational distribution expense	1,291	1,298
	<u>21,039</u>	<u>16,272</u>
Less industry payments for fertilizer	19,094	14,393
	<u>1,945</u>	<u>1,879</u>

*Deduct.

	<u>1973</u>	<u>1972</u>
	(Thousands)	
Fertilizer and Munitions Development (Continued)		
Fertilizer introduction (Continued)		
Farm test demonstrations outside the Valley		
Fertilizers used	\$ 345	\$ 280
Planning and supervision	624	503
	<u>969</u>	<u>783</u>
Less farmer payments for fertilizer	192	190
	<u>777</u>	<u>593</u>
Net expense of fertilizer introduction	<u>2,722</u>	<u>2,472</u>
Research and development	5,553	5,059
Net expense of fertilizer and munitions development	<u>15,749</u>	<u>20,084</u>
General Resources Development		
Agricultural projects		
Agricultural development		
Fertilizers used	169	178
Planning and supervision	909	952
	<u>1,078</u>	<u>1,130</u>
Less farmer payments for fertilizer	90	114
	<u>988</u>	<u>1,016</u>
Development investigations and general expenses	509	438
Net expense of agricultural projects	<u>1,497</u>	<u>1,454</u>
Forest and wild land resources development	1,367	1,235
Tributary area development	1,755	1,668
Regional development planning	914	558
Townlift community improvement	723	480
Demonstrations in education and manpower development	803	139
Minerals projects	274	213
Environmental quality projects	430	332
Net expense of general resources development	<u>7,763</u>	<u>6,079</u>
Land Between The Lakes Operations	<u>2,306</u>	<u>1,972</u>
Valley Mapping	<u>469</u>	<u>499</u>
Other Expense, Net	<u>—</u>	<u>80</u>
NET EXPENSE	44,400	44,008
Accumulated net expense at beginning of period	<u>538,136</u>	<u>494,128</u>
Accumulated net expense at end of period	<u>\$582,536</u>	<u>\$538,136</u>

The notes on pages 31 and 32 are an integral part of the financial statements.

CHANGES IN FINANCIAL POSITION

For the Years Ended June 30, 1973 and 1972

	Power program		All programs	
	1973	1972	1973	1972
	(Thousands)			
Source of Funds				
Program sources				
Net power income; page 25	\$ 106,421	\$ 112,124	\$ 106,421	\$ 112,124
Add items not requiring funds; note a	16,241	31,931	16,241	31,931
Funds from power operations	122,662	144,055	122,662	144,055
Sale of power facilities	665	480	665	480
Funds from power program; note b	123,327	144,535	123,327	144,535
Net expense of nonpower programs; page 29			44,400*	44,008*
Add items not requiring funds; note a			7,547	10,270
Funds used in nonpower operations			36,853*	33,738*
Sale of nonpower facilities			1,131	564
Funds used in nonpower programs			35,722*	33,174*
Debt sources				
Long-term bonds				
Issues	548,069	547,034	548,069	547,034
Short-term notes				
Issues	1,520,000	2,020,000	1,520,000	2,020,000
Redemptions	1,670,000*	2,070,300*	1,670,000*	2,070,300*
Total debt sources	398,069	496,734	398,069	496,734
Other sources				
Congressional appropriations	226*	3,359	64,550	67,150
Property transfers	212	228	343	414
Contributions in aid of construction	3	117	3	117
Total source of funds	<u>\$ 521,385</u>	<u>\$ 644,973</u>	<u>\$ 550,570</u>	<u>\$ 675,776</u>
Disposition of Funds				
Expended for plant and equipment, excluding allowance for funds used	\$ 407,715	\$ 538,165	\$ 431,436	\$ 559,033
Less salvage from plant transfers, and depreciation charged to construction and clearing accounts	2,282	2,676	4,714	5,053
	405,433	535,489	426,722	553,980
Payments to U. S. Treasury; note 5				
Return on appropriation investment	53,785	55,810	53,785	55,810
Repayment of appropriation investment	20,000	20,000	20,029	20,034
	73,785	75,810	73,814	75,844
Deferred charges, net	1,872	1,119*	1,872	1,119*
Changes in working capital; note c	40,295	34,793	48,162	47,071
Total disposition of funds	<u>\$ 521,385</u>	<u>\$ 644,973</u>	<u>\$ 550,570</u>	<u>\$ 675,776</u>

*Deduct.

NOTES:

a. Items not requiring funds:

	Power		Nonpower	
	1973	1972	1973	1972
	(Thousands)			
Provisions for depreciation	\$89,468	\$83,399	\$ 7,600	\$ 6,714
Provisions for depletion	211	104	10	14
Loss or gain* on retirements and disposals of property, plant, and equipment, net	418*	164	63*	3,542
Amortization of deferred charges and credits, net	337	287	—	—
Allowance for funds used (construction and nuclear fuel)	73,357*	52,023*	—	—
	<u>\$16,241</u>	<u>\$31,931</u>	<u>\$ 7,547</u>	<u>\$10,270</u>

The notes on pages 31 and 32 are an integral part of the financial statements.

NOTES — Continued

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

	Year ended June 30	
	1973	1972
	(Thousands)	
Funds from power program	\$123,327	\$144,535
Add back interest charges	139,041	100,168
Net power proceeds	<u>\$262,368</u>	<u>\$244,703</u>

c. Components of changes in working capital:

	Power program		All programs	
	1973	1972	1973	1972
	(Thousands)			
Cash	\$12,593	\$29,994	\$23,247	\$42,853
Accounts receivable	10,163	6,634	8,788	7,810
Inventories	31,449	26,191	31,908	26,096
	54,205	62,819	63,943	76,759
Less other current liabilities	13,910	28,026	15,781	29,688
	<u>\$40,295</u>	<u>\$34,793</u>	<u>\$48,162</u>	<u>\$47,071</u>

*Deduct.

The notes on pages 31 and 32 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 \$1,014,358,000 in completed multipurpose dams at June 30, 1973, is classified as follows:

	Investment		
	Direct	Multiple-use	Total
	(Thousands)		
Power	\$312,163	\$177,272	\$ 489,435
Navigation	151,114	136,723	287,837
Flood control	59,656	135,133	194,789
Recreation	267	24,428	24,695
Tributary area development	20	17,582	17,602
Total	<u>\$523,220</u>	<u>\$491,138</u>	<u>\$1,014,358</u>

2. **Accounting policies** — Straight-line depreciation is provided for substantially on a composite basis. Except for chemical plant, plant retirements (including original and removal costs less salvage) are charged against appropriate accumulated depreciation accounts. Because of the experimental nature of fertilizer and munitions development, losses on early retirements of chemical plant are included in current year operations. 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.

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 6.0 percent and 6.0 percent during 1973 and 5.4 percent and 5.5 percent during 1972.

Discounts, expenses, 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.

3. **Estimates of cost to complete major construction projects, and commitments** — The cost to complete the major power projects (including nuclear fuel) under construction or authorized for construction at June 30, 1973, is estimated to be \$4,545,100,000, including commitments of \$1,328,900,000 for materials and services contracted for and not delivered. The corresponding estimate for multipurpose and nonpower projects is \$148,400,000, including commitments of \$3,300,000.

TVA and the City of Memphis, Tennessee, have entered into agreements under which (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.

On June 22, 1972, the TVA Board of Directors approved a Utility Contribution Agreement with Breeder Reactor Corporation (BRC), a District of Columbia nonprofit corporation. The agreement obligates TVA to pay to Breeder Reactor Corporation the sum of \$21.7 million over a 10-year period with equal annual payments beginning December 31, 1972, and ending December 31, 1981. The payment is on behalf of TVA and its distributors in support of the Nation's first commercial-scale liquid metal fast breeder reactor demonstration plant project. At June 30, 1973, the remaining commitment was \$18,445,000.

NOTES TO FINANCIAL STATEMENTS, continued

4. **Appropriation investment**— Changes in appropriation investment during the years ended June 30, 1973 and 1972, were as follows:

	Power program		All programs	
	1973	1972	1973	1972
	(Thousands)			
Congressional appropriations	\$ 226*	\$ 3,359	\$ 64,550	\$ 67,150
Transfers of property from other Federal agencies	212	228	343	414
	14*	3,587	64,893	67,564
Less repayments to General Fund of the U. S. Treasury	20,000	20,000	20,029	20,034
Increase or decrease* for the period	20,014*	16,413*	44,864	47,530
Balance, beginning of period	1,054,804	1,071,217	2,234,987	2,187,457
Balance, end of period	<u>\$1,034,790</u>	<u>\$1,054,804</u>	<u>\$2,279,851</u>	<u>\$2,234,987</u>

*Deduct.

An additional appropriation of \$45,676,000 was made as of July 1, 1973, by Public Law 93-97, approved August 16, 1973.

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 as follows:

	Return	Repayment	Total
	(Thousands)		
Total to June 30, 1972	\$569,203	\$165,000	\$734,203
Year ended June 30, 1973	53,785	20,000	73,785
	<u>\$622,988</u>	<u>\$185,000</u>	<u>\$807,988</u>

For 1974 the required payments will be \$63,422,000 as a return on the appropriation investment at the computed average interest rate of 6.129 percent and \$20,000,000 as a repayment, a total of \$83,422,000.

In addition to the payments from net power proceeds, \$29,000 of nonpower proceeds was paid to the U. S. Treasury in 1973 under the provisions of Section 26 of the TVA Act. This brought the total payments from nonpower proceeds to \$41,615,000.

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 27, \$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 \$5 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 payments to the U. S. Treasury described in note 5. Issues outstanding on June 30, 1973, consist of the following:

Long-term debt	(Thousands)
4.40% 1960 Series A, due Nov. 15, 1985	\$ 50,000
4% 1961 Series A, due July 1, 1986	50,000
4½% 1962 Series A, due Feb. 1, 1987	45,000
5.70% 1967 Series A, due May 15, 1992	70,000
6¾% 1967 Series B, due Nov. 1, 1992	60,000
8% 1969 Series A, due June 1, 1974 (to be refinanced)	100,000
8¼% 1969 Series B, due Oct. 15, 1994	100,000
9% 1970 Series A, due Mar. 15, 1995	100,000
9¼% 1970 Series B, due June 15, 1995	50,000
8¾% 1970 Series C, due June 15, 1975	50,000
7¼% 1971 Series A, due July 1, 1976	100,000
7.30% 1971 Series B, due Oct. 1, 1996	150,000
7% 1972 Series A, due Jan. 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 Oct. 1, 1997	150,000

7.35% 1973 Series A, due Jan. 1, 1998	100,000
7.35% 1973 Series B, due Apr. 1, 1998	150,000
Total long-term debt	<u>1,775,000</u>
Short-term notes	
Payable to U. S. Treasury	100,000
Payable to public	480,000
Total short-term notes	<u>580,000</u>
	<u>\$2,355,000</u>

An additional bond issue, 7¾ percent 1973 Series C, due July 1, 1998, in the amount of \$150,000,000 was sold in July 1973.

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, and the unfunded prior service cost is being amortized and funded over a period of 33 years from July 1, 1972. The cost of the plan to TVA for the years ended June 30, 1973 and 1972, was \$18,683,000 and \$16,813,000, respectively.

8. **Litigation**— On December 2, 1971, the Environmental Defense Fund and other plaintiffs filed suit to enjoin construction of the Tellico project on various grounds, including alleged failure to comply with the National Environmental Policy Act by, among other things, not filing an Environmental Impact Statement for the project. On January 11, 1972, the United States District Court for the Eastern District of Tennessee issued a limited preliminary injunction, pending trial, enjoining certain phases of work on the project, but allowing other activities to go forward. Thereafter, TVA filed an Environmental Impact Statement for the Tellico project, and the trial to determine the adequacy of that statement and other questions raised by the plaintiffs is to begin on September 17, 1973.

On July 5, 1972, the Environmental Defense Fund and other plaintiffs filed suit to enjoin TVA from constructing the Duck River project, consisting of the Normandy and Columbia Dams, on various grounds, including alleged failure to comply with the National Environmental Policy Act by, among other things, filing an Environmental Impact Statement for the project which plaintiffs claimed was inadequate. The action was filed in the United States District Court for the Eastern District of Tennessee, Northern Division, but was transferred to the Winchester Division of that Court. TVA filed a motion to dismiss the action or in the alternative for summary judgment. The motion was granted except as to the cause of action based on an alleged violation of the National Environmental Policy Act. The case has been set for trial during January 1974. Work on the project is proceeding as scheduled.

With respect to both of the above cases, counsel for TVA believe that the National Environmental Policy Act and all other applicable laws have been complied with and that the actions are without merit.

On May 26, 1972, TVA filed a condemnation action in the United States District Court for the Northern District of Alabama, Northeastern Division, to acquire 1,174 acres of land in Jackson County, Alabama, known as the Bellefonte site, "for and as a part of an inventory of sites for electric generating plants." Defendants filed an answer in which they raised 34 objections and defenses to the taking. In substance they are that TVA lacks statutory and constitutional authority to acquire the property, that it is not being acquired for a public use, and that the taking is unnecessary, an abuse of discretion, and in violation of the National Environmental Policy Act of 1969. TVA filed a motion to strike such defenses and objections on the ground that they are insufficient as a matter of law. No court ruling has been made on this motion. Counsel for TVA believe that the defenses are without merit.

OPERATING STATISTICS

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

GENERATING PLANTS / Units in Service on June 30, 1973

TVA HYDRO PLANTS	NO. UNITS	INSTALLED CAPACITY — KW	FISCAL 1973 NET GENERATION — KWH (MILLIONS)
Apalachia	2	78,900	550.8
Blue Ridge	1	20,000	60.4
Boone	3	75,000	244.0
Chatuge	1	10,000	38.6
Cherokee	4	120,000	515.9
Chickamauga	4	108,000	897.2
Douglas	4	115,000	561.6
Fontana	3	225,000	1,343.8
Fort Loudoun	4	135,590	812.4
Fort Patrick Henry	2	36,000	147.3
Great Falls	2	31,860	209.3
Guntersville	4	97,200	827.0
Hiwassee	2	117,100	355.1
Kentucky	5	175,000	1,162.9
Melton Hill	2	72,000	225.1
Nickajack	4	97,200	743.6
Nolichucky (retired 8-28-72)	—	—	3.1
Norris	2	100,800	546.5
Nottely	1	15,000	45.2
Ocoee #1	5	18,000	90.1
Ocoee #2	2	21,000	144.8
Ocoee #3	1	27,000	210.8
Pickwick	6	220,040	1,441.0
South Holston	1	35,000	213.5
Tims Ford	1	45,000	118.9
Watauga	2	50,000	174.0
Watts Bar	5	150,000	1,187.2
Wheeler	11	356,400	1,818.0
Wilbur	4	10,700	30.6
Wilson	21	629,840	3,422.8
Total TVA Hydro	109	3,192,630	18,141.5
TVA			
GAS TURBINE PLANTS			
Allen	20	620,800	138.2
Colbert	8	476,000	115.7
	28	1,096,800	253.9
TVA			
STEAM PLANTS			
Allen	3	990,000	4,790.9
Bull Run	1	950,000	5,892.2
Colbert	5	1,396,500	6,651.2
Cumberland	2*	1,300,000	5,915.8
Gallatin	4	1,255,200	6,877.7
John Sevier	4	823,250	4,474.2
Johnsonville	10	1,485,200	6,665.7
Kingston	9	1,700,000	9,576.7
Paradise	3	2,558,200	14,522.4
Shawnee	10	1,750,000	9,940.7
Watts Bar	4	240,000	943.8
Widows Creek	8	1,977,985	8,132.7
Total TVA Steam	62	16,426,335	84,384.0
Alcoa Dams (12)		423,715	2,623.2
Corps of Engineers Dams (7)		753,000	3,693.1
Total System		21,892,480	109,095.7
Total Hydro		4,369,345	24,457.8
Total Steam		16,426,335	84,384.0
Total Gas Turbine		1,096,800	253.9

*Unit 2 was not in commercial operation at June 30.

POWER EARNINGS

(Millions)

	<u>1973</u>	<u>1972</u>	<u>1971</u>	<u>1970</u>	<u>1969</u>
OPERATING REVENUES					
Sales of electric energy					
Municipalities and cooperatives	\$476.3	\$415.3	\$379.2	\$285.5	\$222.2
Federal agencies	103.2	73.3	61.9	59.4	63.6
Industries	144.7	124.3	125.0	106.0	92.2
Electric utilities	.8	6.3	10.1	7.6	7.3
Interdivisional	4.0	3.4	3.1	3.0	2.8
Total sales of electric energy	<u>729.0</u>	<u>622.6</u>	<u>579.3</u>	<u>461.5</u>	<u>388.1</u>
Rents	20.3	19.2	18.7	18.1	15.2
Total operating revenues	<u>749.3</u>	<u>641.8</u>	<u>598.0</u>	<u>479.6</u>	<u>403.3</u>
OPERATING EXPENSES					
Production	408.7	325.6	306.1	246.1	210.3
Transmission	18.9	17.8	16.9	15.1	14.3
Customer accounts	.5	.4	.4	.3	.3
Demonstration of power use	1.3	1.2	1.2	1.1	1.0
Administrative and general	27.4	24.0	22.0	18.0	15.6
Payments in lieu of taxes	27.3	25.7	20.0	16.1	14.5
Social security taxes	3.8	3.2	2.9	2.4	2.2
Depreciation	89.5	83.4	80.0	75.1	71.6
Other	—	—	—	—	—
Total operating expenses	<u>577.4</u>	<u>481.3</u>	<u>449.5</u>	<u>374.2</u>	<u>329.8</u>
Operating income	171.9	160.5	148.5	105.4	73.5
Other Income and Deductions	<u>73.8</u>	<u>51.9</u>	<u>48.2</u>	<u>31.6</u>	<u>16.0</u>
Income before interest charges and extraordinary item	245.7	212.4	196.7	137.0	89.5
Interest Charges	<u>139.3</u>	<u>100.3</u>	<u>77.7</u>	<u>62.4</u>	<u>38.8</u>
Income before extraordinary item	106.4	112.1	119.0	74.6	50.7
Extraordinary Item	—	—	—	—	—
Net Income	<u><u>\$106.4</u></u>	<u><u>\$112.1</u></u>	<u><u>\$119.0</u></u>	<u><u>\$ 74.6</u></u>	<u><u>\$ 50.7</u></u>
NET POWER PROCEEDS FROM OPERATIONS					
Income before interest charges and extraordinary item	\$245.7	\$212.4	\$196.7	\$137.0	\$ 89.5
Add back noncash items	16.0	31.8	31.9	43.5	55.6
Total	<u><u>\$261.7</u></u>	<u><u>\$244.2</u></u>	<u><u>\$228.6</u></u>	<u><u>\$180.5</u></u>	<u><u>\$145.1</u></u>

*Deduct.

FISCAL YEARS

1968	1967	1966	1965	1964	1963	1962	1961	1960	1959
\$197.2	\$172.0	\$158.2	\$136.8	\$118.2	\$110.6	\$ 98.3	\$ 91.0	\$ 85.4	\$ 76.6
78.9	83.9	84.0	82.4	100.7	100.2	101.7	109.9	110.0	108.2
84.2	79.6	71.5	67.1	59.7	52.4	47.9	43.5	43.3	40.9
8.6	10.1	7.9	4.8	3.1	1.2	.3	.2	.3*	8.5
2.7	3.1	3.0	3.0	2.8	2.6	2.3	2.2	2.3	2.0
371.6	348.7	324.6	294.1	284.5	267.0	250.5	246.8	240.7	236.2
12.1	2.4	2.2	1.9	1.9	1.8	1.6	1.5	1.7	1.3
383.7	351.1	326.8	296.0	286.4	268.8	252.1	248.3	242.4	237.5
191.1	187.8	170.4	139.9	134.3	129.6	116.3	119.8	116.6	116.0
13.9	12.9	12.4	12.2	12.0	11.8	11.0	10.7	9.2	8.9
.2	.2	.2	.2	.3	.3	.2	.2	.2	.2
1.0	.9	.8	.8	.8	.8	.8	.7	.6	.6
14.4	13.3	12.1	11.5	10.9	10.2	9.4	9.2	10.3	9.7
13.1	11.9	10.5	9.1	8.2	7.3	6.7	6.5	6.3	5.9
1.8	1.7	1.2	1.0	1.0	.9	.8	.8	.8	.6
70.7	65.7	62.6	59.1	56.8	52.8	52.1	50.6	48.7	44.7
—	—	—	—	—	—	.1	.3	.1	.1
306.2	294.4	270.2	233.8	224.3	213.7	197.4	198.8	192.8	186.7
77.5	56.7	56.6	62.2	62.1	55.1	54.7	49.5	49.6	50.8
8.1	3.7	5.2	3.9	4.7	6.8	6.8	3.4	1.5	—
85.6	60.4	61.8	66.1	66.8	61.9	61.5	52.9	51.1	50.8
26.5	19.7	13.9	11.1	8.6	6.8	5.3	1.3	—	—
59.1	40.7	47.9	55.0	58.2	55.1	56.2	51.6	51.1	50.8
10.3*	—	—	—	—	—	—	—	—	—
<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>	<u>\$ 51.6</u>	<u>\$ 51.1</u>	<u>\$ 50.8</u>
\$ 85.6	\$ 60.4	\$ 61.8	\$ 66.1	\$ 66.8	\$ 61.9	\$ 61.5	\$ 52.9	\$ 51.1	\$ 50.8
62.6	62.0	57.4	55.2	52.1	46.3	47.3	49.7	48.7	44.7
<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>	<u>\$102.6</u>	<u>\$ 99.8</u>	<u>\$ 95.5</u>

NET POWER ASSETS

(Millions)

NET ASSETS	1973	1972	1971	1970	1969
Completed plant	\$3,820.5	\$3,404.4	\$3,317.9	\$3,202.9	\$2,977.3
Less accumulated depreciation	1,156.2	1,075.4	998.0	924.5	856.0
Net completed plant	2,664.3	2,329.0	2,319.9	2,278.4	2,121.3
Construction in progress	1,318.6	1,294.3	822.4	481.9	386.4
Nuclear fuel	93.1	63.9	41.5	24.8	13.2
Inventories	140.8	109.3	83.1	37.5	44.2
Other current assets less other current liabilities	17.4*	26.3*	34.9*	16.6	2.2
Deferred charges, net	15.0	11.5	10.0	6.8	6.9
Total	\$4,214.4	\$3,781.7	\$3,242.0	\$2,846.0	\$2,574.2
DERIVED FROM					
U. S. Treasury funds, gross	\$1,469.9	\$1,470.0	\$1,466.4	\$1,463.5	\$1,462.0
Less Treasury funds repaid	435.1	415.2	395.2	375.2	360.1
Net U. S. Treasury funds	1,034.8	1,054.8	1,071.2	1,088.3	1,101.9
Long-term debt	1,775.0	1,225.0	675.0	675.0	375.0
Short-term notes payable to U. S. Treasury	100.0	100.0	100.0	100.0	100.0
Short-term notes payable to public	480.0	630.0	680.3	321.0	352.7
Advances and contributions	.9	.9	.8	.8	.7
Retained earnings	823.7	771.0	714.7	660.9	643.9
Total	\$4,214.4	\$3,781.7	\$3,242.0	\$2,846.0	\$2,574.2

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>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>	<u>1959</u>
\$2,900.7	\$2,792.5	\$2,602.6	\$2,466.8	\$2,335.2	\$2,236.3	\$2,084.1	\$2,042.5	\$1,940.3	\$1,873.4
789.3	727.2	671.9	614.3	563.8	514.1	463.9	417.8	370.7	326.9
2,111.4	2,065.3	1,930.7	1,852.5	1,771.4	1,722.2	1,620.2	1,624.7	1,569.6	1,546.5
216.3	150.0	203.5	220.6	259.0	247.7	288.0	161.7	116.0	89.6
—	—	—	—	—	—	—	—	—	—
51.5	44.9	32.4	39.1	33.3	32.8	35.7	31.8	34.9	33.9
3.6	23.8	7.3	8.4	.5*	17.8*	15.8*	5.5	51.7	48.6
5.1	3.3	2.5	1.4	1.1	1.0	1.0	.4	—	—
<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>	<u>\$1,824.1</u>	<u>\$1,772.2</u>	<u>\$1,718.6</u>

\$1,461.0	\$1,455.2	\$1,455.1	\$1,454.7	\$1,454.4	\$1,454.0	\$1,453.5	\$1,453.1	\$1,451.4	\$1,449.1
345.1	330.1	315.1	300.1	290.1	280.1	270.1	260.1	250.1	250.1
1,115.9	1,125.1	1,140.0	1,154.6	1,164.3	1,173.9	1,183.4	1,193.0	1,201.3	1,199.0
275.0	215.0	145.0	145.0	145.0	145.0	145.0	50.0	—	—
100.0	100.0	100.0	95.0	85.0	50.0	—	—	—	—
250.0	202.2	140.0	80.0	35.0	—	—	—	—	—
.7	.7	.7	.7	.6	.6	.6	.6	.6	.4
646.3	644.3	650.7	646.7	634.4	616.4	600.1	580.5	570.3	519.2
<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>	<u>\$1,824.1</u>	<u>\$1,772.2</u>	<u>\$1,718.6</u>

SYSTEM INPUT, SYSTEM OUTPUT

(Millions of kilowatt-hours)

SYSTEM INPUT	1973	1972	1971	1970	1969
System generation					
Hydro					
TVA plants	18,141.5	15,915.2	12,733.6	12,313.2	11,595.4
ALCOA plants	2,623.2	2,119.7	1,811.7	1,779.3	1,813.3
Cumberland plants	3,693.1	3,257.7	2,737.1	2,447.2	1,579.2
Total hydro	24,457.8	21,292.6	17,282.4	16,539.7	14,987.9
TVA steam plants	84,384.0	73,439.8	74,332.1	76,144.6	75,600.9
Gas turbine plants	253.9	71.1	18.3	—	—
Total net generation	109,095.7	94,803.5	91,632.8	92,684.3	90,588.8
Purchased	670.3	266.1	593.2	459.2	4.3
Interchange received	7,288.0	7,075.4	8,889.6	8,141.8	7,354.8
Total input	117,054.0	102,145.0	101,115.6	101,285.3	97,947.9
SYSTEM OUTPUT					
Sales					
Municipalities and cooperatives	63,822.0	57,820.3	55,534.6	53,692.9	49,008.2
Federal agencies	17,112.5	12,501.8	11,773.5	13,069.6	14,826.9
Industries	21,864.7	19,592.0	21,278.3	22,012.6	20,568.1
Electric utilities	92.1	539.7	1,407.3	1,273.7	1,300.5
Total outside sales	102,891.3	90,453.8	89,993.7	90,048.8	85,703.7
Interdivisional	581.3	636.6	653.9	673.5	670.2
Total sales	103,472.6	91,090.4	90,647.6	90,722.3	86,373.9
Returned to ALCOA*	1,820.3	1,857.6	1,846.7	1,847.5	1,756.2
Interchange delivered	8,202.7	5,998.1	5,049.4	5,379.7	6,808.5
Losses	3,558.4	3,198.9	3,571.9	3,335.8	3,009.3
Total output	117,054.0	102,145.0	101,115.6	101,285.3	97,947.9
Generating capacity, June 30 — kilowatts	21,892,480	19,880,420	19,828,380	19,422,480	18,239,280
Area peak load — kilowatts	18,888,000	16,664,000	16,745,000	16,797,000	15,017,000
Monthly billing demands, 12 months — megawatts**	197,137	178,179	176,610	174,030	163,861

*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

1968	1967	1966	1965	1964	1963	1962	1961	1960	1959
15,187.8	13,317.9	11,024.4	14,615.5	13,255.3	12,844.7	15,651.3	12,860.8	13,496.7	12,020.4
2,283.8	1,868.9	1,777.1	2,163.0	2,044.4	1,783.1	2,432.5	1,804.0	1,971.3	1,637.5
3,361.6	2,555.3	1,338.0	2,023.6	1,532.6	1,699.0	2,370.8	2,225.4	1,990.8	1,340.3
20,833.2	17,742.1	14,139.5	18,802.1	16,832.3	16,326.8	20,454.6	16,890.2	17,458.8	14,998.2
69,619.4	68,114.0	67,941.9	55,651.7	56,535.5	52,221.6	44,575.9	47,627.0	45,953.9	45,971.4
90,452.6	85,856.1	82,081.4	74,453.8	73,367.8	68,548.4	65,030.5	64,517.2	63,412.7	60,969.6
	79.7	23.7	—	—	—	—	—	—	3.7
5,156.2	5,141.0	2,676.9	2,765.4	3,041.2	2,643.8	2,225.5	2,155.2	2,077.9	1,611.8
<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>	<u>66,672.4</u>	<u>65,490.6</u>	<u>62,585.1</u>
44,575.0	40,705.9	37,783.5	32,161.3	27,848.1	25,530.4	22,815.2	21,174.1	20,044.5	17,716.2
18,801.8	20,226.3	20,638.2	20,391.9	25,361.8	25,211.4	25,891.3	28,209.1	28,284.0	28,012.3
19,213.4	18,589.8	16,765.1	15,773.7	14,077.4	12,228.4	10,950.7	10,077.4	10,364.3	9,518.0
1,462.1	1,768.1	1,150.1	769.8	441.8	181.5	65.2	49.1	48.0	1,389.7
84,052.3	81,290.1	76,336.9	69,096.7	67,729.1	63,151.7	59,722.4	59,509.7	58,740.8	56,636.2
667.8	796.6	768.4	764.1	720.7	666.2	598.8	591.5	601.8	527.3
84,720.1	82,086.7	77,105.3	69,860.8	68,449.8	63,817.9	60,321.2	60,101.2	59,342.6	57,163.5
1,863.5	1,688.1	1,694.7	1,638.5	1,865.7	2,049.4	1,962.7	1,913.4	1,890.1	1,965.8
6,204.9	4,614.3	3,430.6	3,490.4	3,839.0	3,441.2	3,278.2	2,915.2	2,494.7	1,642.0
2,820.3	2,687.7	2,551.4	2,229.5	2,254.5	1,883.7	1,693.9	1,742.6	1,763.2	1,813.8
<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>	<u>66,672.4</u>	<u>65,490.6</u>	<u>62,585.1</u>
18,202,090	18,111,860	17,149,500	14,675,615	13,353,615	12,711,215	11,998,660	11,884,660	11,373,460	10,997,210
15,266,000	14,634,000	14,263,000	12,801,000	12,218,000	12,124,000	10,889,000	10,322,000	9,641,000	9,375,000
160,932	157,203	145,557	133,691	126,046	119,112	110,882	108,416	105,363	

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>
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
1961	1,453,163	1,288,521	163,422	9	1,211
1960	1,413,136	1,252,920	159,087	9	1,120
1959	1,380,505	1,224,348	155,036	9	1,112

Electricity Sales — Millions of kilowatt-hours

<u>FISCAL YEAR</u>	<u>TOTAL</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL AND INDUSTRIAL</u>	<u>FEDERAL AGENCIES</u>	<u>OUTDOOR LIGHTING</u>
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
1961	58,559	11,631	17,964	28,801	163
1960	58,041	10,936	18,072	28,886	147
1959	54,670	9,501	16,494	28,540	135

Revenue from Electricity 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>
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
1961	343,232	113,748	114,340	112,085	3,059
1960	334,844	108,588	111,227	112,282	2,747
1959	314,170	98,065	103,346	110,203	2,556

Residential Statistics

FISCAL YEAR	AVERAGE ANNUAL USE	AVERAGE ANNUAL BILL	AVERAGE RATE
1973	15,080 kWh	\$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
1961	9,135	89.34	.98
1960	8,806	87.44	.99
1959	7,863	81.16	1.03

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 inter-divisional 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

FISCAL YEARS

Fuel Burned	1973	1972	1971	1970	1969
Steam plants					
Coal — tons	35,412,573*	31,893,192	32,458,437	32,231,605	30,889,528
Gas — MCF	10,976,396	18,712,421	17,279,633	16,148,405	19,317,397
Total fuel expense	\$267,648,942	\$213,031,932	\$195,598,895	\$157,478,759	\$143,425,848
Coal expense per ton	\$7.462	\$6.509	\$5.886	\$4.771	\$4.509
Gas expense per MCF	\$0.311	\$0.291	\$0.263	\$0.230	\$0.215
Gas turbine plant					
Oil — gallons	18,382,686	3,452,990	1,015,670	—	—
Gas — MCF	911,478	515,784	137,256	—	—
Total fuel expense	\$2,436,855	\$581,553	\$180,432	—	—
Oil expense per gallon	\$0.114	\$0.110	\$0.127	—	—
Gas expense per MCF	\$0.369	\$0.392	\$0.373	—	—
Fuel Ratios					
Steam plants					
Fuel expense per kWh generation — mills	3.351	2.910	2.631	2.068	1.897
Btu per kWh net generation	9,770	9,710	9,690	9,650	9,560
Cents per million Btu burned	34.29	29.96	27.14	21.44	19.84
Btu per pound of coal fired	10,840	10,820	10,796	11,106	11,356
Gas turbine plant					
Fuel expense per kWh net generation — mills	9.596	8.171	9.850	—	—
Btu per kWh net generation	13,830	14,297	15,600	—	—
Cents per million Btu burned	69.38	57.15	63.14	—	—
Coal Received					
Tons	40,155,580	34,021,932	38,121,872	30,955,067	28,864,249
Cost FOB plant	\$300,149,876	\$220,429,421	\$224,281,101	\$139,832,705	\$126,079,012
Cents per million Btu FOB plant	34.60	29.86	27.23	20.35	19.22

*Does not include 2,096,524 tons burned during initial operation of Cumberland Steam Plant.

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