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Senate Hearings

Before the Committee on Appropriations

Public Works for Water and Power Development and Atomic Energy Commission Appropriations

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H.R. 15155

93d CONGRESS, SECOND SESSION

Fiscal Year 1975

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Part 5 (Pages 3597–4049)

Appalachian Regional Commission
Federal Power Commission
Tennessee Valley Authority

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PUBLIC WORKS FOR WATER AND POWER DEVELOPMENT AND ATOMIC ENERGY COMMISSION APPROPRIATIONS FOR FISCAL YEAR 1975

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETY-THIRD CONGRESS

SECOND SESSION

ON

H.R. 15155

AN ACT MAKING APPROPRIATIONS FOR PUBLIC WORKS FOR WATER AND POWER DEVELOPMENT, INCLUDING THE CORPS OF ENGINEERS—CIVIL, THE BUREAU OF RECLAMATION, THE BONNEVILLE POWER ADMINISTRATION, AND OTHER POWER AGENCIES OF THE DEPARTMENT OF THE INTERIOR, THE APPALACHIAN REGIONAL DEVELOPMENT PROGRAMS, THE FEDERAL POWER COMMISSION, THE TENNESSEE VALLEY AUTHORITY, THE ATOMIC ENERGY COMMISSION, AND RELATED INDEPENDENT AGENCIES AND COMMISSIONS FOR THE FISCAL YEAR ENDING JUNE 30, 1975, AND FOR OTHER PURPOSES

Printed for the use of the Committee on Appropriations

PART 5 (Pages 3597–4049)

Appalachian Regional Commission
Federal Power Commission
Tennessee Valley Authority

U.S. GOVERNMENT PRINTING OFFICE

29-353 O WASHINGTON : 1974

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PUBLIC WORKS APPROPRIATIONS FOR FISCAL YEAR 1975

MONDAY, APRIL 8, 1974

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 2:30 p.m. in room S–126, the Capitol, Hon. John C. Stennis (chairman) presiding.

Present: Senator Stennis.

TENNESSEE VALLEY AUTHORITY

STATEMENT OF AUBREY J. WAGNER, CHAIRMAN

ACCOMPANIED BY:

DON McBRIDE, DIRECTOR
WILLIAM L. JENKINS, DIRECTOR
LYNN SEEBER, GENERAL MANAGER
JOHN S. BARRON, ASSISTANT TO THE GENERAL MANAGER, PLANNING AND BUDGET
LAWRENCE L. CALVERT, WASHINGTON REPRESENTATIVE
LEON EDWARD ELLIS, CHIEF, BUDGET STAFF
ROBERT H. MARQUIS, GENERAL COUNSEL
LEWIS B. NELSON, MANAGER OF AGRICULTURAL AND CHEMICAL DEVELOPMENT
JAMES E. WATSON, MANAGER OF POWER
JAMES L. WILLIAMS, JR., DIRECTOR OF PURCHASING

PREPARED STATEMENT OF SENATOR STENNIS

Senator STENNIS. All right gentlemen, we will get down to business. You already know that you have a special welcome from me, and we will take up today the request of two important agencies funded in the Public Works—AEC Appropriations Bill.

Beginning with the Tennessee Valley Authority, we are pleased and happy to welcome you to the subcommittee once again. Before proceeding now with Chairman Wagner's statement, I have a very brief statement that I want to make here regarding TVA and its work, but I will be quite brief on that, gentlemen.

CURRENT TVA PROGRAMS

Nearly 41 years ago, the Congress launched a unique demonstration in the seven States of the Tennessee Valley region. The creation

of the Tennessee Valley Authority took as its basic premise the idea that all resources should be regarded, not as separate and competing entities, but as totally interrelated parts of nature—of the total environment. Today, as this nation faces up to a crisis over energy supply, to a host of environmental and economic concerns, it is important to keep in mind this basic idea embodied in the TVA. For only in taking a broad, balanced approach to our problems can we hope to find workable and lasting solutions.

We welcome you gentlemen to pursue this thought as we discuss TVA's programs with you today. Indeed, since I was unable to be with you last year, it is something of a double delight to have this opportunity to discuss the broad range of activities you are carrying on, both in promoting the economic vitality of the region and in preserving the rich quality of the total environment.

For example, I note that the amount of commerce moving on the Tennessee waterway continues to set new records yearly and that the Yellow Creek port has moved to the point where it can soon be contributing jobs and increased incomes to the people of the region.

I see where your flood control operations over the past 2 years have prevented damages of some $630 million—more than twice the original cost of all TVA flood control facilities plus the cost of operating and maintaining these facilities over the years.

I note that your research and development work on new fertilizers is continuing. One of the critical problems facing our country today is the shortage of fertilizers and the effects of that shortage on American agricultural production. It is of utmost importance that full support be given to strengthening national fertilizer research and development to help overcome this problem.

Your budget proposal also shows that TVA is continuing to work with the people of the region in plans for new communities and the revitalization of existing ones. It shows that over 20,000 junk cars have been collected and disposed of in the Tennessee Valley alone under a program you began a few years ago. You report that thousands of young people each year are learning about nature first hand in the special education program you have in the Land Between the Lakes area. I have always emphasized the importance of getting our young people out to such areas as this one.

I also am told that you are continuing the largest power construction program in TVA's history and, at the same time, that you are spending around $150 million a year in meeting the need for pollution control on your powerplants.

I don't mean to belabor the point, but it seems to me that these are examples of the kind of balanced, across-the-board approach I mentioned a few moments ago. Over the years, the Tennessee Valley has become something of a national laboratory, identifying and demonstrating solutions to new and changing problems.

Now, at the time when the Nation is faced with growing problems of getting the fuels to meet its energy requirements, when the necessity of meeting both economic and environmental need is greater than ever before, we look to you gentlemen to keep that pioneering, problem-solving heritage of the Tennessee Valley on course. It is in this spirit that we give you a special welcome here today.

TVA AREA SERVED

Now, long before I ever came to this Senate, I knew about the TVA. I was judge there in east Mississippi, which included several counties of the TVA area and my home county is the southernmost county in the TVA area.

And, because of that, I get a good deal of flack from some other counties down there, you see, but we are very happy to be in the area and I really wish more counties of the State were in the area, but, at the same time, as you recall, we settled a lot of matters here when we settled the matter about financing and had an agreement about the area.

I have been pleased, of course, as a member of this subcommittee, to know more in detail about the work you are doing. I have, for a long time, known two of you personally and want to get better acquainted with your other members.

You are carrying on a lot of important experimental work. You are continuing the fertilizer experimental work, to a degree?

Mr. WAGNER. Yes, sir, very much.

Senator STENNIS. Yes; I remember a good deal when that first shovel of dirt turned down there was to make fertilizer.

Mr. WAGNER. Is that right?

Senator STENNIS. Yes. But, really, looking to the first one was ammunition, of course, World War I, but before they really made any headway, as you recall—I will state this for the record, you already know it, you gentlemen do, you went on into this fertilizer business and I remember the Henry Ford bid, too, for the whole works.

Mr. WAGNER. Yes, sir.

Senator STENNIS. We will be glad to hear you know, Chairman Wagner.

We have a lot of witnesses on this bill and I believe all of the others have put their statement in the record, and then for additional emphasis, they have outlined the points that they thought were more important.

Will it suit you all right to follow that procedure?

Mr. WAGNER. I will be happy to do that.

PREPARED STATEMENT

Senator STENNIS. I think it really a more effective way to testify. All right, without objection, all of the statement will go in the record.

[The statement follows:]

We welcome this opportunity to come before you again and to tell this Committee something of what TVA is doing and would like to do in the future.

The Tennessee Valley region demonstrates that people can improve their economic situation and their environment concurrently. No where else in the

Nation has the life style of so many people changed more in so short a time and with minimal adverse effect on the quality of the natural environment. Forty years ago the Tennessee Valley region was predominantly agricultural. Now it is predominantly manufacturing and commercial. For the first time on record, new industrial projects announced in 1973 for the Tennessee Valley region represented an estimated investment of approximately a billion dollars.

Other changes are evident. Green pastures and forests have largely replaced eroded fields. Fewer people are on farms and they are making better livings. The forest resource has grown in quality and quantity and the forests themselves remain, not destroyed by the forest industry they support. Floods have been controlled, and the developed river system carries commerce and generates power. Industrial development along the reservoir shoreline has spurred the regional economy. Investments in industrial facilities along the Tennessee River waterway also set a record in 1973, with $329 million invested in plants and terminal facilities. At the same time, the water in the Tennessee River is of higher quality than it was in 1933. Streams and lakes attract thousands of recreationists. A plentiful supply of electric energy has made a major contribution to better jobs and better living.

These and other factors have created a new spirit of progress and optimism in the region. The once serious outmigration to northern industrial centers has all but halted. There are jobs and good living for people in the Valley. There are reasons, both economic and environmental, for them to stay.

With all its change, the Valley still displays its essentially rural charm. Industrial growth has taken place primarily in the rural areas. Smaller towns and villages have greatly benefited from the location of industries in and near them. People in the Valley can to a very great extent live and work in the country without sacrificing the benefits of industrial wages or urban amenities.

TVA and Valley institutions and agencies are working together to build new communities and to upgrade existing small towns. Our 1975 budget program contains estimates for continued planning of a new community on the Tellico reservoir. Called Timberlake, this community is being planned to offer an integrated ideal living, working, and recreation environment in an area that is now fields and forests. Funds are also in the budget for continuation of plans for an interrelated system of existing communities and new rural village clusters on the lower end of the Elk River in Tennessee and Alabama. This will show a rational use of rural land, affording a full range of living conditions in a healthy environmental setting.

We will continue to be a leader in fertilizer development and in cooperative programs of fertilizer introduction and use. Fertilizer is the key to food and fiber abundance in a crowded, hungry world. At TVA's National Fertilizer Development Center at Muscle Shoals and at state university agricultural experiment stations and on farms across the Nation, we are working to discover and demonstrate tomorrow's fertilizer, the kind that will improve the efficiency of farm production and will pose no threat to the environment. Urea ammonium phosphate and sulfur-coated urea are such fertilizers, and they are about ready for widespread introduction and demonstration.

As a regional resource development agency, TVA is interested in a quality environment. Our task is to see in its totality what one of my first predecessors on the TVA Board, Dr. Harcourt Morgan, called "the seamless web." To use a modern vernacular, TVA has the job of "getting it all together." We are concerned for water and air, fish and fowl, stream and lake, trees and fields, and energy and the economy. But primarily we are concerned with the people in the region and their total environment. We want a quality environment and a prosperous people. We hope that environmental legislation will be interperted in a balanced manner which will promote rather than delay the achievement of this regional goal.

To reach this goal will require dependable funding. This doesn't mean unlimited spending, but rather the continued availability of financing at reasonable levels so that projects once undertaken can proceed on an efficient schedule.

APPROPRIATION REQUEST

Our appropriation request for fiscal year 1975 is $74,600,000. This is one of the larger requests in recent years in terms of new money, but total obligations in 1975 will not be significantly above what is now estimated for the current budget year. For the past few years we have brought forward sizable unobligated balances, accumulated as a result of construction delays. We expect to use some $70,200,000 in 1974. And, if inflation is taken into account, the 1975 request will buy about the same program as the 1974 budget.

The 1975 budget program does not provide for any new construction starts financed from appropriated funds. Our primary emphasis in 1975 and in the years immediately following will be to push to completion those projects that have been under way a long time.

We have some overdue projects now under construction. Completing them expeditiously will save money in a time of rising construction costs. It will give effect to project benefits too long deferred. It will enable TVA to meet its obligations to state and local agencies and bodies who are anxious to cooperate with us and who have been and are waiting for us to do our part. They are ready to or have already undertaken their share of these regional cooperative projects.

I would like to tell you a little about some of these projects.

Tellico dam and reservoir, a multipurpose project on a principal tributary of the Tennessee River in east Tennessee, has been under construction since 1967. The dam was then scheduled for closure in April 1970. A suit involving the National Environmental Policy Act has kept the Tellico project a subject of litigation for several years. Last year at the time we appeared before this Subcommittee, construction was enjoined. The injunction has been lifted and a District Federal Court and an Appeals Court have found in favor of TVA. Given the level of funding we project for 1975 and 1976, we expect to close Tellico Dam in the winter of 1976–1977, late by almost seven years. When completed the Tellico project will add an average of 200 million kWh of clean electric energy annually to TVA's output. It will add 126,000 acre-feet of flood storage to the system, affording much needed flood protection to Chattanooga, Tennessee, and extend navigation some 30 miles up the Little Tennessee River, opening an underused area to industrial, residential, and recreational development.

Construction of the Duck River project began in June 1972. The project will provide 340,000 acre-feet of flood control storage, a reliable water supply on which future economic development largely depends, and a variety of recretaional and economic opportunities. The people of the area are organized and are performing the non-Federal share of the cooperative project. They have pledged to repay $16.2 million of the projects cost attributable to area water supply benefits and have already paid into a trust fund some $436,000 to amortize that indebtedness. They are obligated to work with the private sector to obtain investments of $50 million in industrial and recreational developments, improved governmental services, and similar activities which will assure the realization of project benefits. The project is also the subject of litigation under NEPA. A Federal Court enjoined further construction of the project as of March 30, 1974, because of certain inadequacies in TVA's environmental statement, but on April 1 stayed the injunction until May 4 to give TVA an opportunity to comply fully with NEPA.

Construction of the Bear Creek multipurpose water control system in northwest Alabama has been under way since 1967. One dam of four has been put in operation and channel improvement has been completed, affording some benefit for flood control and recreation. Our present schedule projects completion of the whole job by the summer of 1978. The project will provide flood control, water supply, recreational opportunities, and area economic benefits.

Our appropriation-financed operating programs will require $35,200,000 in 1975. We will continue to push forward in our regional demonstration programs to help local people and agencies make maximum use of the region's resources. Our goal now as it has been for forty years is to instill in the region the concept of "a quality life in a quality environment."

TVA POWER PROGRAM

Although the TVA power program is not financed by appropriations, I would like to discuss it briefly in the light of the present national and world energy situation.

On balance, TVA as a producer of electric power is in a better situation to meet the problems of a deep and pervasive energy problem than are many utilities in the United States. About 80 percent of our system production comes from coal and about 20 percent from hydroelectric plants. We have only about a million kilowatts of capacity in oil-fired turbine units and this is for peaking purposes. Consequently, oil and natural gas shortages and prices have not directly and immediately affected our system's dependability or operating cost. We do have some real problems with coal.

Half of TVA's total system operating cost at present is represented by the cost of coal. Despite efforts on our part to encourage restraint, we have seen the price of coal advance by jolting increments, urged upward by a number of factors, including general inflationary pressures and increasing demand.

Coal burned in TVA steam plants which cost an average of $4.51 a ton in 1969 now averages about $9.00 a ton. As we use up deliveries under old contracts the rate per ton goes up with the rising price of new purchases. We understand that some of our neighboring utilities have contracted for low sulphur coal at costs as high as $30.00 a ton. Just last week TVA paid more than $13.00 a ton for replacement coal, which means that before long the average rate per ton burned will increase. Expressed another way, each dollar increase in coal price adds over $40 million a year to TVA's annual coal bill and to the consumer's electric bill.

Beyond the matter of price but not unrelated is the matter of supply. Getting new contracts to replace those expiring is difficult. Very few new mines are being opened at the present, but there are many new customers. Some former users of natural gas and oil are turning to coal. Last year national coal production dropped slightly. Demand grew by about 10 percent. Demand has outrun production and the result is showing up in higher prices for new purchases.

Other costs are rising. Increasing costs of materials, equipment, and wages are reflected in greater project costs. Despite rate increases, the unit price of electricity to the consumer is still low in the Valley, averaging about 1½ cents a kilowatt hour in 1974. Ten years ago the rate averaged a little less than a cent. The current average rate per kWh is about the same as it was 20 years ago. I know of no other consumer item that has done so well in the face of inflationary pressures.

Total cost of environmental quality controls for projects now in operation or under construction can hardly be measured at this time. Under some interpretations of the Clean Air Act, SO_2 control could cost a billion dollars for a system that might not even work. TVA has a much less expensive way to meet ambient air quality standards which we believe is a better solution than chemical scrubbers.

Basic to the solution of energy and environmental problems is a vigorous program of research and development. TVA and the Department of Interior's Office of Coal Research are cooperating in a project to produce a clean fuel gas from coal for producing electric power. We would design, install, and test two or more large coal gasifiers with desulfurization systems at a TVA power plant in an effort to solve engineering and environmental problems associated with industrial use of high-sulfur coals.

We will continue to investigate the possibilities of using municipal wastes as a fuel for large steam-electric plants, using TVA's Allen Steam Plant at Memphis for prototype tests.

Research and development in support of the liquid metal fast breeder reactor will continue. This is a joint project, involving the AEC, the electric utility industry, and TVA as a part of that industrial group.

Despite the problems which confront the entire energy industry, TVA will continue to meet the power demand of the region and we will do so efficiently.

This completes my statement but we will be glad to present our 1975 budget program in such detail as the Committee may wish.

JUSTIFICATION

Senator STENNIS. Your fiscal year 1975 budget justification will be placed in the record at this point.

[The justification follows:]

TENNESSEE VALLEY AUTHORITY

PREFACE

The Tennessee Valley Authority is a corporation wholly owned by the Federal Government. It is an independent agency under a Board of Directors responsible to the President and the Congress. It was created by the Congress in 1933 for the unified conservation and development of the resources of the Tennessee Valley. TVA is charged with the responsibility for developing the Tennessee River and for providing a low-cost supply of electric power to the Tennessee Valley region; for chemical research, and the introduction of experimental fertilizers useful in agriculture; and for aiding, in the national interest, the comprehensive resource development and economic growth of the Tennessee Valley region in cooperation with the states and their subdivisions and agencies.

Summaries of the budget program described on the following pages are as follows:

	1973 Actual	1974 Estimate	1975 Estimate
Expenditures (accrued):			
Appropriations	$58,215,880	$72,013,959	$74,847,000
Power proceeds and borrowings	1,094,306,321	1,322,582,000	1,526,626,000
Nonpower proceeds	30,931,501	36,871,000	38,478,000
Total expenditures	1,183,453,702	1,431,466,959	1,639,951,000
Payments to the Treasury	73,813,128	83,434,211	90,020,000
Appropriations (budget authority)	64,550,000	45,676,000	74,600,000
Income (accrued):			
Power proceeds	776,937,156	991,001,000	1,152,283,000
Nonpower proceeds	32,033,929	36,368,000	38,339,000
Total income	808,971,085	1,027,369,000	1,190,622,000
Proceeds from borrowings	400,000,000	420,000,000	480,000,000

Summary of Budget Financed from Appropriations
(For fiscal years ending June 30, 1973, 1974, and 1975)
Obligation Basis

CAPITAL OUTLAY	1973 actual		1974 estimate		1975 estimate	
REGIONAL DEVELOPMENT PROGRAM						
Water resources development						
Multipurpose facilities:						
Duck River project:						
Normandy dam and reservoir	$8,906,483		$8,494,000		$9,388,000	
Columbia dam and reservoir	1,811,913		1,913,000		3,612,000	
Total Duck River project	10,718,396		10,407,000		13,000,000	
Bear Creek multipurpose water control system	1,431,918		3,368,000		2,945,000	
Tellico dam and reservoir	2,919,003		7,531,000		16,900,000	
Tims Ford dam and reservoir	1,250,711		-		-	
Additions and improvements at multipurpose dams	524,414		614,000		440,000	
Navigation facilities:						
Railway bridge alterations at Decatur, Alabama	-		249,000		275,000	
Yellow Creek Port project	3,608,151		1,199,000		-	
Additions and improvements at navigation facilities	482,422		396,000		203,000	
Flood control facilities	1,096,197		662,000		400,000	
Recreation facilities	320,407		594,000		87,000	
Investigations for future facilities	96,336		52,000		150,000	
Total water resources development capital outlay		$22,447,955		$25,072,000		$34,400,000
Land Between The Lakes		1,848,112		2,497,000		2,041,000
Total regional development capital outlay		24,296,067		27,569,000		36,441,000
FERTILIZER AND MUNITIONS DEVELOPMENT						
Chemical facilities		3,155,577		4,262,000		2,959,000
GENERAL SERVICE ACTIVITIES						
Reno Bridge–Great Falls reservoir	-		2,200,000		300,000	
General facilities	-934,056	-934,056	369,959	2,569,959	-	300,000
Total capital outlay		26,517,588		34,400,959		39,700,000
EXPENSES						
REGIONAL DEVELOPMENT PROGRAM						
Water resources development						
Navigation operations	1,008,143		1,057,000		1,123,000	
Flood control operations	955,502		955,000		954,000	
Regional water quality management	1,529,151		1,456,000		1,355,000	
Recreation development	694,580		692,000		763,000	
Fisheries and waterfowl resources development	483,081		553,000		590,000	
Preliminary surveys and engineering	460,775		400,000		309,000	
Multipurpose reservoir operations	6,203,279		7,144,000		6,481,000	
Total water resources development expenses		11,334,511		12,257,000		11,575,000

Summary of Budget Financed from Appropriations (Continued)
(For fiscal years ending June 30, 1973, 1974, and 1975)
Obligation Basis

EXPENSES (Continued)	1973 actual		1974 estimate		1975 estimate	
General resources development						
Agricultural projects	1,495,181		1,650,000		1,738,000	
Forest and wild land resources development	1,355,308		1,513,000		1,805,000	
Minerals resources projects	274,009		275,000		275,000	
Environmental quality projects	430,333		418,000		418,000	
Development of tributary areas	1,530,038		1,607,000		1,669,000	
Demonstrations in education and manpower development	803,143		801,000		801,000	
Regional development planning	476,132		560,000		592,000	
Townlift community improvement	723,374		735,000		747,000	
Interagency health service demonstrations	-		104,000		155,000	
Multipurpose reservoir operations	124,922		139,000		122,000	
Total general resources development expenses		7,212,440		7,802,000		8,322,000
Land Between The Lakes						
Land Between The Lakes operations		2,097,200		2,292,000		2,322,000
Total regional development expenses		20,644,151		22,351,000		22,219,000
FERTILIZER AND MUNITIONS DEVELOPMENT						
Fertilizer research and development	5,486,534		5,761,000		5,839,000	
Fertilizer introduction	7,975,483		7,025,000		6,587,000	
Total fertilizer expenses		13,462,017		12,786,000		12,426,000
GENERAL SERVICE ACTIVITIES						
Valley mapping and remote sensing	456,256		415,000		395,000	
Other expenses	51,761		148,000		160,000	
Total general service expenses		508,017		563,000		555,000
Total expenses		34,614,185		35,700,000		35,200,000
INVENTORIES AND PROPERTY TRANSFERS						
GENERAL SERVICE ACTIVITIES						
General inventories	31,009		-		-	
Property transfers	-21,140		-		-	
Total inventories and property transfers		9,869		-		-
Total budget financed from appropriations		61,141,642		70,100,959		74,900,000
FINANCING						
Appropriations		64,550,000		45,676,000		74,600,000
Balance brought forward		21,316,601		24,724,959		300,000
Balance carried forward		-24,724,959		-300,000		-
Total financing		61,141,642		70,100,959		74,900,000

Summary of Budget Financed from Power Proceeds and Borrowings
(For fiscal years ending June 30, 1973, 1974, and 1975)
Accrued Expenditure Basis

CAPITAL OUTLAY	1973 actual	1974 estimate	1975 estimate
POWER SUPPLY AND USE			
Cumberland Steam Plant units 1-2	$48,761,398	$17,876,000	-
Browns Ferry Nuclear Plant units 1-3	95,271,105	93,677,000	$54,019,000
Sequoyah Nuclear Plant units 1-2	121,732,778	96,072,000	82,673,000
Raccoon Mountain pumped-storage project	33,670,761	58,234,000	41,013,000
Watts Bar Nuclear Plant units 1-2	29,341,645	93,879,000	195,808,000
Bellefonte Nuclear Plant units 1-2	7,614,477	22,374,000	80,040,000
Hartsville Nuclear Plant units 1-4	697,039	3,554,000	8,206,000
Nuclear plants 7 and 8	-	152,000	1,105,000
Allen Gas Turbine Plant units 1-16	39,928	93,000	-
Allen Gas Turbine Plant units 17-20	412,008	544,000	-
Colbert Gas Turbine Plant units 1-8	978,970	1,126,000	-
Transmission system facilities	68,727,422	73,668,000	72,400,000
Land and land rights	9,648,437	19,678,000	21,696,000
Additions and improvements at power facilities	29,717,137	65,177,000	109,936,000
Nuclear fuel	29,229,596	30,213,000	43,740,000
Investigations for future power facilities	1,882,008	834,000	825,000
Total power supply and use	$477,724,709	$577,151,000	$711,461,000
GENERAL SERVICE ACTIVITIES			
General facilities	4,961,156	5,751,000	3,317,000
Total capital outlay	482,685,865	582,902,000	714,778,000

(Continued)

Summary of Budget Financed from Power Proceeds and Borrowings (Continued)
(For fiscal years ending June 30, 1973, 1974, and 1975)
Accrued Expenditure Basis

EXPENSES	1973 actual		1974 estimate		1975 estimate	
POWER SUPPLY AND USE						
Power operations	573,340,413		740,341,000		802,719,000	
Allocation of multipurpose reservoir operations	3,364,326		3,971,000		3,516,000	
Total expenses		576,704,739		744,312,000		806,235,000
INVENTORIES AND DEFERRED ITEMS						
POWER SUPPLY AND USE						
Power inventories	31,448,678		-8,299,000		3,670,000	
Deferred charges	3,397,955		3,601,000		1,913,000	
Deferred credits	69,084		66,000		30,000	
Total inventories and deferred items		34,915,717		-4,632,000		5,613,000
Total budget financed from power proceeds and borrowings		1,094,306,321		1,322,582,000		1,526,626,000
FINANCING						
Balance brought forward		-26,249,833		-17,403,449		-12,406,690
Proceeds from borrowings		400,000,000		420,000,000		480,000,000
Current proceeds:						
Power operations	772,593,813		988,370,000		1,150,183,000	
Sale of retired plant	664,758		1,183,000		1,375,000	
Miscellaneous receipts	3,678,585		1,448,000		725,000	
Total current proceeds		776,937,156		991,001,000		1,152,283,000
Payments to Treasury:						
Reduction of appropriation investment	-20,000,000		-20,000,000		-20,000,000	
Dividend (return on appropriation investment)	-53,784,451		-63,422,241		-70,000,000	
Total payments to Treasury		-73,784,451		-83,422,241		-90,000,000
Balance carried forward		17,403,449		12,406,690		-3,250,310
Total financing		1,094,306,321		1,322,582,000		1,526,626,000

Summary of Budget Financed from Nonpower Proceeds
(For fiscal years ending June 30, 1973, 1974, and 1975)
Accrued Expenditure Basis

EXPENSES	1973 actual	1974 estimate	1975 estimate
REGIONAL DEVELOPMENT PROGRAM			
Water resources development			
Multipurpose reservoir operations	$325,001	$278,000	$258,000
General resources development			
Agricultural projects	89,665	153,000	153,000
Total regional development expenses	414,666	431,000	411,000
FERTILIZER AND MUNITIONS DEVELOPMENT			
Fertilizer introduction	20,424,357	25,934,000	30,294,000
GENERAL SERVICE ACTIVITIES			
Reimbursable services	10,092,478	10,506,000	7,773,000
Total budget financed from nonpower proceeds	30,931,501	36,871,000	38,478,000
FINANCING			
Balance brought forward:			
Continuing fund	$1,000,000	$1,000,000	$1,000,000
Other	-558,243	515,508	538
Total brought forward	441,757	1,515,508	1,000,538
Current proceeds:			
Multipurpose reservoir operations	325,001	278,000	258,000
General resources development	89,665	153,000	153,000
Land Between The Lakes operations	193,762	260,000	327,000
Fertilizer and munitions development	19,956,880	24,637,000	29,364,000
Reimbursable services	10,092,478	10,506,000	7,773,000
Sale of retired plant and miscellaneous receipts	1,376,143	534,000	464,000
Total current proceeds	32,033,929	36,368,000	38,339,000
Payments to Treasury	-28,677	-11,970	-20,000
Balance carried forward:			
Continuing fund	-1,000,000	-1,000,000	-1,000,000
Other	-515,508	-538	158,462
Total carried forward	-1,515,508	-1,000,538	-841,538
Total financing	30,931,501	36,871,000	38,478,000

WATER RESOURCES DEVELOPMENT
(CAPITAL OUTLAY)

Capital outlays for water resources development in fiscal year 1975 will for the most part be applied to continuation of work on multipurpose projects begun in prior years and for which funds have been previously appropriated. Final statements describing and assessing the environmental impacts of these continuing projects have been filed with the Council on Environmental Quality as required by NEPA and have been sent to the Public Works Subcommittees of the Appropriations Committees of both the Senate and the House, the Office of Management and Budget, and a number of other agencies. There have been no changes in the nature or scope of these projects subsequent to the preparation of the final environmental statements.

DUCK RIVER PROJECT

1973 actual	$10,718,396
1974 estimate	10,407,000
1975 estimate	13,000,000

Location and Description

The Duck River project will control about 1,181 square miles of drainage area in Maury, Marshall, Bedford, and Coffee counties in Tennessee. The project consists of two dam and reservoir units. The Normandy dam site is about eight miles north of Tullahoma, Tennessee, on the Coffee-Bedford county line. The Columbia dam site is about two miles east of Columbia, Tennessee, in Maury County.

Benefit Cost Ratio—1.3:1

Summarized Financial Data

	Normandy	Columbia
Actual to June 30, 1973	$10,660,000	$2,575,000
Estimate for fiscal year 1974	8,494,000	1,913,000
Estimate for fiscal year 1975	9,388,000	3,612,000
Estimate to complete	6,458,000	45,400,000
Estimated Federal cost	35,000,000	53,500,000

Project Status and Plans for 1975

Planning for the project was completed in September 1968. The process of assessment and review of environmental impacts as required by the National Environmental Policy Act was completed with the publication of the final environmental impact statement in April 1972. Minor preliminary land acquisition work was done in 1971. In 1972, engineering and design began, land acquisition was resumed, and a construction start was made on Normandy following completion of the review of environmental impacts. Land acquisition and engineering and design continued for both projects in 1973 and construction was accelerated at Normandy. In 1974, activity at Normandy continued and construction began at Columbia. The 1975 estimate of $13,000,000 provides for continued construction at both sites with funds applied as follows:

	Normandy	Columbia
Continuation of land acquisition	$1,700,000	$1,100,000
Construction of highway, bridge, and other relocations: continuation at Normandy; begin at Columbia	4,000,000	600,000
Continue dam and spillway construction	1,800,000	700,000
Begin miscellaneous structures and improvements at Normandy	900,000	-
Construction plant, equipment, and inventories	-200,000	150,000
Construction supervision and services	912,000	309,000
General engineering and design	400,000	500,000
General administration	76,000	53,000
Changes in unpaid undelivered orders	-200,000	200,000
Total obligations	9,388,000	3,612,000

Purpose and Scope

The Duck River project is a multipurpose water control system for development of the Upper Duck River area in middle Tennessee. The system is a central element in a coordinated plan for the unified development and utilization of the resources in this tributary area. It will control floods in urban, agricultural, and potential industrial areas; improve the quality and quantity of water available for municipal and industrial use; create a broad range of new recreation opportunities; enhance land values; and provide more productive employment of the local labor force in construction of the project and in water-using industries it will make possible.

29-353 O - 74 - pt. 5 - 2

The two reservoirs will provide about 340,000 acre-feet of storage volume for flood control. Floods equal to the record flood of 1948 at Columbia, Tennessee, will be reduced to essentially a nondamaging stage. Shelbyville and Centerville, Tennessee, will also receive flood control benefits. Flood damages will be significantly reduced for almost 10,000 acres of agricultural and potential industrial land downstream from the dams and for roads and bridges in the area. The reservoir storage capacity also will assist in controlling floods along the Tennessee River downstream from Kentucky Dam and along the lower Ohio and Mississippi rivers.

The water control system will furnish a reliable source of water supply for present and future municipal and industrial requirements in the four counties of the Upper Duck River basin. The availability of raw-water for the unified water grid distribution system now being developed in these counties will be greatly improved. Storage releases will supplement streamflow so that the residual load of municipal and industrial waterborne wastes after secondary treatment will not exceed the assimilative capacity of the river.

The reservoirs will provide excellent opportunities for a variety of water-oriented recreation activities now deficient in the watershed. They will be readily accessible from several regional population centers and will be only a day's travel time from metropolitan areas of the Midwest. Both reservoirs will offer attractive boat and bank fishing, and reaches of the river immediately downstream from the dam sites could also be developed for fishing.

Approximately 18,000 acres of project land will surround the two reservoirs. The project will enhance the value of approximately 9,000 acres of this land and some 1,500 additional acres of adjoining land remaining in private ownership.

Construction of the Duck River project and its operation and maintenance will aid in economic development of the Upper Duck River area by providing additional higher paying jobs in the subemployed group. A long step toward permanent relief of the subemployment problem in the region can be provided by the creation of more jobs in industrial and related trades and services enterprises. Significant industrial growth will occur on sites located downstream from the dams, which will be benefited by an assured water supply of high quality and by increased flood protection.

Local Cooperation

Leaders in the Upper Duck River area have been working with TVA for several years to identify and correct some of the basic problems impeding economic progress. The first step was taken in 1964 with formation of a citizen organization, the Upper Duck River Development Association, made up of some 1,700 people. Next, in March 1965, the Tennessee Legislature created the Tennessee Upper Duck River Development Agency, an organization with broad legal powers and one with official recognition in the governmental structure of the area, and gave it broad responsibilities for formulating and carrying out plans

and programs for developing the resources of the area. The Tennessee State Planning Commission in 1966 designated the four Upper Duck River counties as a planning region and created the Upper Duck River Regional Planning Commission as an arm of the development effort.

Thus, three different organizations, each performing a separate but vital task, have been created to plan, guide, and support the overall economic development effort in the Upper Duck River valley. Effective coordination of effort is achieved through a deliberate overlapping of membership on the boards of directors of the three organizations and through the use of a common staff.

The five principal cities of the Upper Duck River area are already demonstrating their ability and willingness to cooperate in projects to improve the development opportunities of their region. They are participating in the construction of a water grid distribution system which, when completed, will tie the five municipal water systems with a four-county network of distribution lines to supply almost every suburban and rural community, along with a number of industrial sites. Upon completion of TVA's Duck River project, supplies to the area water distribution system will be greatly strengthened.

The local participation contract between the Upper Duck River Development Agency and TVA was executed in July 1971. Under its terms the Agency agreed to:

1. Promote the implementation of the pioneering developmental planning concept to guide and optimize future development of the area.

2. Obtain the investment of $50,000,000 in area development projects.

3. Assist in the planning, development, and utilization of the project shorelands.

4. Repay the $16,200,000 project costs attributed to the water supply benefits.

The five municipal water systems of the Upper Duck area subsequently executed a contract with the Agency to underwrite the $16,200,000 obligation through additions to their rate schedules and are presently making payments into an agency managed trust fund in accordance with contract provisions.

Project Information

Physical Data	Normandy	Columbia
Drainage area, square miles	195	1,181
Reservoirs:		
Normal maximum pool elevation	875	630
Length, miles[a]	17	54
Length of shoreline, miles[a]	72	236
Area, acres[a]	3,230	12,600
Volume, acre-feet[a]	117,000	294,000
Controlled flood storage, acre-feet	62,400	281,000
Dams:		
Type	Earthfill and concrete	Earthfill
Length, feet	2,710	2,075
Height above foundation, feet	110	105
Spillways:		
Type	Concrete ogee	Concrete chute
Length, feet	94.5[b]	250
Gates	Radial(2)	Radial(5)
Land acquisition:		
Agricultural and rural residential lands with improvements consisting of farm buildings and residences	9,300 acres	31,900 acres
Relocations and protections:		
Highways	$4,300,000[c]	$8,500,000[d]
Highway bridges	2,400,000(4)	5,200,000(10)
Utilities, cemeteries, and other structures	1,000,000	3,900,000
Total	7,700,000	17,600,000

a. At normal maximum pool.
b. Spillway length is included in length of dam.
c. Approximately 17 miles.
d. Approximately 36 miles.

3613

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
NORMANDY	June 30, 1974	June 30, 1975	
Total project	50	80	June 1976
Land acquisition	60	95	July 1975
Reservoir	30	75	December 1975
Dam	65	85	January 1976
COLUMBIA			
Total project	3	10	June 1979
Land acquisition	5	15	June 1978
Reservoir	-	2	December 1978
Dam	2	10	January 1979

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost
NORMANDY					
Land acquisition	$2,094	$1,700	$1,700	$206	$5,700
Reservoir adjustments and clearing	926	1,800	4,000	1,674	8,400
Dam and spillway	2,461	5,100	1,800	1,239	10,600
Public-use facilities and miscellaneous structures and improvements	-	-	900	2,400	3,300
Construction plant, equipment, and inventories	577	-	-200	-377	-
Construction supervision, general engineering and design, and general administration	2,785	1,511	1,388	1,316	7,000
Total expenditures	8,843	10,111	9,588	6,458	35,000
Changes in unpaid undelivered orders	1,817	-1,617	-200	-	-
Total obligations	10,660	8,494	9,388	6,458	35,000
COLUMBIA					
Land acquisition	1,002	600	1,100	10,198	12,900
Reservoir adjustments and clearing	67	100	600	19,833	20,600
Dam and spillway	-	300	700	8,200	9,200
Public-use facilities and miscellaneous structures and improvements	-	300	-	2,700	3,000
Construction plant, equipment, and inventories	-	150	150	-300	-
Construction supervision, general engineering and design, and general administration	1,320	649	862	4,969	7,800
Total expenditures	2,389	2,099	3,412	45,600	53,500
Changes in unpaid undelivered orders	186	-186	200	-200	-
Total obligations	2,575	1,913	3,612	45,400	53,500

Cost Estimate. The estimated total cost of $88,500,000 for the Duck River project includes an increase of $10,000,000 over the previous estimate. The increase applies to the Normandy estimate and reflects (1) land and construction price escalation, extended supervision and overheads, and other costs associated with a two-year delay in the construction schedule and (2) project scope and design changes including a change in the type of dam and spillway, changes in highway relocation plans, and foundation problems encountered during construction. Closure of the Normandy Dam has been rescheduled to January 1976. The Columbia estimate remains unchanged pending development of a revised construction schedule.

BEAR CREEK MULTIPURPOSE WATER CONTROL SYSTEM

1973 actual	$1,431,918
1974 estimate	3,368,000
1975 estimate	2,945,000

Location and Description

Construction of the Bear Creek water control system began in 1967. This is a multipurpose project consisting of four dams—Bear Creek, Cedar Creek, Little Bear Creek, and Upper Bear Creek—and nine miles of floodway on Bear Creek. Bear Creek begins in northwestern Alabama and flows through part of northeastern Mississippi before emptying into Pickwick reservoir at Tennessee River mile 244.7.

Benefit Cost Ratio—1.2:1

Summarized Financial Data

Actual to June 30, 1973 (planning, design, and construction)	$11,532,000
Estimate for fiscal year 1974 (design and construction)	3,368,000
Estimate for fiscal year 1975 (design and construction)	2,945,000
Estimate to complete (design and construction)	24,155,000
Estimated Federal cost	42,000,000
Estimated value of non-Federal commitments	11,700,000

Project Status and Plans for 1975

Bear Creek Dam was closed in March 1969, channel improvements were substantially completed in 1973, and construction of Little Bear Dam was begun in 1973. The effort in 1975 will be directed toward completion of Little Bear Dam, with application of the 1975 estimate of $2,945,000 as follows:

Completion of reservoir adjustments and clearing, public-use facilities, general yardwork, and roadway on dam	$900,000
Completion of spillway, sluiceway, and earthfill dam	1,500,000
Construction plant equipment and inventories	100,000
Construction supervision and services	349,000
General engineering and design	100,000
General administration	48,000
Changes in unpaid undelivered orders	-52,000
Total	2,945,000

Purpose and Scope

The project is designed to provide flood relief for agricultural lands and a measure of control of Bear Creek's contribution to lower Tennessee River floods. It will afford increased industrial and municipal water supplies and will provide new shoreland resources which will significantly affect future development of the Bear Creek area. With the closure of the Bear Creek unit and the completion of the floodway, substantial flood damage was averted during last spring's unusually intense rainfalls. New recreation facilities have been constructed and are receiving heavy use. The project is a key element in a cooperative comprehensive economic development program for the entire Bear Creek region, which has generated significant industrial and economic growth. Dozens of new manufacturing plants have not only provided new employment but placed a new level of demand on the region's water supply systems. To meet these demands a regional water grid system which will use the Upper Bear Creek unit as a water source was designated, funded jointly by local governments and EDA, and will be under construction soon.

The scope of state and local participation has been agreed to and includes major assistance by the state in highway relocations in the reservoir areas; local assumption of selected project responsibilities such as floodway maintenance; operation and management of shoreline lands; and commitments for long-range area development activities.

Physical Data

Channel improvements:

Bear Creek channel–actual length improved	18 miles
Floodway, length–actual length of floodway constructed	9 miles

	Bear Creek	Cedar Creek	Little Bear Creek	Upper Bear Creek
Reservoirs:				
Drainage area–square miles	232	179	61	113
Normal summer level–elevation	576	580	620	797
Area–acres	670	4,200	1,560	1,850
Shoreline length–miles	39	64	38	100
Minimum pool–elevation	565	560	603	787
Dams (earth embankment with concrete spillway):				
Length–feet (including spillway)	1,385	3,160	2,425	1,585
Maximum height–feet (above foundation)	84	96	94	87

Land acquisition:	
Agricultural and rural residential lands with improvements consisting of farm buildings and residences	24,100 acres
Relocations and protections:	
Highways and bridges	$650,000[a]
Utilities, cemeteries, and other structures	2,000,000
Total	2,650,000

a. Construction of major relocations is to be performed and financed by the State of Alabama. This estimate provides for TVA participation in engineering and design for State construction of relocations and design and construction of minor tertiary road relocations.

Status of Construction

	Estimated Percent Complete		Completion Date
	June 30, 1974	June 30, 1975	
Total project	35	45	June 1978
Land acquisition	30	30	July 1977
Reservoirs	15	20	December 1977
Dams	35	45	January 1978
Floodway	100	100	October 1973

Summary of Construction Program

In Thousands

	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost
Land and land acquisition	$1,948	$100	-	$6,652	$8,700
Reservoir adjustments and clearing	688	400	$600	6,012	7,700
Dams, spillways, and sluices	2,669	1,600	1,500	7,531	13,300
Floodway	1,558	142	-	-	1,700
Other structures and improvements	652	100	300	848	1,900
Construction plant, equipment, and inventories	92	100	100	-292	-
Construction supervision and services, general engineering and design, and general administration	3,888	901	497	3,414	8,700
Total expenditures	11,495	3,343	2,997	24,165	42,000
Changes in unpaid undelivered orders	37	25	-52	-10	-
Total obligations	11,532	3,368	2,945	24,155	42,000

Cost Estimate. The estimated project cost of $42,000,000 reflects an increase of $8,000,000 over that presented in the Budget Program for fiscal year 1974. The previous cost estimate of $34,000,000 was first reported in the Budget Program of 1971. The increase of $8,000,000 provides for (1) land and construction price escalation, extended supervision and overheads, and other costs associated with a two-year prolongment of the construction schedule ($2.2 million); (2) project scope changes, including additional public-use facilities ($1.5 million); and (3) revision of estimates for features of the three remaining dams to reflect current design and construction quantity information and experience encountered in the construction of Bear Creek Dam ($4.3 million).

TELLICO DAM AND RESERVOIR

1973 actual	$2,919,003
1974 estimate	7,531,000
1975 estimate	16,900,000

Location and Description

Tellico dam and reservoir, under construction since 1967, is a multipurpose water resources and regional economic development project. The Tellico dam site is in Loudon County, Tennessee, near Lenoir City, at mile 0.3 on the Little Tennessee River. Fort Loudoun Dam, on the Tennessee River, is immediately upstream of the confluence of the Tennessee and Little Tennessee rivers. The Tellico Dam will create a reservoir extending upstream approximately 33 miles and connected by means of a short canal with the Fort Loudoun reservoir. Because of this canal, the navigation and power features of the project are attained without construction of a navigation lock or powerhouse, and a valuable flexibility is achieved in TVA flood control operations.

Benefit Cost Ratio–1.7:1

Summarized Financial Data

Actual to June 30, 1973 (planning, design, and construction)	$35,514,000
Estimate for fiscal year 1974 (design and construction)	7,531,000
Estimate for fiscal year 1975 (design and construction)	16,900,000
Estimate to complete (design and construction)	9,055,000
Estimated Federal cost	69,000,000

Project Status and Plans for 1975

The project was started in 1967, the concrete portion of the dam completed in 1969, and by the end of fiscal year 1973 land acquisition and reservoir adjustments were 80 percent and 25 percent complete, respectively. Repeated yearly funding limitations and continuing litigation have prolonged the project long beyond the contemplated and efficient construction period. The 1974 estimate of $7,531,000 and the 1975 estimate of $16,900,000 will provide for continuation of effort leading to closure of the dam in January 1977. Application of the 1975 estimate will be as follows:

Continuation of land acquisition	$3,500,000
Continuation of design and construction of highway and bridge relocations	6,500,000
Continuation of railroad bridge relocation	2,300,000
Continuation of reservoir utility relocations	700,000
Beginning of reservoir rim treatment	400,000
Continuation of main earth dam	900,000
Completion of auxiliary dams	300,000
Resumption of construction of interreservoir canal	100,000
Construction supervision and services	625,000
General engineering and design	200,000
General administration	95,000
Changes in unpaid undelivered orders	1,280,000
Total	16,900,000

Purpose and Scope

The project will add 126,000 acre-feet of flood storage to the TVA system and will extend navigation to an important rail and highway crossing of the Little Tennessee River. It will add an average of about 200,000,000 kWh annually to the Fort Loudoun power generation. The project will stimulate the lagging economy of the area by providing industrial sites with access to river transportation and by providing a water and shoreline resource with great potential for recreational and homesite development. TVA estimates that the wages from the industries expected to take advantage of the improved sites, and from the expansion in related trades and services type employment, will total $43,000,000 annually by the end of a 25-year period. After deducting alternative earnings of those likely to be employed and averaging the effects of this 25 years of growth over the life of the project, it is estimated that the annual equivalent of this increase in wage incomes will be $3,650,000. Net proceeds from the sale of shoreline lands, as industrial and recreational uses develop, will result in a partial recovery of the Federal investment in the project.

Physical Data

Drainage area below Fontana Dam	1,056 square miles
Reservoir:	
Length at elevation 813 (normal maximum pool):	
Little Tennessee River	33.2 miles
Tellico River	20.0 miles
Length of shoreline at elevation 813	310 miles
Volume at elevation 813 (16,500 acres)	414,600 acre-feet
Controlled flood storage	126,000 acre-feet
Dam:	
Type	Concrete gravity nonoverflow dam and spillway and earth embankment
Length (main dam)	3,237 feet
Height above foundation (at deepest excavation)	129 feet
Spillway	Three radial gates 40- by 42-feet
Canal to Fort Loudoun reservoir	1,000 feet long by 500 feet wide
Navigation lock	Use Fort Loudoun lock
Extension of 9-foot navigable channel	30 miles (Little Tennessee River)
Power facilities (none):	
Increase in average annual energy at Fort Loudoun powerhouse	200 million kWh
Land acquisition:	
Agricultural and rural residential lands with improvements consisting of farm buildings and residences	38,000 acres
Relocations and protections:	
Highways (81 miles total–73 miles by TVA)	$13,100,000
Highway bridges (12 total–7 by TVA)	7,400,000
Railroad (3 miles)	1,200,000
Railroad bridge (1)	2,400,000
Utilities, cemeteries, and other structures	2,200,000
Total	26,300,000

Status of Construction

	Estimated Percent Complete		Completion Date
	June 30, 1974	June 30, 1975	
Total project	55	75	December 1977
Land acquisition	85	95	June 1976
Reservoir	35	65	June 1977
Dam	60	75	January 1977 (closure)

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	1975	To Complete	Total Cost
Land acquisition	$16,931	$2,300	$3,500	$869	$23,600
Reservoir adjustments, clearing, and rim treatment	8,572	2,300	9,900	7,128	27,900
Main dam, spillway, and auxiliary dams	4,030	1,400	1,200	1,270	7,900
Interreservoir canal, channel improvements, public-use facilities, and other structures	109	-	100	1,291	1,500
Construction plant, equipment, and inventories	809	-100	-	-709	-
Construction supervision and services, general engineering and design, and general administration	4,957	831	920	1,392	8,100
Total expenditures	35,408	6,731	15,620	11,241	69,000
Changes in unpaid undelivered orders	106	800	1,280	-2,186	-
Total obligations	35,514	7,531	16,900	9,055	69,000

Cost Estimate. The estimated total project cost of $69,000,000 remains unchanged from that presented in the Budget Program for fiscal year 1974.

ADDITIONS AND IMPROVEMENTS AT MULTIPURPOSE DAMS

	1973 Actual	1974 Estimate	1975 Estimate
Operational facilities and equipment	$334,249	$423,000	$351,000
Visitor facilities and improvements	167,304	174,000	76,000
Distribution of administrative and general expenses	22,861	17,000	13,000
Total	524,414	614,000	440,000

Operational Facilities and Equipment

This category includes replacement equipment used in operating the multipurpose system of dams and reservoirs and improvements which contribute to the operating efficiency of existing facilities.

The 1975 estimate includes $75,000 for installation of roadway railing and to make other roadway improvements across Norris Dam; $6,000 to install at various locations a low-voltage power supply to heat spillway gate motors to ensure their operation; $30,000 for an automatic hydrologic data collecting system to be used to collect rainfall data; and $116,000 for equipment such as mowers, tractors, and other equipment and small tools for maintenance of dam reservations.

The 1975 estimate also provides $99,000 for floating bulkheads at Nickajack and Melton Hill dams to facilitate maintenance of spillway gates and assure reliable gate operations and $25,000 for design of a floating bulkhead for use at Boone Dam.

Visitor Facilities and Improvements

Visitors to TVA's multipurpose dam reservations totaled almost 13.2 million in calendar year 1972. Five projects had over one million visitors individually, and five others had over one-half million visitors each. Many of these visitors come primarily seeking information about TVA and its programs. Others seek the enjoyment of outdoor activities such as picnicking, sunbathing, boating, and fishing which TVA reservations and reservoirs provide.

Facilities installed years ago in connection with the construction of TVA's multipurpose dams are now inadequate to serve a more growing mobile population. A continuing program of additions and improvements to existing facilities is essential for safe and sanitary accommodations for the level of visitors being experienced. The 1975 estimate of $76,000 provides for additions and improvements at Pickwick, Fort Loudoun, Douglas, and Chickamauga dams where present facilities are inadequate. Work planned includes shoreline improvements, boat launching ramps, more adequate parking, improved roads for better access, picnic tables and grills, and sanitary facilities.

NAVIGATION FACILITIES

Railway Bridge Alterations, Decatur, Alabama

1973 actual	-
1974 estimate	$249,000
1975 estimate	275,000

Location and Description

The Southern Railway bridge across the Tennessee River at Decatur, Alabama, has long been a serious hazard, causing frequent delays and damages to both rail and river traffic. At present, tows must pass beneath a bridge span supported by two unprotected piers about 180 feet apart, a little more than half the 350 feet of horizontal clearance which TVA regards as the minimum for safe navigation. To create further difficulties, there is an offset in the sailing line. Tows must pass through two highway bridges immediately upstream. The sailing line under the railway bridge is on the south side of the river and under the highway bridges near the middle of the river.

Benefit Cost Ratio–1.6:1

Summarized Financial Data

Estimate for fiscal year 1974	$249,000
Estimate for fiscal year 1975	275,000
Estimate to complete	3,576,000
Estimated Federal cost	4,100,000
Estimated value of non-Federal commitments	120,000

The proposed improvement provides for replacing three spans of the existing bridge with a modern vertical lift span which will increase the horizontal clearance from about 180 feet to about 400 feet and will provide an improved sailing line more nearly in line with the two highway bridges immediately upstream.

Detailed project design is scheduled to start in fiscal year 1974 and continue in 1975 with construction to begin in 1976. The project will be completed in 1977. Benefits consist of savings in time and related operating costs by tows using the waterway, decreases in accidents, avoidance of the possible loss of life, and reduced insurance rates.

Yellow Creek Port Project

1973 actual	$3,608,151
1974 estimate	1,199,000
1975 estimate	-

Location and Description

The Yellow Creek Port project is a public river port terminal and related industrial area on the Yellow Creek embayment of Pickwick reservoir (opposite Tennessee River mile 215.1) in the northeast corner of Mississippi.

Benefit Cost Ratio–6.1:1

Summarized Financial Data

Actual to June 30, 1973	$5,870,000
Estimate for fiscal year 1974	1,199,000
Estimate for fiscal year 1975	-
Estimate to complete	-19,000
Estimated Federal cost	7,050,000
Estimated value of non-Federal commitments	1,650,000

Project Status

Engineering and design began in 1971 and on-site construction started in fiscal year 1972 following completion of a review of the environmental impacts. The project is scheduled for completion late in calendar year 1973.

Purpose and Scope

TVA, the State of Mississippi, and local governmental agencies have joined in a cooperative effort to make the benefits of low-cost barge transportation available to northeast Mississippi and thus to promote industrial development in the area.

Northeast Mississippi is a portion of the Tennessee Valley characterized by a low standard of living and underutilization of human and natural resources. The Yellow Creek Port will provide a river terminal for this section of Mississippi which at present does not have one on the Inland Waterway System. It will have these major impacts on the economic growth of the area: (1) water-transportation-using industries that will locate in the industrial area adjoining the project are typically high wage firms and (2) significant savings in transportation costs will be available to existing and future industries in the vicinity.

Summary of Construction Program

	In Thousands			
	Actual to 6-30-73	Estimate 1974	Estimate To Complete	Total Cost
Access railroad	$2,793	$1,577	-	$4,370
Terminal dock and structures	802	498	-	1,300
Construction supervision and services, engineering and design, and general administration	1,250	149	$-19	1,380
Total expenditures	4,845	2,224	-19	7,050
Changes in unpaid undelivered orders	1,025	-1,025	-	-
Total obligations	5,870	1,199	-19	7,050

Cost Estimate. The $7,050,000 estimate for TVA's share of the project includes an increase of $1,050,000 over the estimate reported in the Budget Program for 1974. The increase results primarily from requirements, disclosed during construction of the access railroad, for greater quantities of earthwork, more extensive drainage structures, and higher cost for track placement. The total estimated cost of the project, including land acquisition and work to be financed by the State of Mississippi, is $8,700,000.

Additions and Improvements at Navigation Facilities

1973 actual	$482,422
1974 estimate	396,000
1975 estimate	203,000

Additons and improvements to the navigation system to accommodate increasing traffic barge and tow size, to correct the normal effects of aging, and to facilitate change in operating standards are necessary to maintain the safety, efficiency, and effectiveness of the navigable waterway.

The estimate of $203,000 provides $178,000 to design and begin construction of four mooring cells at Chickamauga lock (two upstream and two downstream) to provide tieup facilities for the increasing traffic awaiting lockage, and $25,000 for employee compensation benefits related to injuries incurred on navigation projects completed in prior years.

FLOOD CONTROL FACILITIES

Local Flood Damage Prevention Projects

1973 actual	$1,096,197
1974 estimate	662,000
1975 estimate	400,000

Local flood damage protection projects at Duffield, Virginia, and Oliver Springs, Tennessee, were completed in 1971. The Duffield project, described in the 1971 President's budget, provided flood control for a new industrial area which was created as part of a multicounty development program in southwest Virginia. The Oliver Springs project, first described in the 1969 President's budget, provided the flood control necessary to trigger a comprehensive community development program

in a small coalfield town in eastern Tennessee. The concept of each of the projects was innovative, and the patterns of Federal, state, and local relationships involved in each were unusually extensive. Both are successful demonstrations of how a traditional Federal function such as provision of flood control works can be better integrated into comprehensive development programs.

The 1975 estimate provides a level of funding for continuing TVA assistance to local agencies in constructing the smaller flood damage prevention projects. Such projects are products of cooperative planning of Federal, state, and local agencies with private firms and local development associations. TVA's objective in these projects is to stimulate comprehensive development programs. A series of local flood damage prevention projects has been constructed in Valley towns over the past 10 years. TVA's experience with these projects strongly suggests that the normal processes for planning and funding them are too time-consuming and too inflexible. Such programs typically include a number of elements, having diverse sources of funding, and each involving its own decision-making procedures. Flexibility is needed in the decision-making procedures for the flood control element. The $400,000 estimate provides that flexibility. The financing authority would be limited to those situations involving not more than a $1,000,000 TVA outlay. The interagency reviews required by the Environmental Policy Act and the Intergovernmental Cooperation Act of 1968 would be secured prior to initiation of any projects selected.

RECREATION FACILITIES

1973 actual	$320,407
1974 estimate	594,000
1975 estimate	87,000

The 1975 estimate of $87,000 provides $50,000 for development of a public-use area on TVA-owned land at Little Foster Falls southeast of Tracy City in Marion County, Tennessee. Little Foster Falls has been used for swimming, fishing, and viewing for many years and offers unique recreation potential for further development of its scenic beauty. Partial development of selected sites along TVA reservoirs will continue. The estimate for this work is $37,000.

INVESTIGATIONS FOR FUTURE FACILITIES

1973 actual	$96,336
1974 estimate	52,000
1975 estimate	150,000

Investigations for future water resources development facilities determine the scope and evaluate the economic benefits and environmental aspects of possible projects in sufficient detail for decision on whether to recommend construction and provide basic information needed for project design. The 1975 estimate includes $50,000 to complete flood studies for Gatlinburg, Tennessee, and to initiate studies for Duffield, Virginia, and Newport, Tennessee; and $100,000 to begin design of the South Chickamauga Creek flood control project at Chattanooga, Tennessee.

Gatlinburg, Tennessee, a resort town at the northern entrance to the Great Smoky Mountains National Park, is exposed to a unique and extreme flood problem. Not only is there the usual property damage involved, but an unusual threat exists to human safety from suddenly rising waters. A number of protection plans have been investigated, the most practicable appears to be a 6,000-foot long tunnel through Crockett Mountain to divert floodwaters around the city. Preliminary planning investigations have been coordinated closely with city officials who have agreed that the city would fund approximately one-fifth of the cost.

Phase I of a two-phase project at Duffield, Virginia, designed to bring significant economic progress to a segment of "hard core" Appalachia has been completed. The 330 acres of industrial land developed in Phase I is now anticipated to be fully utilized by 1977 and the Phase II increment of 645 acres of additional industrial land will be required. To meet this need, flood relief improvements should be extended four to five miles downstream. Channel improvement is being planned for flood relief within the context of a planning report prepared by a consultant for the Economic Development Administration.

Newport, Tennessee, is located on the Pigeon River in the foothills of the Smoky Mountains. A three-mile section of Sinking Creek, which flows through the Newport area, has developed into an industrial and tobacco warehouse area with other commercial property and is subject to frequent flooding. The feasibility of structural or other measures to provide flood relief will be investigated. If warranted, a planning report and environmental statement will be prepared in 1976.

South Chickamauga Creek flows into the Nickajack reservoir at Chattanooga, Tennessee. The Brainerd area of Chattanooga lies along the west bank of the creek and is subject to flooding. The flood relief plan consists of a levee system, stream channel improvements, and related drainage facilities. The project will provide flood relief for over 1,200 acres in this growing area of Chattanooga involving 1,500 residences, 2 schools, and 155 commercial establishments. The 1975 estimate of $100,000 will provide for field surveys, foundation investigations, and other preliminary design work.

WATER RESOURCES DEVELOPMENT
(OPERATING EXPENSES)

NAVIGATION OPERATIONS

1973 actual	$1,008,143
1974 estimate	1,057,000
1975 estimate	1,123,000

The nine-foot draft navigation channel from Knoxville, Tennessee, to Paducah, Kentucky, presently carries more than 28 million tons of commercial freight annually. The Corps of Engineers operates and maintains the locks and the channel. The U.S. Coast Guard maintains the channel markers. TVA operates the multipurpose system to provide full depth in the waterway at all times, plans and provides necessary navigation improvements, and provides a wide variety of technical assistance to transportation interest, state agencies, subregional planning and development agencies, and waterfront communities—all toward the end that low-cost water transportation be a highly effective tool in regional development.

The economic impact of the Tennessee River waterway and the primary waterfront industries and terminals is greater than the 40,000 jobs they provide. It extends throughout the Valley region to satellite plants located inland and using waterfront industry products as inputs or specializing in services and products required by waterfront industries.

3631

Navigation Engineering and Investigations

	1973 Actual	1974 Estimate	1975 Estimate
Engineering investigations	$329,865	$348,000	$372,000
Transportation economic studies	220,207	221,000	228,000
Cooperative development work with state and local agencies	372,354	382,000	401,000
Total	922,426	951,000	1,001,000

Engineering Investigations

Engineering investigations are made in order to keep the Tennessee River navigation system adequate to meet the need of modern-day transportation; to coordinate the operation and maintenance efforts of the U.S. Coast Guard, the Corps of Engineers, and TVA; to protect individual safety and the natural environment; and to promote waterway use to maximize the economic and social benefits of the Tennessee River navigation system.

A major physical problem on the waterway at present is the hazardous turn span in the Southern Railway bridge at Decatur, Alabama, described on page 21. Other problem areas of lesser immediate consequence and their remedial treatment are being studied in order to protect and strengthen the regional transportation system. The overall activity includes land-use planning, planning and making channel extensions, studying the need for additional public-use terminals, and coordinating with other agencies. Examples of these activities included in the 1975 estimate are (1) increased planning for the main lock at Pickwick Landing Dam; (2) assisting communities such as New Johnsonville, Tennessee, to plan potential public-use terminal sites; and (3) beginning an intensive study aimed at reducing the growing congestion at Kentucky lock.

TVA navigation charts are sold at the rate of nearly 40,000 copies annually. They are the only maps that show water depths of the lakes along with shoreline features. These charts are used by individuals, private industry, and local planning groups in development of transportation improvements, industrial parks, river terminals, and marinas. They are used internally in planning for navigation channels and facilities, location of navigation aids, public-use terminals, and recreational boat docks. To be most effective they must show up-to-date land and water conditions. In 1975 four charts will be revised. There are more than 200 commercial recreational boat docks that serve the general public on the 10 lakes connected by navigation locks. These lakes are the permanent base for about 30,000 recreational boats, and an additional 10,000 boats are brought to the lakes annually by trailer. Recreational boaters depend on well-marked secondary channels to reach boat docks where they can get supplies and services, find favorite fishing spots and access points where they can launch boats, picnic and camp, or enjoy a day's outing. The commercial boat docks also depend on these channels to provide them the main-lake access and customers. More than 1,200 buoys are required to mark the 260 miles of secondary channels. TVA established the secondary channel marking system and maintains it.

Transportation Economic Studies

Economic studies are undertaken to establish the benefits to be derived from improvements to the system. For example, a study concerning a proposed barge terminal was completed in fiscal year 1973. The study defined the service area and estimated the potential traffic.

3632

The economic well-being of the region is heavily dependent on trade with other regions. Eighty-five percent of the traffic on the waterway originates or terminates in other regions. Thus the health of its transportation system, the understanding of the relationships among types of carriers, and the early assessment of the results of proposed changes are all of prime importance to the full development of the region's resources.

The changes taking place in the relative costs of using barging and other modes of transportation bring new opportunities for shippers, both in the use of existing plants and the establishment of new production facilities. Helping them to analyze their transportation options creates a continuing need for commodity rate studies. These changes also require the evaluation of the feasibility of establishing additional public-use terminals, coordinating with local planning agencies in these studies.

3633

Cooperative Development Work with State and Local Agencies

To assure that the Tennessee River waterway renders a maximum contribution to industrial development and economic growth in the Tennessee Valley region, TVA assists state, subregional, and local development organizations to plan for and capture the development opportunities the waterway and other resources offer. For example, TVA provides development organizations with technical assistance and research services concerning the area's resources, industrial growth trends, industrial location characteristics, and identification of suitable industrial areas. Emphasis is on promising or emerging industrial opportunities for the region based on the changing industrial mix in the Southeast, new interindustry relationships, and forecasts of market growth. Working relationships are maintained with various state offices of the seven Tennessee Valley states, 39 multicounty organizations, 52 community organizations (including waterfront counties), and six other public and private development groups.

To date, 75 communities have requested specific assistance in land-use planning for industrial sites. Approximately one-half of these have already taken affirmative action ranging from buying land for industrial development to full development of industrial parks. Twenty-three of the industrial parks are now occupied by 85 firms, employing more than 15,000 people.

Other Navigation Expense

1973 actual	$32,972
1974 estimate	49,000
1975 estimate	64,000

The 1975 estimate of $64,000 includes $17,000 for power furnished to the Corps of Engineers for lock operations; $20,000 for miscellaneous engineering inspection activities related to locks, channels, mooring cells, and other navigation facilities; and $27,000 for unwatering and inspection of the lock at Pickwick Landing Dam.

Summary of Navigation Operations Expenses

	1973 Actual	1974 Estimate	1975 Estimate
Navigation engineering and investigations	$922,426	$951,000	$1,001,000
Other navigation expense	32,972	49,000	64,000
Distribution of administrative and general expenses	52,745	57,000	58,000
Total appropriation estimate	1,008,143	1,057,000	1,123,000
Allocated from multipurpose reservoir operations	2,103,299	2,501,000	2,203,000
Total expenses before depreciation	3,111,442	3,558,000	3,326,000
Depreciation (no funding required)	2,848,366	2,860,000	2,860,000
Total expenses	5,959,808	6,418,000	6,186,000

Program and Performance

TVA's program for navigation improvement of the Tennessee River and its tributaries began in 1933 and by 1945 a dependable nine-foot channel for the full length of the Tennessee River was essentially complete. The nine-foot channel was

completed in all respects in 1952. Commercially navigable channels extend up a number of tributaries, and 130 miles of these channels are used by commercial tows. Private industry has invested more than $2.1 billion in waterfront plants, terminals, and distribution facilities. Ninety-nine percent of this investment has been made since 1945.

Tennessee River traffic volume continues to grow with movement of 28.5 million tons in calendar year 1972, a 3 percent increase over 1971 and a new tonnage record for the eleventh consecutive year.

Savings on transportation charges to shippers are estimated at $65.6 million in calendar year 1972. This is the difference between the freight charges actually paid and those which would have been paid if the river had not been improved for navigation. Freight originating outside the Valley or moving from the Valley to outside destinations accounts for about 97 percent of the transportation savings estimate.

Operation of the Tennessee River navigation channel involves TVA, the Corps of Engineers, and the Coast Guard. Total cost to the three agencies in 1972 for operation and maintenance of the waterway, including provision for depreciation, was about 13 percent of the public benefits in the form of transportation cost savings in the same year.

FLOOD CONTROL OPERATIONS

1973 actual	$955,502
1974 estimate	955,000
1975 estimate	954,000

The TVA system of multipurpose dams and reservoirs affords a substantial degreee of flood protection along the Tennessee River and its tributaries, and contributes significantly to the reduction in flood heights along the lower Ohio and Mississippi rivers. However, flooding recurs frequently along unprotected tributary streams throughout the Valley. Continual assessment and updating of current flooding and future flood damage potential is done in order to plan and operate a comprehensive effort to prevent flood damages.

Flood control operations involve (1) assessment of flood damages through the collection and analysis of flood data, (2) studies to improve the operation of the existing multipurpose dam and reservoir system during future flooding, (3) assistance to communities in planning and implementation of flood damage prevention measures, and (4) operation of local flood control facilities.

Operation of the TVA multipurpose dam and reservoir system prevented flood damage totaling approximately $630 million from storms that occurred in December 1972; March, May, November, and December 1973; and January 1974.

3635

This includes over $550 million at Chattanooga, Tennessee; $56 million elsewhere along the Tennessee River and below the major storage reservoirs on the tributaries; and $16 million along the lower Ohio and Mississippi rivers. Total damages averted on the lower Ohio and Mississippi rivers does not include those prevented by TVA system operation during the January 1974 flood. This total is more than twice the original cost of all TVA flood control facilities plus the cost to date of operating and maintaining these facilities.

System Flood Control Studies and Investigations

1973 actual	$350,077
1974 estimate	382,000
1975 estimate	425,000

This program includes (1) collecting data on current floods, (2) engineering studies to guide current flood operations and appraise results, (3) development and dissemination of flood information, (4) review of plans which affect the Tennessee River system submitted for approval under Section 26a of the TVA Act, (5) evaluating the hydrologic safety of TVA dams, and (6) appraisal of potential flood damages.

The 1975 estimate provides for data collection and operating studies expected in an average year. Information obtained in these studies is used in establishing logical flood damage reduction objectives in local flood studies. A major emphasis in 1975 will be to accelerate review of hydrologic safety of TVA dams and the appraisal program of potential flood damages. Initiation of a reappraisal of Chattanooga, Tennessee, last studied in 1961, is planned. The workload, particularly that of collecting data on current floods, varies from year to year depending on the number and severity of floods. Accurate flood data are necessary for evaluating the effectiveness of existing facilities and their operation and to appraise flooding problems on unprotected tributaries.

Local Flood Damage Prevention

1973 actual	$436,510
1974 estimate	464,000
1975 estimate	472,000

Most of the towns and cities in the Valley are growing. As they expand, pressure to use floodplains increases. TVA encourages state and local governments to assume responsibility for solving local flood problems and provides them flood

data and technical assistance in planning for floodplain use in developing codes and ordinances for regulating floodplain use and in promoting other measures to reduce flood losses. Local officials are helped to develop and select from alternatives the best means to meet their community's needs.

In the past 20 years, TVA has prepared comprehensive flood reports for 137 Valley communities and partial data to meet current needs have been furnished to 20 others. In recent years considerable effort has been devoted to revising past flood reports and extending them to encompass areas of future urban expansion. In 1973, over 200 requests were handled for flood information at specific sites being considered for schools, post offices, hospitals, residences, commercial buildings, industries, or other developments. TVA makes special investigations of such situations when the information is not available. The use of this information helps reduce developments at elevations subject to flooding, reduces future flood damages, and demands for future flood protection projects. Executive Order 11296 dated August 10, 1966, directs all Federal executive agencies to evaluate flood hazards to preclude uneconomic, hazardous, or unnecessary use of floodplains. TVA provides other agencies the flood information necessary to implement this Executive Order in the Tennessee River basin.

The ultimate test of the usefulness of this information is the action taken to reduce flood hazards and prevent development of potential hazards. Eighty-nine Valley communities have formally adopted floodplain regulations using TVA engineering and other technical assistance. During the current period of rapid industrial development, about 25 industrial plants per year are prevented from locating in hazardous flooding areas.

Many communities in the Tennessee Valley are developing comprehensive programs that will permit best land use. Local committees consider flood control works, floodproofing of buildings, flood forecasting, zoning, subdivision regulations, building codes, policies in controlling extension of utilities, streets, open spaces, and parks to determine the combination providing the best solution to flood problems. TVA provides them technical assistance. In many cases a satisfactory degree of flood damage prevention can be effected through local action without resort to substantial Federal capital outlay. Where facilities are needed to complete a plan, TVA may work out cost-sharing arrangements with local officials and request funds for Federal participation.

TVA also assists communities in establishing eligibility for flood insurance under the National Flood Insurance Program. In cooperation with the National Weather Service, TVA assists in establishing flash flood warning devices and locally operated flood forecasting procedures.

3637

Operation and Maintenance of Local Flood Control Facilities

1973 actual	$140,031
1974 estimate	77,000
1975 estimate	25,000

TVA participates in the operation and maintenance of local flood control facilities at Bristol, Tennessee-Virginia. The 1975 estimate will provide for collection of hydrologic data and for the analysis of operations.

Summary of Flood Control Operations Expenses

	1973 Actual	1974 Estimate	1975 Estimate
System flood control studies and investigations	$350,077	$382,000	$425,000
Local flood damage prevention	436,510	464,000	472,000
Operation and maintenance of local flood control facilities	140,031	77,000	25,000
Distribution of administrative and general expenses	28,884	32,000	32,000
Total appropriation estimate	955,502	955,000	954,000
Allocated from multipurpose reservoir operations	2,476,517	2,934,000	2,603,000
Total expenses before depreciation and flood control improvements	3,432,019	3,889,000	3,557,000
Local flood control improvements and writeoffs[1]	357,610	-	-
Depreciation	1,313,665	1,297,000	1,297,000
Total expense of flood control operations	5,103,294	5,186,000	4,854,000

1. These are mainly charges to operating expenses of writeoffs of flood protection studies and investigations at projects which have been abandoned. Like depreciation they require no financing and are included here in the interest of completeness of reporting.

REGIONAL WATER QUALITY MANAGEMENT

1973 actual	$1,529,151
1974 estimate	1,456,000
1975 estimate	1,355,000

TVA water quality management activities have as their objective the maintenance of surface and groundwater sufficient to permit their optimum development for

–municipal, industrial, and agricultural water supplies;

–propagation of fish and wildlife;

–water-contact recreation; and

–aesthetic satisfaction.

To achieve these objectives TVA works with state and local governments, industries, Federal agencies, and private citizens to protect and enhance the water quality of the Valley.

Funds for water quality management are allocated as follows:

	1973 Actual (Rounded)	1974 Estimate	1975 Estimate
Water quality planning	$272,000	$77,000	$77,000
Water quality inventory	258,000	803,000	718,000
Pollution abatement activities	543,000	173,000	173,000
Special studies and demonstration projects	456,000	403,000	387,000
Total	1,529,000	1,456,000	1,355,000

TVA's regional water quality management program may be divided into four principal areas of activity. The first is water quality planning. A comprehensive report on the water quality situation throughout the Valley has been prepared to assist Valley states in preparing detailed water quality management plans for each major subbasin in the Valley and for the main stem of the Tennessee River. These basin plans are required of the states by the Federal Water Pollution Control Act Amendments of 1972. TVA assists the states by providing technical input to their plans which varies according to the needs of the individual states. When completed, each subbasin plan will (1) project domestic and industrial waste loads, stream reach by stream reach, to at least the year 2000 by 10-year increments; (2) evaluate water quality conditions, reach by reach, that would normally be expected to exist during these time periods; (3) specify degree of waste treatment required to allow for growth and yet meet state and Federal standards; (4) recommend other means of achieving acceptable water quality conditions; and (5) include a plan of implementation for securing needed pollution abatement. During 1973, considerable water quality data, hydrologic data, and direct staff assistance in determining stream assimilative capacities was provided the State of Tennessee for use in preparing basin plans for the Elk River and Duck River basins. Technical assistance was also provided Alabama in preparation of the Tennessee River basin plan for north Alabama. In 1974 and 1975 TVA assistance to the Valley states will be limited to providing water quality and hydrologic data and reviewing and commenting on draft basin plans prepared by the states.

The second element of water quality management is water quality inventory. This is an inventory of water quality conditions based on monitoring water quality, either periodically or continuously. The objective is to maintain an up-to-date inventory of water quality conditions that will adequately meet the needs of TVA, EPA, state and local governmental agencies, industries, and the general public. In 1973 a water quality monitoring network was developed that includes about 44 sampling stations at "key" locations in the Valley. This network is basically the existing temperature and dissolved oxygen monitoring network expanded to include additional water quality measures and additional stations. This activity will be fully implemented in 1974 and 1975. Detailed water quality studies were carried out in 1973 on one mainstream reservoir and one major subbasin. In 1974 and 1975 these monitoring programs will be increased in planned stages to provide additional aerial coverage and to provide significant additional parameter coverage. Assistance will continue to be given to the Environmental Protection Agency in the operation of its national monitoring system and all data obtained will be made available to Federal, state, and local agencies.

The third feature is pollution abatement activities. In the past, TVA's pollution abatement activities included (1) detailed engineering review of plans to determine adequacy of water pollution abatement measures at new installations where Section 26a permit or TVA land rights are involved; (2) biological and water quality surveys in the vicinity of existing industries, municipalities, etc., that are sources of significant pollution in the Valley; and (3) biological and water quality surveys in the vicinity of new industrial sites both before operation and after the industry has been in operation for some time. Future activities will be limited to (1) maintaining a water use and waste discharge (and potential pollutant discharge)

3640

inventory; (2) investigating fish-kills, accidential spills of oil and other hazardous materials, and pollution discharges associated with treatment plant malfunctions; and (3) special studies related to water pollution problems, e.g., the mercury problem.

During 1973, twenty fish-kills or other pollution incidents were investigated. In addition, surveillance monitoring of mercury concentrations in fish flesh, water, and sediment were continued for Chickamauga, Pickwick, and Kentucky reservoirs and the North Fork Holston River. Surveillance of the mercury problem will be continued in 1974.

Special studies and demonstration projects will be performed to support the water quality management program. Many of these studies will be done in response to problems arising in water quality management, while others are continuing efforts to solve problems of a persistent nature. The continuing investigations are: (1) field documentation of water quality and biological conditions associated with depletion of dissolved oxygen in TVA reservoirs in such a manner to facilitate a more complete understanding of reservoir water quality changes during storage; (2) computer documentation of existing ecologic models and development of improved water quality models; (3) development of methods for predicting the effects of reservoirs on water quality in tailrace streams; (4) pilot-scale studies of oxygen injection at Fort Patrick Henry Dam and the design, construction, and testing of a full-scale reaeration system at this dam; (5) continue review of possible reaeration methods at 10 other TVA dams including the design of a full-scale system for the most problematic case; and (6) perform field studies and utilize temperature monitoring data to improve methods for predicting the rate at which receiving waters will lose excess heat.

3641

RECREATION DEVELOPMENT

1973 actual	$694,580
1974 estimate	692,000
1975 estimate	763,000

The objective of TVA's recreation program is to identify resources of potential value for recreation and demonstrate their best alternative uses and conservation, recognizing the social nature of recreation needs. TVA activities in this field include demonstrations and cooperative projects.

TVA offers technical assistance to states, towns, communities, local development groups, and individuals in defining and undertaking their role in Valley recreation resource development. Growth in recreation demand has made it necessary for TVA also to take a more direct role in providing basic recreation opportunities. Direct TVA development remains a relatively minor part of total reservoir recreation development. Since 1969, TVA has developed 80 sites along the shorelines of 15 reservoirs. Nearly 100 public parks (including 17 state parks), over 400 public access areas, 22 state wildlife management areas, and 300 boat docks and marinas have been provided by others on TVA's reservoirs.

A comprehensive land capability analysis of reservoir shorelands will be essentially completed in fiscal year 1974. During fiscal year 1975, information from this analysis will provide a basis for recreation development assistance. New ways of expressing the values of recreation development and use will continue to be studied. Research problems of recreation travel economics will be investigated. Attention will be given to scenic and recreation rivers and trails in the Tennessee Valley.

Special Studies

Increased emphasis on recreation has generated a substantial need for information to answer questions on activity and facility preferences and needs; the market for commercial recreation developments in the Valley; and the benefits, costs, and economic impact of recreation resource development.

Specific activities for fiscal year 1975 will include:

–Economic data and technical information support for implementation of a comprehensive Valley-wide recreation plan.

–Technical assistance in recreation economics and market analysis to both TVA and outside organizations.

–Survey of recreation investment and visitation on TVA lakes.

–Development of information on recreation economics and market analyses for a boat dock and marina improvement program.

–Input to a study of a systems approach to land management.

–Participation in special studies initiated by outside organizations such as Water Resources Council and Corps of Engineers.

Recreation Planning

Recreation planning provides the basis for sound judgment in the development and utilization of the Valley's recreation resources. Activities included under this function for fiscal year 1975 will be:

3642

—Continuation of the comprehensive Valley-wide recreation plan, especially the capability analysis for resources in nonreservoir counties.

—Additional planning and site selection for access facilities on TVA reservoir shorelines (page 27).

—Preparation of prospectus for needed commercial recreation developments identified in the comprehensive Valley-wide recreation plan.

—Additional studies on classification and use of the Valley's scenic and recreation streams.

—Initiate implementation of scenic and recreation trails program.

—Evaluation of recreation development proposals submitted to TVA.

Technical Assistance

In fiscal year 1973 TVA assistance programs reached 38 different cities and communities in the Valley; 12 separate counties; 17 Federal, state, or local agencies; and several quasipublic and development groups. This assistance ranges from furnishing basic information to preparation of site investigation, development, and program usage plans. Specific activities in technical assistance for fiscal year 1975 anticipate responding to a growing number of requests. More attention will be given to followup on implementation of plans and programs. Additional support will also be provided toward implementing the comprehensive Valley-wide recreation plan.

Maintenance of Recreation Facilities

The estimate of $90,000 is for cyclic maintenance of TVA's facilities in the reservoir public access areas. Work involved is nonroutine such as repaving or regraveling roads and parking areas, repainting and roof replacement for sanitary facilities, and shoreline improvements. No major cyclic maintenance has been performed, except for flood damage repairs in fiscal year 1973, due to the newness of the facilities in question.

Summary of Recreation Development Expenses

	1973 Actual	1974 Estimate	1975 Estimate
Special studies	$196,638	$218,000	$199,000
Recreation planning	228,970	228,000	232,000
Technical assistance	199,011	189,000	184,000
Operation and maintenance of facilities	17,216	-	90,000
Distribution of administrative and general expenses	52,745	57,000	58,000
Total appropriation estimate	694,580	692,000	763,000
Allocated from multipurpose reservoir operations	1,623,463	1,709,000	1,675,000
Total expenses before depreciation	2,318,043	2,401,000	2,438,000
Depreciation	149,331	156,000	156,000
Total expense of recreation development	2,467,374	2,557,000	2,594,000

FISHERIES AND WATERFOWL RESOURCES DEVELOPMENT

1973 actual	$483,081
1974 estimate	553,000
1975 estimate	590,000

There are 639,000 acres of reservoir, 9,600 miles of streams, and many small lakes and ponds in the Tennessee Valley. The complex biological system of fishes, waterfowl, water-oriented mammals, and other kinds of aquatic life dependent on these waters serves the people of the Valley in many ways. Some are important to the economy of the region, some offer significant opportunities for leisure time, and some are a source of food. Each species contributes to a healthy, balanced aquatic biosystem. TVA has aided in the increase and improved quality of the region's fisheries and waterfowl resources base. Maintenance of the existing resource and its expansion and improvement require research, informed development and management, and promotion of good conservation practices. Increasing pressures on fisheries and waterfowl resources accompany the growing demands of an urban industrial society on the region's lands and waters. TVA's objective is to aid in the effective management, protection, and use of lakes and streams and reservoir lands to assure that the fisheries and waterfowl resource makes its optimum contribution to the region's economic, social, and environmental well-being.

3645

Fisheries Investigations

1973 actual	$219,751
1974 estimate	200,000
1975 estimate	198,000

Over the years TVA's limited fisheries investigations have led to significant changes in fisheries management policies in the Tennessee Valley and have contributed to the body of knowledge of reservoir management. Elimination of closed seasons on game fish, removal of size limits on most species, and more liberal creel limits for many species are the result of TVA studies and persuasive efforts with Valley states. TVA studies also led to stabilization of reservoir water levels during the game fish spawning periods. TVA conducted some very successful stocking experiments to introduce, among other new species, (1) the white crappie, one of the Valley's most popular game fish, and (2) the threadfin shad, a forage fish. Native species have been successfully transplanted to new reservoirs.

TVA's policy decisions regarding the management and use of the Valley's fisheries resources must have a sound scientific base. To provide basic information and knowledge TVA collects fisheries data to answer questions about populations, species composition, reproduction, fishing pressure and success, and to provide other information to guide fisheries management and use decisions.

Studies of the Valley's streams and reservoir tailwaters are being conducted to identify opportunities to improve stream fisheries, determine the impact of environmental modifications on the stream fisheries resources, develop criteria to regulate competing and compatible use, and determine stream habitat requirements for the more important species.

Studies of the Valley's reservoir fisheries resource are being conducted to identify and describe opportunities to improve reservoir fisheries, determine habitat requirements for specific reservoir species, and develop analytical and predictive ecological models for TVA's reservoirs. The information should help TVA make improved reservoir management decisions. TVA is also conducting studies to determine the effects of environmental disturbances on the Valley's fisheries resources.

Fisheries Resource Management and Use

1973 actual	$148,635
1974 estimate	179,000
1975 estimate	218,000

3646

Each fisheries management and use activity is selected for its direct contribution to the regional objectives of increasing recreation, generating economic activity, creating jobs, producing more food, and protecting the aquatic system.

Efforts are currently concentrated on Norris and Melton Hill reservoirs, the tailwaters of Norris and Wilson dams, on four streams, and on the aquaculture industry.

The Norris reservoir work will demonstrate the benefits of a comprehensive management and use effort. The project will include determining and informing the public about the location, movement, and feeding habits of important species; installing and marking fish attractors; evaluating and improving reservoir access; and increasing bank fishing opportunities.

At Melton Hill, a relatively new TVA reservoir within reach of 400,000 people, the fisheries resource seems to be underutilized. Reasons for this will be determined and an appropriate management and use program will be developed and implemented.

TVA is cooperating with the U.S. Fish and Wildlife Service and the Tennessee Game and Fish Commission to develop a trout fishery in the tailwaters of Norris reservoir. By 1976 an optimum stocking scheme will be established and management is expected to continue without TVA participation. The Wilson Dam tailwater is known nationally for its outstanding smallmouth bass fishery. TVA is beginning efforts to develop a management plan to ensure its perpetuation and determine how such a fishery might be duplicated in other TVA tailwaters.

Sources of pollution have been eliminated on two Tennessee Valley streams—the North Fork Holston River and the Tuckasegee River. TVA is evaluating the fisheries resource capabilities of these rivers and will prepare and implement reclamation plans to achieve a healthy fisheries resource in each.

The Upper Clinch-Powell rivers are prime spawning grounds for several important reservoir species, most notably the walleye pike. TVA is evaluating the fishery in these rivers and will prepare and implement a plan to appropriately manage and use the resource. This river system also contains the best remaining habitat in the eastern United States for certain species of mussels, and TVA is assessing both populations and habitat in an effort to find ways to preserve this unique resource.

TVA will continue to promote a healthy Valley-wide food fish production industry and provide technical assistance to those now in the business in an effort to secure the full economic benefits of the industry. Particular attention is given to the use of heated water in intensive culture systems.

3647

Waterfowl Management and Use

1973 actual	$114,695
1974 estimate	174,000
1975 estimate	174,000

Migratory waterfowl, once very rare in the Tennessee Valley, have increased in numbers and popularity as a result of waterfowl habitat developed by TVA. Waterfowl areas on TVA reservoirs annually provide about 40,000 man-days of hunting and over two million man-days of other outdoor recreation. For the most part, the Valley's waterfowl increases have been concentrated near the Mississippi Flyway in northern Alabama and west Tennessee and Kentucky. There are outstanding opportunities to manage lands and waters for migratory ducks and geese in east Tennessee, and the U.S. Fish and Wildlife Service has expressed interest in the possibility of a cooperative venture to develop facilities in this area to attract waterfowl from crossover flights. As a start TVA is developing the 635-acre Nolichucky reservoir to demonstrate this possibility. Nolichucky was originally built by a private power company and was operated for many years for power production. Now

obsolete, the generating equipment is being retired, and the reservoir will be dedicated to other public service. Water level management and food plantings on Nolichucky will attract an estimated 10,000 migratory ducks and geese to the reservoir each fall. In addition, substantial numbers of resident ducks and geese will be established to provide year-round opportunities for study and observation. The development will also serve as a demonstration of how similar reservoirs throughout the United States can be developed to provide additional public benefits.

TVA's migratory waterfowl work also includes surveillance and development of waterfowl habitats throughout the Valley that are critical to the well-being of Valley populations. TVA cooperates with the states of Tennessee, Kentucky, and Alabama to supplement and complement the region's migratory populations with resident species of ducks and geese that will remain in the region year-round. This work can have several benefits. First, it can supplement the production of northern breeding grounds which have been declining. Second, ducks and geese can be introduced in areas where they are not now found. And third, if ducks and geese can be kept in the region throughout the year, they will be of more benefit to more people.

PRELIMINARY SURVEYS AND ENGINEERING

Preliminary surveys and engineering provide background information and analyses, development of planning procedures, and long-range plans to aid in the determination of the need for more detailed water resources development. Engineering assistance is given to communities and multicounty planning organizations to help them assess needs and to develop possible solutions to water supply and waste water disposal problems. In addition, the program includes research associated with watershed investigations with current emphasis on urban watersheds.

	1973 Actual	1974 Estimate	1975 Estimate
Research on soil-water relationships	$129,305	$102,000	$85,000
Preliminary investigations	129,053	106,000	90,000
Regional water supply and liquid waste disposal	139,339	115,000	99,000
Valley-wide assessment of water needs	63,078	77,000	35,000
Total	460,775	400,000	309,000

Research on Soil-Water Relationships
($85,000)

This subprogram includes the collection and analysis of basic hydrologic information on small experimental watersheds to determine the effects of land-use changes and management practices as urbanization, timber harvesting, reforestation, and land reclamation upon the amount and quality of streamflow. This information is used in the development and refining of mathematical models which relate the characteristics of a watershed to its streamflow and water quality. The models are used as planning tools to predict the effects of proposed localized changes in land use or management practices. The models also can simulate streamflow information in areas where historical records are lacking. For example, models based on data now being collected on four urban areas in Knoxville can be used by city planners and engineers to assess and control the problems of flooding, urban drainage, and water pollution which are created by urban development.

Preliminary Investigations
($90,000)

Work under this subprogram includes: (1) cooperation with the Water Resources Council in interagency activities related to water resources planning criteria and procedures; (2) limited studies to develop workable improvements in evaluation procedures, with emphasis on environmental comparisons for alternative plans; (3) preparation of basic population and economic projections and analyses; and (4) preliminary studies of potential modifications in reservoir system operations necessary to meet changing conditions.

Regional Water Supply and Liquid Waste Disposal
($99,000)

The urbanization and industrialization of small and intermediate-sized towns in the region, together with a proliferation of utility districts to provide service in rural or suburban areas, have created problems in water supply and liquid waste disposal. Because many communities have planned and acted independently and concentrated on short-range needs, the quality of better service and lower costs which are attainable from larger systems have not been realized. To encourage broader

planning, TVA provides technical assistance to communities and multicounty planning and development organizations in assessing current and future needs based on urban and industrial growth forecasts. The engineering concept plans provided by TVA are useful to affected communities in contracting with private consultants for detailed planning and design of appropriate water supply and liquid waste disposal facilities. Technical assistance on groundwater and related geology is also made available. Funding in 1975 is for continuation of these activities based upon an existing backlog of requests for assistance.

Valley-wide Assessment of Water Needs
($35,000)

A systematic assessment of current and future water needs and problems in the Valley is under way to provide information for use in guiding TVA water resources programs and to provide basic data periodically called for by the Water Resources Council and other organizations. It is a limited effort designed to draw mostly from ongoing planning by TVA program divisions and other agencies in the region. Therefore, it concentrates on developing a consistent set of planning criteria, assumptions, and time horizons for use in the ongoing work so that it can be summarized on a comparable basis. Although an initial and somewhat incomplete assessment is to be assembled in 1974, a continuing effort over time at a reduced level of funding is planned to improve and update the information. This work complements the Water Resources Council 1975 water assessment by providing data which would not otherwise be available because a framework study was not funded for this region.

Schedule B-1. Multipurpose Reservoir Operations
(For fiscal years ending June 30, 1973, 1974, and 1975)

	1973 actual		1974 estimate		1975 estimate	
Income		$325,001		$278,000		$258,000
Expenses						
Development of water resource management methods	$256,133		$270,000		$200,000	
Water control operations	1,309,063		1,367,000		1,370,000	
Water control investigations	189,684		167,000		71,000	
Investigations and control of reservoir ecology	1,232,272		1,201,000		1,008,000	
Plant protection and services to visitors	1,573,370		1,639,000		1,740,000	
Operation and upkeep of dam reservations	1,224,793		1,347,000		1,368,000	
Reservoir land management	2,209,147		2,264,000		2,286,000	
Maintenance	1,335,984		2,457,000		1,549,000	
Other expense	296,516		394,000		355,000	
Distribution of administrative and general expenses	390,566		426,000		430,000	
Total expenses before depreciation:						
Financed from appropriations	6,328,201		7,283,000		6,603,000	
Financed from power proceeds	3,364,326		3,971,000		3,516,000	
Financed from nonpower proceeds	325,001		278,000		258,000	
Total	10,017,528		11,532,000		10,377,000	
Depreciation	3,407,826		3,426,000		3,426,000	
Total expenses		13,425,354		14,958,000		13,803,000
Net expense of multipurpose reservoir operations		13,100,353		14,680,000		13,545,000
Allocation to Programs						
Water resources development						
Net expenses before depreciation	6,203,279		7,144,000		6,481,000	
Depreciation	2,078,760	8,282,039	2,090,000	9,234,000	2,090,000	8,571,000
General resources development						
Net expenses before depreciation	124,922		139,000		122,000	
Depreciation	99,648	224,570	103,000	242,000	103,000	225,000
Power operations						
Net expenses before depreciation	3,364,326		3,971,000		3,516,000	
Depreciation	1,229,418	4,593,744	1,233,000	5,204,000	1,233,000	4,749,000
Total allocation		13,100,353		14,680,000		13,545,000

MULTIPURPOSE RESERVOIR OPERATIONS
(Schedule B-1—Operations and Maintenance)

Fiscal year 1975 expenses for multipurpose reservoir operations are estimated at $10,377,000 before depreciation, of which $6,603,000 will be financed from appropriations, $3,516,000 from power proceeds, and $258,000 from directly related income.

Multipurpose reservoir operations involve the management, operation, and maintenance of TVA's system of 23 multipurpose projects. These activities assure public benefits from the primary functions of navigation, flood control, and power and from the many other values created by a reservoir system with more than 10,000 miles of shoreline and 347,000 acres of surrounding lands under TVA ownership or control. Operating costs for the system are collected in a single program category and net costs are distributed to the programs benefited.

Development of Water Resource Management Methods

1973 actual	$256,133
1974 estimate	270,000
1975 estimate	200,000

Scientific progress in recent years makes it possible to develop and use improved reservoir operating methods to deal more efficiently and effectively with the multiple objectives and variables in TVA's complex system. New and better procedures make possible current evaluation of changes to guide day-to-day decisions. TVA will develop a mathematical model of the Tennessee River system incorporating all the variables, constraints, and interrelationships which need to be considered for optimal operations.

Development of such a model is a long-term task, and two preliminary steps begun in 1972 will be completed by 1975. In fiscal year 1972 perfection of methods of investigating the effects of scheduled flow for specific purposes on quantitative system water management, the power economy of the system, and on water quality were begun. When completed in 1974 this step will allow evaluation of the impact of thermal discharge standards on the system operation. Concurrently, and continuing into fiscal year 1975, available mathematical methods for water resource optimization are being tested for potential use in the final basinwide water management scheme. A river subbasin has been selected as a specific application example. Also the needs for research, data, and further method development will be identified.

Water Control Operations

1973 actual	$1,309,063
1974 estimate	1,367,000
1975 estimate	1,370,000

Water control operations require the collection and evaluation of data on rainfall throughout the watershed, waterflow in the Valley streams, and water storage and releases. To support these activities, TVA maintains a network of about 400 rain gages, 4 evaporation stations, about 160 stream gaging stations, and a VHF radio system for transmission of rainfall and streamflow data from selected remote areas in the Valley. In addition, other agencies maintain about 110 rain gages and the U.S. Geological Survey maintains 149 stream gages in the Valley from which data are supplied to TVA on a regular basis or upon request. TVA pays part of the operating costs for 94 of the USGS gages that are essential to TVA operations. Installation and operation of the gages are closely coordinated between the various agencies to prevent duplication and unnecessary installation. The General Weather Center, a private forecasting concern under contract to TVA, furnishes daily and extended forecasts of rainfall as well as information on expected light intensities, temperatures, and other meteorological factors needed in system operations.

Data from a portion of the overall network, consisting of 200 rain gages, and from about 60 of the stream gages are provided daily or more often, as required, to a central water control office in Knoxville. These data are analyzed, together with data on reservoir elevations, discharges, and power generation schedules, and a plan of operation for several days in advance is formulated for each reservoir. Instructions are then issued to the operators at each dam for storing or releasing water as needed. A daily river bulletin, giving data observed for the previous day and anticipated data for the current and two succeeding days at each principal reservoir, is published in cooperation with the National Weather Service and is distributed to persons and firms concerned with the effects of reservoir elevations and discharges. Data are exchanged regularly and frequent consultations are held with the Corps of Engineers in scheduling Tennessee Valley reservoir system outflow to provide benefits to the lower Ohio and Mississippi rivers during low-flow and flood-flow periods.

Water Control Investigations

1973 actual	$189,684
1974 estimate	167,000
1975 estimate	71,000

Water control investigations include such activities as measurement of sedimentation in streams and reservoirs; checks on the operation of the spillways, sluices, and other hydraulic facilities; basic hydraulic research; investigation of damage claims arising from the operation of multiple-purpose reservoirs; and investigation of applications by others to build structures along the river or its tributaries.

The 1975 estimate of $71,000 provides for (1) continuation of sedimentation surveys and related investigations on the mainstream and tributary reservoirs, (2) continuation of coordination of a wide variety of hydrologic and hydraulic information with other governmental or private organizations, and (3) investigation of damage claims arising from operation of the multipurpose reservoir system.

Investigations and Control of Reservoir Ecology

	1973 Actual	1974 Estimate	1975 Estimate
Insect control	$604,883	$676,000	$569,000
Aquatic weed control	627,389	525,000	439,000
Total	1,232,272	1,201,000	1,008,000

Insect Control

This activity is directed primarily toward the control of a mosquito that carries malaria. In specific areas limited efforts are made to control floodwater mosquitoes, biting flies, and ticks.

Natural methods are emphasized for mosquito control. Lake water levels are fluctuated to interfere with mosquito production. Water is pumped or drained from low areas. Shoreline vegetation is mowed. Larvicide is applied only when required to supplement these measures. Planned control measures in 1974 and 1975 for the lower river reservoirs are shown below.

	Fiscal Year 1974	Fiscal Year 1975
Plant growth control (mechanical and herbicidal)	5,187 acres	3,818 acres
Drainage maintenance	133,750 linear feet	130,600 linear feet
Application of larvicide	29,000 acres	29,000 acres
Operation and maintenance of dewatering projects	18,800 hours	18,800 hours

The two woody plants in TVA reservoirs of most concern to mosquito control are willow and buttonball. In relatively broad, flat areas and in some protected embayments and sloughs, dense stands afford an extensive habitat for mosquito production. Where the shoreline is steep, they form a narrow bank of little importance. In some cases the plants grow so tall and the canopy is so dense that application of larvicide would be both ineffective and hazardous. They dampen wind and wave action and tend to reduce the effect of water level fluctuation for mosquito control. For these reasons, growth of the plants must be controlled by mechanical mowing. Approximately 3,818 acres of shoreline are scheduled for growth control during fiscal year 1975.

All control work scheduled for fiscal year 1974 will be performed on Kentucky, Pickwick, Wilson, Wheeler, Guntersville, Nickajack, and Chickamauga reservoirs. Water level management is expected to provide satisfactory mosquito control on all other reservoirs.

Aquatic Weed Control

Eurasian watermilfoil has become the most troublesome weed in TVA reservoirs. TVA experience during the past decade has resulted in the development of two methods of controlling watermilfoil; water level management to dry the plant by dewatering or by otherwise disturbing its habitat, and application of 2,4-D herbicide. Neither method has produced permanent control and they must be employed together or separately on an annual basis to keep present colonies within a tolerable level.

Herbicide, 2,4-dichlorophenoxyacetic acid, is applied to large watermilfoil colonies by two-man crews in boats specially equipped for the work and employed exclusively for search and treat operations. Small colonies of watermilfoil or individual plants in sparsely infested reservoir areas are treated with liquid or granular herbicide, applied manually from a boat or while wading.

TVA also applies herbicide by helicopter after evaluating the location, extent, and density of the watermilfoil infestation; the operational costs involved; and the potential danger to nontarget shoreline vegetation.

Watermilfoil continues to be a major problem in Wilson, Guntersville, Nickajack, and Melton Hill reservoirs and a lesser problem in Wheeler, Chickamauga, and Watts Bar reservoirs. In 1975 search and treat operations will be continued on all these reservoirs where limited treatment will be made as necessary in areas of high public use.

3655

Plant Protection and Services to Visitors

1973 actual	$1,573,370
1974 estimate	1,639,000
1975 estimate	1,740,000

As of June 30, 1973, TVA multipurpose projects represented an initial investment of more than a billion dollars. Many projects are in rural, isolated areas and all major projects are considered essential to national defense. All must be protected from fire damage, theft, vandalism, sabotage, and civil disorders. The major projects are open to the public. In calendar year 1972, over 13 million people visited them creating attendant problems of crowd and traffic control, visitor safety, maintenance of law and order, emergency first aid, and accident investigations.

Property protection is the major function of this activity. Receiving and protecting visitors and enforcement of Federal and state laws and project regulations are important subsidiary functions. The 1975 estimate of $1,740,000 provides for the necessary protection to property and persons by uniformed employees on duty at all times at major projects. The extent of protection is based on location, size, and type of project; current security information; recommendations from periodic surveys by U.S. military forces; and visitor load.

Operation and Upkeep of Dam Reservations

1973 actual	$1,224,793
1974 estimate	1,347,000
1975 estimate	1,368,000

TVA's multipurpose dam reservations include about 14,000 acres of land, 105 miles of roads, extensive parking areas, walks and paths, maintenance and visitor buildings, and picnic areas with tables, benches, fireplaces, and grills. Additional facilities are placed in service annually to serve increased public demand. About 60 percent of the reservation acreage is in natural or forest cover; about 15 percent is maintained as meadow or pasture; and about 25 percent (3,500 acres) is maintained for intensive public use. A variety of operations is necessary for the upkeep of these grounds and the roads serving them to meet operating requirements of dams, locks, and other major installations, and to receive and safeguard the visiting public. Maintenance standards are designed to provide a clean and attractive appearance of all public grounds

commensurate with intensity of use in the interest of public health, safety, convenience and economy. In recent years, to alleviate the general inflationary trend, a program of maintenance changes has been initiated to reduce acreage requiring intensive maintenance and improve the safety and economy of the entire program. Changes in the types of plant material and increased use of approved chemicals and more efficient maintenance equipment are being used in this effort.

Maintenance work for nonintensive public-use areas consists of prevention and control of fires and erosion; control and removal of dead or diseased timber; and improvements to plantings of seedlings. Wherever feasible, meadow and pasture areas are maintained by local farmers under agricultural license agreements which relieve TVA of maintenance costs and provide modest cash income.

Income expected to be realized from the operation of dam reservations is $17,000 in fiscal year 1975 derived principally from land rentals, water system revenues, leased village properties, and boat dock licenses.

Reservoir Land Management

	1973 Actual	1974 Estimate	1975 Estimate
Land operations	$1,684,195	$1,654,000	$1,666,000
Operation of backwater protection facilities	44,697	59,000	61,000
Land sales expense	45,084	50,000	50,000
Operation of reservoir recreation facilities	435,171	501,000	509,000
Total	2,209,147	2,264,000	2,286,000

This activity relates primarily to the management of land and land rights acquired and held by TVA on a narrow 10,000-mile strip along the shores of its major multiple-use reservoirs. As of June 30, 1973, TVA owned about 232,000 acres of such lands and held easement rights on an additional 115,000 acres above full-pool lake levels. These lands are used by individuals, agencies, and private groups for recreation, boat docks, wildlife refuges, agriculture, and other purposes. Continuous surveillance is necessary to ensure that trespass is controlled and that authorized uses do not conflict with the primary purposes of the reservoirs and are consistent with full public uses of the reservoirs. Every effort is made to promote public understanding of the overall functioning of the reservoir system to avoid misunderstandings based on a lack of information. Engineering surveys are made to install and maintain boundary and maximum reservoir level markers and to

record changes in land ownership and physical developments on reservoir lands which are related to TVA's program responsibilities. The lands held by TVA are reviewed periodically in the light of changing program requirements; lands no longer necessary for program purposes are sold. Selling costs are included in this activity.

Some reservoir lands are licensed for agricultural purposes, involving public offering of available lands, establishment of minimum rental rates, review of applications, issuance of licenses, collection of rentals, and enforcement of license provisions. Approximately 885 licenses will be in effect in 1975 for the use of 19,500 acres of land for agricultural purposes, with estimated revenues of about $77,000.

Reservoir land operations also include forest fire protection, reforestation of selected areas, and marketing of timber and other forest products. Approximately 3,900 cords of pulpwood and 4,278,000 board-feet of timber are projected for sale in 1975 with a total estimated sales price of $127,000. Revenues from miscellaneous reservoir land operations, leased or licensed boat docks, cabin sites, and group camps are estimated at $28,000.

Increasing use of TVA lands by visitors and increasing private development in areas adjacent to TVA properties require constant surveillance and control by TVA of land in its ownership. Other activities included are a variety of "housekeeping" duties such as continuation of cooperative effort with the Department of Interior in sponsoring the Johnny Horizon program in the Tennessee Valley; promoting the establishment of sanitary landfills in counties adjacent to TVA reservoirs; removal of drift, debris, and clutter along TVA shorelines; protecting forested lands from fire, primarily under contracts with Valley state forestry divisions; operation and maintenance of backwater protection facilities such as dikes; and maintaining public-use facilities provided along the reservoir shorelines by TVA to assure safe, sanitary, and convenient access to the lakes.

Maintenance

1973 actual	$1,335,984
1974 estimate	2,457,000
1975 estimate	1,549,000

The average age of TVA's major dam and reservoir projects is more than 26 years. Norris Dam, the first, was completed March 4, 1936. All but six of these projects antedate 1950. Maintenance work is becoming more significant in operation of the facilities. Routine maintenance activities consist mainly of painting spillway gates, maintaining spillway gate operating devices and other equipment and structures at multipurpose dams; maintaining visitor buildings located on the

reservations; and resurfacing, resealing, and major repairs to roads, walks, and parking areas. Maintenance of certain earthfills is required under the terms of contracts entered into with the owners of the highways and railroads when TVA dams were built.

Extraordinary maintenance sometimes requires immediate attention. Such a situation presently exists at Fontana Dam. Cracking in certain concrete portions of the dam which was first discovered in October 1972 poses a potentially serious stability problem. Work began in late fiscal year 1973 to determine the extent and nature of remedial measures required. The preliminary estimate for the total investigations and repairs is $2.0 million with approximately $1.5 million required in 1974 and $0.5 million in 1975.

Major maintenance scheduled in 1975 is shown below.

Cherokee Dam	Paint spillway gates
Douglas Dam	Paint spillway gates
Fontana Dam	Exploratory drilling and repairs on abutment
Kentucky Dam	Paint spillway gates and guides
	Miscellaneous highway and bridge embankment maintenance
Norris Dam	Repair concrete roadway over dam
Pickwick Dam	Repair spillway gates
Wilson Dam	Inspect, repair, and paint spillway gates
	Spillway apron repairs
	Roadway and sidewalk repair on bridge over dam

The estimate also includes resurfacing about 94 miles of roads at 10 locations. In addition to these major items, the regular inspection activity will be expanded to provide better information on repair needs so that extraordinary maintenance can be kept to a minimum.

Other Expense

1973 actual	$296,516
1974 estimate	394,000
1975 estimate	355,000

The estimate for 1975 covers operation and maintenance of the dams in the Beech River watershed project; two dams in the Bear Creek watershed system; and the Tims Ford Dam. Activities include vector control work, checking the flood detention features, maintaining access roads to all dams and earthfills, and minor surveying and mapping work.

29-353 O - 74 - pt. 5 - 5

Schedule B-2. General Resources Development
(For fiscal years ending June 30, 1973, 1974, and 1975)

	1973 Actual	1974 Estimate	1975 Estimate
Income			
Income from sale of fertilizer materials	$89,665	$153,000	$153,000
Expenses			
Agricultural projects:			
Appropriations	1,495,181	1,650,000	1,738,000
Nonpower proceeds	89,665	153,000	153,000
Total agricultural projects	1,584,846	1,803,000	1,891,000
Forest and wild land resources development	1,355,308	1,513,000	1,805,000
Minerals resources projects	274,009	275,000	275,000
Environmental quality projects	430,333	418,000	418,000
Development of tributary areas	1,530,038	1,607,000	1,669,000
Demonstrations in education and manpower development	803,143	801,000	801,000
Regional development planning	476,132	560,000	592,000
Townlift community improvement	723,374	735,000	747,000
Interagency health service demonstrations	-	104,000	155,000
Total	7,177,183	7,816,000	8,353,000
Allocated from multipurpose reservoir operations	124,922	139,000	122,000
Total expenses before depreciation:			
Financed from appropriations	7,212,440	7,802,000	8,322,000
Financed from nonpower proceeds	89,665	153,000	153,000
Total	7,302,105	7,955,000	8,475,000
Depreciation	550,962	121,000	121,000
Total expenses	7,853,067	8,076,000	8,596,000
Net expense of general resources development	7,763,402	7,923,000	8,443,000

GENERAL RESOURCES DEVELOPMENT

TVA has developed the Tennessee River system for navigation, flood control, and power purposes. Additional recreation, wildlife, water supply, and water quality benefits have resulted, and the total effect has been a major contribution to the economic and social development of the region. The general resources development program described below includes activities through which the diverse capabilities of the TVA organization are brought to bear upon special problems or additional development opportunities principally related to the land and its products and to the people of the region and their institutional resources.

AGRICULTURAL PROJECTS

	1973 Actual	1974 Estimate	1975 Estimate
Financed from appropriated funds:			
Development program	$1,110,256	$1,109,000	$1,112,000
Special projects	253,553	389,000	472,000
Program planning and analysis	87,329	105,000	106,000
Administrative and general expenses	44,043	47,000	48,000
Total	1,495,181	1,650,000	1,738,000
Financed from nonpower proceeds:			
Development program	89,665	153,000	153,000

Primary objectives of the cooperative agricultural resource development program are to promote increased income from agriculture and help those workers not needed in or fully employed in agriculture to find off-farm work. Specific program goals are to (1) change land use to its highest long-range economic capability, (2) consolidate farms into larger units and improve tenure arrangements, (3) upgrade and expand marketing systems, (4) improve farm management, (5) improve the standard of living of rural people, (6) introduce new higher income-producing agricultural enterprises, and (7) recognize as soon as possible the hindrances to full development. Activities largely involve research and development and the use of findings in demonstrations and educational projects aimed at introducing improved practices and systems to farmers.

Development Program

	1973 Actual	1974 Estimate	1975 Estimate
Financed from appropriated funds:			
Valley agricultural resource development	$988,303	$997,000	$998,000
Special agricultural investigation and technical assistance	121,953	112,000	114,000
Total	1,110,256	1,109,000	1,112,000
Financed from nonpower proceeds	89,665	153,000	153,000

Agricultural resource development is oriented to major problems and opportunities of regional scope. The program is an educational one in which new and improved fertilizers produced by TVA are often a principal input in a developmental process. Help is given in farm management, introducing new farm enterprises, and developing related marketing systems. These activities are conducted with the land-grant universities of the seven Valley states, practical farmers, and in appropriate circumstances local development organizations, including tributary area associations. They are designed for the particular resource opportunities and problems of the areas in which they are conducted. Program activities conducted in agricultural resource development include fertilizer trials and field demonstrations, resource management farms, rapid adjustment farms, and garden demonstrations with low-income farm families.

Fertilizer trial demonstrations, usually no larger than one acre, are used to introduce new TVA fertilizers and to evaluate them. TVA generally supplies the fertilizer at its expense, including freight charges. These demonstrations give professional agricultural workers experience with new TVA fertilizers under actual farming conditions.

Field demonstrations show the proper practices for fertilizing and producing specific crops. They are especially useful in introducing new enterprises. They use an entire field or a sizable portion. Crop yields or animal products are evaluated by comparison with conventionally fertilized areas. Fertilizer oriented field demonstrations are well suited for work with both commercial farmers and part-time farmers. TVA fertilizers are supplied at partial-pay prices. During fiscal year 1973 emphasis was on demonstrations to show potentials for increasing farm income by using grain and forage in livestock production and to introduce new specialty crops or solve fertility problems associated with low yield, as shown in the following table.

Forage, pasture, and feed grains	283
Specialty crops (vegetables, fruits, nuts, and shrubbery)	333
Field crops	82
Evaluation of TVA fertilizers	33
Total	731

Resource management farms are whole-farm demonstrations showing the changes needed in managing land, labor, and capital resources for maximum income. These farms have replaced an earlier program element known as farm test demonstrations. The resource management farm involves the operator, the land-grant university of his state, and TVA in developing for his specific farm a concept of organizing and managing all resources to increase family income. Farmers in this program range from commercial farmers to those typical of the low-income farm group. Experience gained on program farms is useful in guiding developments on other farms with similar resources and capabilities.

Rapid adjustment farms are used to explore and demonstrate ways to accelerate realization of potential income and changes on a commercial scale. Introduced in the early 1960's the rapid adjustment farm has become an exceptionally effective device for both research and teaching. Operators of rapid adjustment farms become innovators and provide leadership to other farmers in making needed adjustments to the changing agricultural situation. Rapid adjustment farms show on an accelerated time schedule what Valley farmers need to do if they are to have successful commercial operations. The magnitude and rate of changes on rapid adjustment farms are great, as are capital requirements and risks to the farmer. TVA helps by furnishing fertilizer required in the demonstrations at no cost to the farmer except for freight and handling charges. Qualified college personnel give special attention to each rapid adjustment farm.

Home garden demonstrations are conducted with low-income families in depressed rural areas of the Valley to show the economic value of a home garden in supplying food and improving nutrition. Low-income families are taught to plan a vegetable mix related to their dietary needs. They are advised on production and cultural methods and on preparing and preserving food. TVA provides seed, insecticide, fertilizer, sprayer, and technical help to conduct the demonstrations.

The following table shows the number of demonstrations by type to be conducted in fiscal year 1975, compared with the number in earlier years.

3663

	1973 Actual	1974 Estimate	1975 Estimate
Fertilizer trials and field demonstrations	731	770	780
Resource management farms	631	650	675
Rapid adjustment farms	38	40	45
Home garden demonstrations	292	325	350

Special Areas of Interest–Illustrations

In the mountainous areas of western North Carolina, more than $12 million worth of trellised tomatoes, strawberries, ornamental shrubbery, and Christmas trees are produced annually. These enterprises have been introduced into north Georgia, southwest Virginia, and eastern Tennessee. At the time demonstrations to accelerate production of these crops begin, activities to develop an adequate marketing structure are started. Blueberries will be introduced as an enterprise in southwest Virginia to increase agricultural income and to help renovate strip mined soils.

In the middle portion of Tennessee, many farms have enough acreage for efficient livestock production. Activities are conducted to intensify forage and feed grain production. On many large farms, dairying is highly profitable. Swine production offers an opportunity to intensify output on smaller acreages, while beef cattle has a potential for many farms and fits particularly well on part-time farms. In western Tennessee and Kentucky, programs emphasize efficient livestock production through double cropping and improved beef-forage systems.

In northeast Mississippi and the western portion of north Alabama labor intensive enterprises, such as feeder pigs, pimento peppers, and cucumbers are emphasized because of the limited acreage of productive soils. Other high value enterprises such as peaches and strawberries are being introduced and evaluated. With the completion of the Yellow Creek Port and its grain handling facilities, more emphasis will be placed on market hog and broiler production.

In the middle portion of north Alabama, emphasis will continue on soybean production to coincide with construction of a soybean processing plant at Decatur, Alabama. In the Sand Mountain area or eastern portion of north Alabama, introduction of high value horticultural crops with related marketing facilities will be intensified and demonstrations will be continued to show profitability of supplemental irrigation.

Special Investigations and Technical Assistance

TVA conducts special studies in specific watersheds (subregional areas) to determine the need for water control methods beneficial to agriculture and to determine environmental effects on agriculture of such projects. Land-use studies are carried out to determine (1) areas most suited for continued agricultural production, (2) areas having the capability of joint uses such as crop production and industrial waste disposal, and (3) areas which are not essential for agricultural production. Other studies are conducted to provide information for planning and initiating intensive agricultural activities. On a more general basis, technical planning aid is given to subregional planning groups to help them recognize agricultural development opportunities, to solve problems necessary to achieve agricultural development potentials, to conduct agricultural development activities, and to evaluate their results.

Special Projects

	1973 Actual	1974 Estimate	1975 Estimate
Agribusiness development	$56,160	$87,000	$94,000
Land tenure and use problems	16,041	-	-
Research on forage fertilization and utilization	65,417	-	-
Development of new enterprises and opportunities for the rural poor	-	141,000	144,000
Tennessee Valley rural life conferences	29,066	31,000	32,000
Evaluation of livestock waste disposal systems	-	22,000	87,000
Studies of agricultural uses of heated water	86,869	108,000	115,000
Total	253,553	389,000	472,000

Agribusiness development is designed to expand the productive capability and profitability of Valley agriculture through improved marketing and farm-supply systems. Activities include joint market feasibility studies and technical assistance. TVA provides a unique function in agribusiness development in the Valley region by (1) coordinating the planning of projects too large for individual local and state agencies, (2) coordinating activities of many separate agencies, and (3) providing leadership on projects of larger than state size necessary to promote change in the basic market structure. For

example, TVA recently completed an interregional study of soybean processing facilities needed within the Valley region. A private firm used the findings to initiate the building of one of the largest soybean processing plants in the world on the Tennessee River. A present study is examining the interrelationships among farm supply, farm production, and farm product marketing and will show how change in one element involves changes throughout the entire farm and farm dependent sectors. Information from this study will be used to identify the location of proposed farm service centers within the 125 Valley counties. A future study will identify the types and kinds of facilities needed to service the marketing needs of grain and soybean producers.

Development of new enterprises and opportunities for the rural poor will be emphasized in a continuing attack on rural poverty. Low income in the rural areas of the Tennessee Valley is more prevalent than in urban centers and in many other rural areas of the U.S. For many farm families age, educational level, and lack of skills make a transfer to nonfarm employment impossible. Many of these families lack the resources to become successful farmers, yet farm income can be increased substantially through improved production and marketing of high-income agricultural enterprises on existing land. Methods for starting such activities were delineated in a workshop on "Methods of Working with Limited Resource Farmers" sponsored by TVA, the 14 land-grant institutions in the region, Tuskegee Institute, and USDA. This new program activity will emphasize education and provide training in opportunities to increase technical skills related to production of selected agricultural enterprises.

Tennessee Valley rural life conferences involving agribusiness leaders, farmers, bankers, and other community leaders promote a better understanding of farm and agribusiness problems and opportunities in the Valley region and provide for exchange of information and ideas for improved decision making affecting rural economies and quality of rural living. Two conferences will be held during fiscal year 1974 dealing with regional soybean production and marketing and improving rural living on limited resources. During 1975 two conferences will cover opportunities for hog production and marketing and providing quality housing for the rural poor.

An economic evaluation of livestock waste disposal systems in the Tennessee Valley will be accomplished to ensure that future development and expansion of the livestock industry within the region is compatible with an expanding urban and rural population. This work will establish costs associated with the types of waste disposal systems being used by livestock producers in the Tennessee Valley and will integrate these disposal costs into the production functions of specific livestock enterprises. Results from this study will aid in establishing guidelines for farmers who plan to develop livestock facilities. It also will provide guidelines or recommendations for residential and industrial developments on land adjacent to livestock enterprises already in operation. In 1975 this evaluation will be completed and a new project, biological recycling of nutrients from livestock waste, will be initiated. Beneficial effects of livestock wastes within a closed system will be evaluated from agronomic and economic viewpoints.

Studies of agricultural uses of heated water are developing technology for using the energy in heated water discharges from major power plants. A prototype greenhouse has been constructed at Muscle Shoals, Alabama. Special emphasis will be to study plant growth under temperature, humidity, and light relationships existing in north Alabama in greenhouses heated and cooled by heat exchangers designed by Oak Ridge National Laboratory. Production-related economic studies will evaluate the operating efficiency of the pilot greenhouse in preparation for construction and operation of a demonstration greenhouse. This will be built at Browns Ferry where great quantities of heated water will be available from a nuclear power plant. A crop production plan adapted to seasonal marketing conditions for greenhouse horticultural production in the Southeast will be developed. In addition, field experiments have been established in the forage research area to determine the effect of heated soil as a preliminary investigation of hot water utilization.

Program Planning and Analysis

	1973 Actual	1974 Estimate	1975 Estimate
Total	$87,329	$105,000	$106,000

To plan, direct, and evaluate effectively a program for encouraging development of agricultural resources in the Valley and of the industries directly related to agriculture, TVA continuously appraises regional rural and agricultural trends. These studies include farm size and value, land use, farm expenditures and product sales, farm type, operator tenure, changes in marketing facilities, and regional rural and farm migration.

Specific objectives of these studies are to (1) improve understanding of changing conditions in the Valley, (2) define more sharply the emerging problems of rural people, (3) appraise the influence of program activity in bringing about desired changes, and (4) improve planning guidelines for long-range Valley resource development.

FOREST AND WILD LAND RESOURCES DEVELOPMENT

	1973 Actual	1974 Estimate	1975 Estimate
Forest and wild land investigations	$294,925	$348,000	$322,000
Forest and wildlife management and wildlife use	287,777	366,000	366,000
Forest industry development	256,185	284,000	301,000
Improvement and establishment of wild land vegetation	332,595	305,000	301,000
Strip mine reclamation	124,802	146,000	450,000
Administrative and general expenses	59,024	64,000	65,000
Total	1,355,308	1,513,000	1,805,000

Forest and Wild Land Investigations

Forest and wild land resource surveys are conducted systematically to appraise the quality and quantity of the resource; its location, ownership, and use; ecological and hydrological conditions; and the recreational, scenic, and wildlife potential of the Valley's forest and wild lands. From these inventories, performed on a county-unit basis at the rate of eight a year, current conditions are determined, results of past programs are evaluated, trends are predicted, and new program directions are established. These surveys provide the data for answering requests from the public for resource information. Major expansion of the Valley forest products industry has resulted from and will continue to depend on the availability of resource inventory data gathered and analyzed by TVA. Special investigations are made to develop improved techniques for getting information on the resource. Investigation of remote sensing applications (e.g. color-infrared photography) will be continued in 1975 in cooperation with Oak Ridge National Laboratory, USGS, and NASA.

Hydrologic studies are made to determine forest and wildland soil-water relationships. This knowledge is necessary to proper management and use of Valley land and water resources. A pilot study is being undertaken to evaluate the capability of forest lands to assimilate waste water effluents from sewage treatment plants.

A comprehensive guide for land-use planning is being developed and methods of evaluating the impacts of alternative programs, projects, and land-use decisions on wild land resources are being improved.

Ecosystems surveys and analyses are made to improve the understanding of the structure and function of specific ecosystems and the effects of changes on them. This work is done in cooperation with the departments of Agriculture and Interior, National Science Foundation, and Atomic Energy Commission.

Forest and Wildlife Management and Wildlife Use

The efficient management of forests and wild lands to balance timber and wildlife production with recreation, aesthetics, and watershed environmental protection is dependent on up-to-date technology and decision-making tools. TVA is now developing a new resource management technique. The program, called "WRAP" (Wild Land Resource Allocation Procedures), is expected to speed the application of modern management practices significantly, especially on the Valley's 18 million acres in 350,000 private holdings. The program will be fully operational in fiscal year 1975. Various other forest and wildlife management technologies, such as forest fertilization, even-aged hardwood management, and wild turkey and deer management, are being tested and demonstrated.

3669

Use of wildlife in forests and uplands for hunting and general enjoyment is far below the potential. TVA is working to determine current use, needs, and opportunities. Specific areas (including TVA lands) are being developed to demonstrate opportunities for fuller use. TVA works with the owners of private land to promote fee-hunting and the development of shooting preserves. Selected TVA properties—islands, reservoir lands, and tracts held for future power plant sites—are being examined to assess their present and potential use as wildlife areas available to the public.

Aesthetic improvement of forests, wild lands, and waterways offers significant contributions to an overall quality of life. Demonstrations on the use of vegetation for screening have been established and fuller development of scenic resources on TVA lands is planned. As the Valley's population becomes more urban, the need to increase opportunities for natural beauty and outdoor recreation in and near the city becomes greater. Discrete use of vegetation and the addition of wildlife and fishery resources can provide amenities for both young and old in cities and communities and around factories and industrial areas. TVA will demonstrate some of the more promising opportunities. TVA will also set aside and preserve several small wild areas on TVA lands for public enjoyment and study. TVA's forest and wild lands are also being examined to develop management plans which ensure maximum public benefits.

Forest Industry Development

The forest products industry is one of the top contributors to the Valley economy, with a plant investment of $768 million, a payroll of some $250 million a year, and an annual product value of around $1 billion. TVA maintains close surveillance of the resource base as described above and close contacts with the industry to detect and forecast changes that reveal unusual forest production and timber utilization problems and opportunities. TVA identifies, evaluates, and promotes those industrial uses that provide the greatest economic, social, and environmental benefits for the Valley to encourage an even greater economic value of the forest resource.

As in most of the East, timber harvesting practices in the Valley are for the most part inefficient and outdated. Logging studies by TVA have shown that Valley loggers using present equipment could reduce annual costs by $4 to $5 million through the application of cost control principles. TVA is implementing demonstration projects to help loggers achieve these savings. TVA conducts a modest educational program to encourage adoption of better logging methods and works with the forest industry to promote more efficient utilization of trees as they are cut. The economics of chipping tree crowns in the woods will be studied in an effort to secure utilization of material now left to rot in the forest. As much as 50 percent of the wood fiber in the tree is often lost in this way.

Economic studies will be made of two areas to encourage the development of new forest industries and to upgrade present operations. A second integrated hardwood utilization complex will be planned and promoted.

Recent air pollution laws are placing increasing pressure on industries to dispose of their wood and bark wastes by means other than burning. These two situations combine to create a unique opportunity to increase the utilization of the forest resource and simultaneously reduce pollution associated with timber processing. TVA is working with the U.S. Forest Service and the industry seeking ways to utilize logging waste and plant residues economically.

Typically, marketing wood products is as complex and disorganized in the Valley as it is in most other regions of the United States. Current marketing trends are being analyzed to develop more efficient marketing systems which will expand markets and improve the industry's product mix.

Improvement and Establishment of Wild Land Vegetation

TVA's long-term forest tree improvement program deals with the region's most important pine and hardwood species. In addition, TVA develops genetically improved wildlife food and cover plants and specialty vegetation needed for strip mine reclamation, wildlife habitat, and aesthetic improvement of wild landscapes.

The production of genetically superior trees and specialty vegetation involves nursery work, some of which TVA will do but most of which will be contracted to state or private nurseries, especially as anticipated demand grows. Technology to incorporate superior hardwoods into the Valley forests is being tested. At present, specialty nursery stock either is not available or is too expensive for the large volume needs anticipated. The establishment of wildlife and specialty vegetation will be intensified throughout the Tennessee Valley on strip mines, power line rights of way, reservoir shorelines, roadsides, and other areas with high visual impact and wildlife potential. TVA's 17,000 miles of power line rights of way and 11,000 miles of reservoir shoreline offer particularly unique revegetation opportunities to improve the region's natural environment through direct and substantial increases in wildlife resources. About 200,000 seedlings will be produced in 1975 for use in TVA programs. Efforts will continue to promote reforestation on private lands, the goal being a level of 50,000 acres a year.

3671

Strip Mine Reclamation

Restoration of surface-mined land is a very important part of the overall task of protecting forest, wild land, wildlife, and water resources and of securing a productive and attractive environment. Abandoned surface mines are sources of pollution and they detrace from the area's natural beauty. TVA works for the restoration of all abandoned surface mines to assure that reclamation is an integral part of active mining operations. As a major buyer of strip mined coal, TVA requires and enforces effective mined land planning, environmental protection, and a high order of reclamation on all lands disturbed in supplying its coal. TVA is the only purchaser of coal in the Nation which requires that its contractors reclaim the land disturbed. The expense associated with enforcing strip mine reclamation clauses of coal procurement contracts is charged to the power program.

TVA assists Valley states in their efforts to secure and implement effective regulatory legislation for surface mining. Among the Valley states, Kentucky, Virginia, Alabama, Georgia, and Tennessee have adopted such legislation. Demonstrations and studies are conducted in cooperation with the U.S. Forest Service, the states, and with the mining industry and landowners to develop better methods of reclamation. Demonstrations established with these same cooperators

show that substantial areas of strip mined land can be restored to timber and wildlife production, that water runoff can be controlled, that stream pollution from acid and silt can be reduced, and that results will begin to show in a relatively short time.

During fiscal year 1975 TVA will examine alternatives and complete plans for restoring 72,000 acres of "orphan" strip mines that were mined and abandoned in the years before strip mine reclamation was required. Currently no one is legally responsible for their reclamation. Restoration of these 72,000 acres of land in the Valley will provide guidelines on the physical and administrative arrangements needed to reclaim the 1.5 million acres of similar unreclaimed lands in the eastern United States.

TVA will begin rehabilitation of some 225 acres of old surface mines and seal 16 deep mine openings in the Piney Creek area of Tennessee. Piney Creek is a part of the drainage area of scenic Fall Creek Falls State Park. This project, to be conducted in cooperation with the State, will show what can be done on the land to rehabilitate a stream that has been degraded by sediment and acid water runoff.

MINERALS RESOURCES PROJECTS

1973 actual	$274,009
1974 estimate	275,000
1975 estimate	275,000

3672

TVA cooperates with Valley state and local agencies in a wide range of geological and mineral resources investigations to accelerate the development of the Valley's mineral resources. TVA coordinates investigations and mineral identification procedures; gathers and interprets data from other investigations; establishes standards for both investigative procedures and map or report publication format; conducts research into patterns of minerals distribution and improvement of exploration techniques; and compiles and publishes geologic and mineral resources maps and data.

Cooperative programs for geologic mapping and publication of geologic and mineral resources maps in the 7-1/2-minute quadrangle format were established for Tennessee in 1962, North Carolina in 1968, and Alabama in 1971. Through 1973 a total of 274 geologic and mineral resource quadrangles has been published, principally in Tennessee. Field mapping and editing are in progress for 21 quadrangles in Tennessee, 9 quadrangles in North Carolina, and 6 quadrangles in Alabama. It is expected that 35 quadrangles will be published in 1974 and an additional 35 in 1975. The State of Georgia has shown considerable interest in this cooperative program. Funding limitations in this program, however, are preventing active participation.

Magnetic mapping by ground methods of the Tennessee Valley region by TVA began in late 1970 and through 1973 ten quadrangles have been published with 12 ready for publication. In 1973 transition from ground to airborne surveying was made to substantially reduce the quadrangle average cost. Airborne surveying is under way and data for 6,000 square miles of area have been recorded. The surveying was done on a cost-share basis in Tennessee in 1973 and will continue in Tennessee and be extended into North Carolina and Alabama in 1974 and 1975.

Compilation of the Tennessee minerals industry atlas being prepared jointly by TVA, the State of Tennessee, and the U.S. Bureau of Mines will continue in 1975.

A considerable amount of unpublished information, as well as published mineral resources data has been assembled, verified, and coded into an organized data retrieval system keyed to a detailed map atlas of the region. This is now being made much more valuable by conversion of the data into a computer-based, information-retrieval system (Computer Resources Information Bank or CRIB) of the U.S. Geological Survey. A suitable computer-terminal facility will be established in Knoxville so that this information can be entered and retrieved with rapid turnaround time and made available in response to requests from the large number of sources requesting such information. Full entry into the CRIB system will be accomplished in early 1975. In addition to retrievel upon request, activities will largely include updating and perfecting information in the CRIB file.

ENVIRONMENTAL QUALITY PROJECTS

	1973 Actual	1974 Estimate	1975 Estimate
Solid waste disposal demonstrations	$297,562	$267,000	$266,000
Regional air quality management	111,422	128,000	128,000
Administrative and general expenses	21,349	23,000	24,000
Total	430,333	418,000	418,000

Concern for the quality of the environment is expressed in all TVA projects and programs as an essential part of unified resource development. The environmental quality projects described in this section are in fields TVA has selected for emphasis on the basis of the seriousness of the problem, TVA program responsibility, and TVA technical competence and experience.

Solid Waste Disposal Demonstrations

1973 actual	$297,562
1974 estimate	267,000
1975 estimate	266,000

TVA works with Valley counties and cities in establishing effective solid waste collection and disposal systems. TVA has filled a need for technical assistance during the development and implementation by the several states of solid waste management plans and the extension of consultant activities into the field of solid waste management. These efforts are directed toward the development of countywide and multicounty solid waste management programs.

TVA provided solid waste management assistance to 34 local governments in fiscal year 1973 and is presently scheduled to provide similar assistance to 35 local governments in fiscal year 1974 and 35 in fiscal year 1975.

A significant element in a program of solid waste management is the organization of rural collection systems for most of the Valley area is rural and many of its people live in the country. Only one Valley county in ten provides solid waste collection services to rural residents. TVA assists counties to prepare collection plans, advises on equipment specifications, and helps in the solution of problems created by random garbage dumps.

Rural cleanup and dump closing are the subject of environmental quality laws. TVA assists Valley counties in closing random dumps by lending equipment and by providing technical assistance, the object being to conduct one demonstration project in each county, accompanied by an educational campaign to make local people aware of the necessity of cooperating with local governments in keeping their neighborhoods clean.

State laws requiring the proper disposal of solid wastes have created an unprecedented demand for assistance on opening and operating sanitary landfills. Existing sources are not able to meet this demand. TVA is providing technical assistance, including feasibility studies and operational plans. Sixteen landfills were planned in fiscal year 1973. This activity will be continued in 1974 and 1975.

New requirements for landfills are creating hundreds of jobs for heavy equipment operators. TVA is assisting local governments in training programs to orient new operators to efficient procedures that comply with state regulations.

Recovering and recycling solid waste components is a partial and permanent solution to problems of solid waste disposal. TVA works with local officials in developing methods of receiving, processing, transporting, and marketing materials suitable for recycling. Two community recycling projects were initiated in 1973. Four more are planned for fiscal years 1974 and 1975.

29-353 O - 74 - pt. 5 - 6

Advanced solid waste investigations will continue to seek improvements in disposal and recycling methods. Among the more promising studies are investigations of waste paper utilization as a cattle feed supplement, basic research on landfill sealants, use of strip mine pits as landfills, rubber recycling, and solid waste incineration and pyrolysis.

Tributary area organizations and local governments have continued and expanded efforts begun in fiscal year 1971 to rid the Valley of junked cars. TVA makes available for limited term demonstrations trucks especially adapted for the retrieval of abandoned junk cars. The local governments provide an operating crew and organize a citizen campaign to help locate the hulks and provide the necessary title clearance. These demonstrations have been very successful in encouraging local governments to begin continuing programs. TVA provides plans so that local governments may construct their own junk car retrievers. At the end of 1973 over 20,000 junked cars had been collected in 40 Valley counties by trucks built by local governments using plans provided by TVA.

Regional Air Quality Management

1973 actual	$111,422
1974 estimate	128,000
1975 estimate	128,000

TVA conducts one of the largest known monitoring and research efforts related to atmospheric emissions from steam power plants. TVA is also conducting extensive in-house research on the removal of SO_2 from flue gases and is performing research of this character for the Air Pollution Control Office of the Environmental Protection Agency as discussed on pages 110 and 193, respectively.

Recognizing the necessity for effective air pollution control at all governmental levels, TVA also contributes to regional air quality management. Basic to regional air quality management is the operation of five air quality trend stations, remote from the influence of large urban and industrial pollution sources, for obtaining a systematic record of air quality trends in the Tennessee Valley watershed. A low-cost bioindicator air quality monitoring network employing white pine ramets to monitor long-term trends in air pollution effects is being developed. Air quality and meterology data and technical information on control technology derived from TVA studies are made available to state and local agencies and industry.

TVA requires that industries include effective air quality controls in new plants at sites involving TVA lands and land rights.

Regional environmental quality assessment is a new activity proposed for this program. The need has been established by implementation of the National Environmental Policy Act, recent plant siting studies, movement toward establishing of a National Land Use Policy Act, and resource management legislation proposed in the President's legislative program, all of which emphasizes the need for a TVA activity to relate environmental quality, land use, and proposed development on a Valley-wide or regional basis.

Development of criteria and methodology is necessary to better guide environmental evaluation of sites proposed for TVA power plants, industry, recreation, and other uses. An information system is proposed to include a regional environmental resource inventory and methods to relate environmental quality data to land-use information and to display resulting information in a format usable for project and program planning.

DEVELOPMENT OF TRIBUTARY AREAS

1973 actual	$1,530,038
1974 estimate	1,607,000
1975 estimate	1,669,000

Through the tributary area development program, TVA aids local governments and citizen groups to plan and implement subregional resource development efforts to accelerate social and economic progress. TVA provides a broad range of technical assistance to help these organizations to understand the interrelations of natural resources development and the social and economic growth. The program is based upon the premise that lasting progress comes when local citizens develop ability to control and improve their own futures. Today almost all of the Valley counties participate through citizens associations, special state agencies, multicounty development organizations, and local governmental agencies.

TVA involvement in tributary area development consists of working with the local people of each tributary area and helping them to identify area needs and opportunities. From this understanding a series of cooperative activities or projects is developed to accelerate economic and social progress. Efforts are concentrated on achievement of each project by consolidating inputs from the private sector, local government, state agencies, other Federal agencies, and TVA.

Developmental activities continue to grow in variety and scope. In response to changing conditions in tributary areas and shifts in aspirations, needs, and opportunities, new activities are added. These activities often provide a testing ground for new concepts and approaches to regional problems.

The resource development activities carried out by TVA in tributary area development are largely budgeted for and described in statements of the content of the programs of which they are a part. Thus, agricultural development in tributary areas is discussed under agricultural projects (pages 62-68), demonstrations of solid waste management (pages 75-76), technical assistance in recreation development programs is discussed in the section on recreation (pages 41-44), and assistance in water quality management is described in the section of that title (pages 38-40). The 1975 estimate of $1,669,000 for tributary area development covers the TVA cost of planning and coordinating activities, the direct cost of which may be charged elsewhere; providing technical advice and assistance to cooperating groups; and conducting development work in selected fields not undertaken regionally. TVA is now working with 42 local organizations in 35 areas covering the entire Tennessee Valley.

Tributary area development includes the development, testing, and demonstration of innovative projects and activities that are either "spun off" to TVA regional programs, to local units of government, or to the private sector. A variety of activities are under way to provide assistance to local governments. One such project is to aid local governments to plan and use automatic data processing applications to such functions as tax records and payrolls. This involves a clearinghouse to allow maximum interchange of programs and conduct of feasibility studies to determine types of computers and programs needed for specific situations. Many small units of government cannot afford to own computers. They can be aided through the organization of computer cooperatives. Using its computer capabilities, TVA is assisting in demonstrations of computer programming of service vehicle routings, such as school buses and garbage collection trucks.

Assistance is also given to local governments in such areas as rural fire protection, whereby TVA will give technical advice on equipment design and the development of systems for providing services promptly. TVA works also in helping provide training programs for public employees. Studies of mass-transit innovations are under way. Technical assistance is offered in development of administrative and accounting procedures for implementing revenue sharing plans. Other activities include programs to develop leadership among young people.

These activities are conducted under contracts and letters of agreement with local government units and other local organizations.

DEMONSTRATIONS IN EDUCATION AND MANPOWER DEVELOPMENT

1973 actual	$803,143
1974 estimate	801,000
1975 estimate	801,000

Education resources and practices in the Tennessee Valley region influence in large measure the extent to which Valley people assume productive roles as workers, citizens, family members, and participants in cultural pursuits. The goal of TVA's demonstrations in education and manpower development is to improve the breadth, quality, and availability of education and training activities in the region.

The fiscal year 1975 program includes a variety of projects designed to promote improvements in Valley education. TVA is a partner in a cooperative regional educational research and training center for school board members. The center, located at Tuscaloosa, Alabama, provides state school board associations and their members with research, training, information, and technical services on persistent and significant educational problems. The center also serves as a clearinghouse for free exchange of information relating to public school education. The success of this project has led to a recognition of the need to develop the skills of school administrators and the upgrading of curriculum in school administration. TVA will work with college departments of education on this project.

Another cooperative project encourages rural school systems to use modern, pertinent educational planning and management techniques. Materials and educational resources will be selected and a demonstration plan will be designed and carried out in a rural school system.

TVA is assisting state groups, including departments of education, in preparing master plans for environmental education.

Manpower development activities will include a training program for public utilities employees and a demonstration program for training environmental technicians.

REGIONAL DEVELOPMENT PLANNING

1973 actual	$476,132
1974 estimate	560,000
1975 estimate	592,000

The estimate for regional development covers staff expenses for analyzing and interpreting basic social, economic, and demographic data on the Tennessee Valley and for translating the findings into plans for development concerned with the general economic and environmental quality of life. These plans serve to guide TVA programs and to help Valley institutions determine how far the region has come and how far and how fast it can go in solving its problems and realizing its opportunities.

A major objective of current regional development planning studies is the systematic preparation of overviews of planning and development within the 201-county Tennessee Valley region. These studies are on a subregion basis developed cooperatively with the official state, regional (multicounty), and local planning and development agencies serving the Valley area.

TVA maintains information on population, employment, income, unemployment, and other socioeconomic measures in the region to assist in planning. Changes in geographic distribution as well as regional changes over time are analyzed to determine their meaning and implications for planning and development in the region and their impact on ongoing and planned programs and projects.

Cooperative population and economic studies are conducted to provide basic data and techniques, such as community profiles, retail trade analyses, and regional simulation models, in order to understand the changes in the region. Data and projections from these analyses give important support for meeting requests for assistance in regional and community development plans and for relating TVA water resources development and other programs to city and regional planning efforts, in addition to being used in TVA program planning.

Relationships with state and local governments and their legal powers, willingness to take political and administrative action, and financial resources all impinge upon the ultimate success of many activities carried on by TVA. Moreover, the public sector is one of the larger segments of the regional economy, particularly in employment. Information and technical data are continuously assembled on current developments in the state and local field in the Valley region, with emphasis on public finances and tax trends.

Environmental values and amenities are of paramount concern in regional development planning. TVA conducts environmental resource surveys in conjunction with state, regional, and local planning agencies and environmental groups to provide an environmental "early warning" system, to identify opportunities for improving environmental quality, and to make available needed information for the public. TVA also works with state, regional, and local planning groups to ensure that land-use plans include environmental quality implications.

TOWNLIFT COMMUNITY IMPROVEMENT

	1973 Actual	1974 Estimate	1975 Estimate
Planning improvement of existing towns and investigation of new town opportunities	$487,106	$504,000	$515,000
New community development examples:			
Timberlake	106,668	100,000	100,000
Lower Elk River	100,716	100,000	100,000
Administrative and general expenses	28,884	31,000	32,000
Total	723,374	735,000	747,000

Townlift community improvement activities cover two broad categories of work: improvement of the physical structure and economic base of existing communities, and development of new communities. These activities are conducted to encourage orderly development, attractiveness, and efficiency of urban places in the Tennessee Valley. Particular attention is given to small communities in planning the development of a viable economic base and adequate public service facilities.

With the advent of revenue sharing, communities are increasingly asking TVA to assist in formulating plans for potential projects. During 1974, some 37 project plans will be completed and in 1975 between 40 and 45 project plans will be undertaken. New community development in fiscal year 1975 will continue in four areas.

The emerging recognition of small- and medium-size communities as important alternatives to metropolitan living prompted TVA to work with the Valley's city and regional planning commissions to revitalize older communities and make them better places in which to live and work. Local governments are offered a multidisciplinary team of planners, architects,

engineers, and economists, who have expertise in problem solving within urban areas. Immediate problems, such as deteriorating downtown areas, strip highway congestion, or lack of adequate industrial areas are studied within the context of total community needs. Plans are prepared in cooperation with local citizens and public officials which, when implemented by the communities, will correct the problem and improve the total community. Examples of places where progress is being made include Fulton, Kentucky; Fayetteville, Tennessee; Elkmont, Alabama; and Jonesboro, Tennessee. In addition, townlift assistance helps to provide a basis and an opportunity for other Federal programs to assist in project implementation.

In addition to work in existing communities, the townlift community improvement program provides assistance in planning for new town development opportunities in the Tennessee Valley region. TVA's role in these developments is to cooperate with other governmental and private organizations in developing comprehensive plans and in determining the economic feasibility of new communities. An example is TVA's cooperative work with the North Central Alabama Regional Council of Governments which has led to the proposed new town of Valtaco. We are now working on a similar new town feasibility study for a strip mine area in Muhlenberg, Kentucky.

Timberlake

The Tellico project on the Little Tennessee River will create a grouping of physical relationships (i.e., controlled land base, rail, barge, highway access, etc.) which provides the potential for creating a major regional center for socioeconomic growth. A new community called Timberlake is being planned as an integrated ideal living, working, and recreation environment to achieve realization of this potential and to prevent any further long-run deterioration of the environment.

In fiscal year 1975 studies will be under way to establish development standards and guidelines and environmental quality standards. Specific public-private roles will be identified, criteria for new-town governmental relationships, and requirements for new community services will be established.

The general development concept anticipates a joint arrangement by TVA and a private "master" developer whereby each would have a major role in planning, developing, and managing the new community over a 20-year development period. The projected development program identified for Timberlake indicates that at the end of 20 years the new community will have a population of 32,000, have provided about 10,000 housing units of all types and prices, and fostered 16,000 regional job opportunities.

As a part of its major program activities, TVA has an occupational health program which provides a broad range of employee health services. Technological aids to medical practice have been adapted to this program as a means of extending quality health services to employees at remote work locations. Many components of this program have been found to have useful application in community health situations, with only minor adaptations. TVA recognizes a responsibility to share the benefits of its health service capabilities with the people of the region and the Nation. To meet that responsibility TVA helps local people to help themselves through use of technology.

During the past few years, the number and magnitude of requests from other regional and local agencies and organizations and community groups for TVA assistance in attacking health problems have increased greatly. Recent and current cooperative interagency projects in which TVA has been involved include demonstrations of: (1) mobile health care facilities in rural areas, (2) emergency medical transportation and equipment, (3) mobile automated multiphasic health testing, (4) regional medical laboratory and automated laboratory systems, (5) computerized electrocardiography, and (6) cooperative health education projects. Upon request, TVA has also provided technical assistance to other agencies in planning and organizing health services and securing facilities.

3682

Lower Elk River

The lower portion of the Elk River area in Lincoln and Giles counties, Tennessee, and Limestone County, Alabama, is a rural area predominately in farms and forests. It is typical of many rural areas with declining population, a limited number of jobs, poor housing, and inadequate public services.

The Lower Elk concept has been developed as a plan to guide area improvement efforts. Presently, development planning concentrates on the interrelated system of existing communities and accompanying potential for completely new small rural village clusters of approximately 2,500 persons each in a permanent setting of agricultural and other open rural type land uses with existing communities slated for special attention.

The area's natural environmental quality is among its greatest assets. Therefore, the Lower Elk concept is an approach to the proper management of the natural environment in a way to assure its continued use and enjoyment. Its design is to achieve rational utilization of rural land and resources while providing for a full range of choices of living conditions within a healthy environmental setting.

Studies and actions in progress will set the frame for maintaining the open space in the area and will provide a regionwide system of services such as water supply, waste disposal, health, and education. A program of specific actions in individual communities will be initiated.

Details for the start of the first of the nine new rural villages planned for the area will be completed. These preparations will include the completion of an environmental impact analysis.

INTERAGENCY HEALTH SERVICE DEMONSTRATIONS

1973 actual	-
1974 estimate	$104,000
1975 estimate	155,000

As an agency responsible for unified development of regional resources, TVA is concerned with the development of human resources. Within this context, health is viewed as a basic human resource.

LAND BETWEEN THE LAKES

CAPITAL OUTLAY

1973 actual	$1,848,112
1974 estimate	2,497,000
1975 estimate	2,041,000

TVA's Land Between The Lakes project in west Kentucky and Tennessee involves the development of a peninsula lying between TVA's Kentucky Lake and Corps of Engineers' Lake Barkley for outdoor recreation and environmental education.

Conceived as a demonstration in "how an area with limited timber and agricultural and industrial resources can be converted into a recreational asset that will stimulate economic growth of the region," the program is now a vehicle for innovative recreation and education activities. Fiscal year 1975 will mark the beginning of the second decade of the Land Between The Lakes program. During the first 10 years, this 170,000-acre peninsula and the lakes around it have become firmly established as a major public outdoor recreation and education center in middle America. Annual visitation has grown from 12,000 in 1964 to 2.0 million in 1973 and is projected to increase to 2.2 million in 1975.

Visitor Estimates by Calendar Years and Types of Use

	1972	1973	1974	1975
Visitor use				
Family campgrounds	224,843	229,844	240,000	260,000
Group camps	45,965	53,504	65,000	72,000
Education centers	167,926	177,744	187,000	210,000
Informal use areas:				
Campers	155,448	147,199	160,000	170,000
Other use	772,866	943,225	940,000	950,000
Hunting	32,420	43,704	45,000	45,000
General and other visitors	590,532	458,780	463,000	493,000
Total	1,990,000	2,054,000	2,100,000	2,200,000

Visitors come from all 50 states and some foreign countries each year, but primarily they come from within a 250-mile radius of the demonstration. A 1973 study by the University of Kentucky found in a sampling of Hillman Ferry campground users the following percentages by state of origin: Kentucky 31; Tennessee 14; Illinois 22; Indiana 11; Ohio 7; Missouri 5; Michigan 4; all others 6. A total of 26 states and Canada were represented in the sample.

The fuel shortage is not expected to reduce use, particularly for camping and other extended stays, since most visitors come from within the region. Visitation from outside the 250-mile radius will likely decline. Because of the energy situation, visitation is estimated to hold at about the 1973 level through 1974 and increase slightly in 1975.

Each year more families are using Land Between The Lakes as a destination vacation spot. Likewise, use by organized groups is growing in number and in distance traveled. Here in relatively uncrowded space the visitor enjoys a variety of outdoor activities including camping, sightseeing, hiking, fishing, hunting, boating, and simply learning about the area's natural resources and their values. The natural resources of the area offer excellent teaching opportunities thereby allowing the demonstration to serve as a pilot plant in environmental education. Its formalized programs have provided experience for more than 22,000 students and a training ground for 2,000 teachers since 1966. Its camping areas, forest, and trails have brought recreation and education to millions more.

To accommodate the present level of use requires a variety of activities for visitors, together with supports that ensure safe travel; provision of water, sanitation facilities, and waste disposal; and reasonable security and protection to life and personal properties of users. The burden of providing such supports falls heavily in the early years of project development. These include improved roads, stations to receive and inform visitors, places to describe and interpret points of interest, and work space for employees to function efficiently–shops, warehouses, and maintenance bases. These basic supports are being provided through the gradual addition of improvements. Some acceleration will be required in providing major features as the visitor load increases. No new starts on major facilities are provided for in the 1975 estimate.

Conservation and Education Facilities

	1973 Actual	1974 Estimate	1975 Estimate
Upland game and migratory waterfowl	$40,075	$50,000	$90,000
Education stations	-	34,000	35,000
Other facilities	34,652	1,000	62,000
Total	74,727	85,000	187,000

The 1975 estimate of $90,000 for upland game and migratory waterfowl continues the program of habitat improvement for restoration distribution of wildlife populations and provides for 60 acres of woods openings, 12 water holes, and 3 supplemental ponds.

An estimate of $35,000 for education stations will be used to continue the development of teaching units vital to support the environmental education program conducted in Land Between The Lakes for resident and day-use school groups and for other visitors.

Other facilities, estimated at $62,000, include electric service, potable water, and sanitation facilities at the field archery range; increased parking from 15 to 30 vehicles at the Silo Overlook; and a trail and parking areas to improve the observation by visitors at the buffalo range.

Recreation Facilities

	1973 Actual	1974 Estimate	1975 Estimate
Brandon Spring group camp	$792,992	$501,000	$390,000
Rushing Creek campground	-	117,000	81,000
Hillman Ferry campground	111,218	199,000	-
Piney campground	27,716	24,000	28,000
Informal use areas	30,314	181,000	165,000
Major trails system	44,509	49,000	142,000
Miscellaneous additions	28,267	4,000	34,000
Total	1,035,016	1,075,000	840,000

Brandon Spring group camp, with bunkhouse capacity for 128 persons, will be placed in operation in fiscal year 1974. The estimate of $390,000 in 1975 will provide a realigned and safe access road (1.25 miles), general grading and landscaping, yard lighting, parking space, walkways, and waterfront improvements.

At Rushing Creek the existing 212 campsites originally built to serve tent campers are being renovated in fiscal year 1974 to serve mobile camping equipment. The 1975 estimate of $81,000 will increase the number of campsites from 212 to 250, incorporating a portion of Jones Creek day-use area, add a sanitary dumping station, and a network of hiking trails.

The estimate of $28,000 for Piney campground in fiscal year 1975 is to complete work begun in 1974 on a central playground with nearby parking space for 50 automobiles, a maintenance area, and hiking trails.

Work at informal use areas will continue upgrading existing areas to help meet the camping load. The estimate of $165,000 will increase campsites by 50.

Work will continue in 1975 on the major trails system. It includes (a) general purpose hiking trails and outpost camps and (b) high adventure trails and base camps. At appropriate intervals on both classes of trails there will be essentials such as outpost campsites, water points, and sanitation facilities. The system is being constructed in segments which ultimately may be connected as a longitudinal trail of some 65 to 70 miles. Additions to the Fort Henry historical trail constructed in 1974 will include parking areas, water supply, and chemical toilets at various starting and terminal points.

The high adventure trail designed to serve the experienced hiker will also serve the more skilled program activities of the Boy Scouts of America and others interested and capable of rugged trail camping.

The 1975 estimate for trails work is $142,000.

General Support Additions

	1973 Actual	1974 Estimate	1975 Estimate
Golden Pond field office	$12,332	$305,000	$375,000
Improvements to Highway 453 (north)	51,484	760,000	-
North entrance traffic control facility	-	108,000	104,000
Other road improvements	259,373	-	196,000
Cleanup and aesthetic improvements	39,085	38,000	110,000
Other general support	376,095	126,000	229,000
Total	738,369	1,337,000	1,014,000

Golden Pond field office. The 1975 estimate of $375,000 will complete the construction of an operations office building including access, parking, and utilities. The remaining temporary quarters (mobile trailers) housing two-thirds of the operating personnel will be released during 1975 and site scars corrected. Landscaping and yard improvements at the office building will be scheduled for 1976.

North entrance traffic control facility. The site work including grading and surfacing of channelized lanes, revision to the sanitary dumping station, and grading for parking area and reception building site is scheduled for fiscal year 1974. The 1975 estimate of $104,000 will provide for construction of the visitor reception building, service counter, restrooms, materials storage and communications equipment; adjoining space for weighing and checking game during hunts with provisions for biological samplings; parking for 50 automobiles with adequate turn space for buses and recreation vehicles; and installation of traffic signals.

Other road improvements include the upgrading of 50 miles of existing gravel roads serving as access to informal use areas and other points of visitation to make them safe for recreation vehicular traffic at an estimated cost of $112,000.

Other work includes completion of studies, surveys, and design for the construction of a permanent access road at the south from U.S. Highway 79 to connect with the Blue Spring Road near its intersection with the Trace (Tennessee Highway 49), $49,000; and surveys and design for upgrading the heavy-use segments of the secondary road network, $35,000.

The cleanup and aesthetic improvement program is a continuing effort to obliterate the remains of old building sites, land scars, abandoned car bodies, and litter left from the days of private ownership. Out of a total of 1,050 sites requiring cleanup about 72 percent was accomplished through fiscal year 1973. The estimate of $110,000 in 1975 will bring the work to 86 percent completion and will provide $8,000 for stabilizing some of the historical structures in various parts of the project area pursuant to Executive Order 11593.

Other general support includes the installation of guard posts with reflectors on Bards Dam for traffic safety; directional and information signs for the main entrance roads; a sewage lagoon water system near the center of the project to serve campers entering and leaving the Trace at U.S. Highway 68; and miscellaneous equipment and improvements.

OPERATING EXPENSES

Land Between The Lakes is operated to afford maximum opportunities for public outdoor recreation and environmental education consistent with sound ecological management of the area's natural resources. To ensure optimum benefit of the area's land resources, techniques of multiple land-use management are employed to provide food and cover for wildlife, upgrade the quality of the forest, and to improve the area's natural beauty. These developmental steps are transforming an area which formerly contributed little to the region to one that provides programs, services, and facilities responsive to the public's leisure needs and interest in the natural environment.

Summary of Land Between The Lakes Operating Expenses

	1973 Actual	1974 Estimate	1975 Estimate
Income	$193,762	$260,000	$327,000
Expenses			
Conservation and education operations	677,344	788,000	799,000
Recreation operations	509,148	593,000	609,000
Supporting operations	849,172	844,000	846,000
Distribution of administrative and general expenses	61,536	67,000	68,000
Total expenses before depreciation	2,097,200	2,292,000	2,322,000
Writeoffs of abandoned projects[1]	21,641	-	-
Depreciation	380,629	385,000	400,000
Total expenses	2,499,470	2,677,000	2,722,000
Net expense of Land Between The Lakes operations	2,305,708	2,417,000	2,395,000

1. These are charges to operating expenses of writeoffs of abandoned recreation projects at Land Between The Lakes. Like depreciation they require no financing and are included here in the interest of completeness of reporting.

Environmental education activities are centered in a 5,000-acre segment of the project. Center Station is the reception building for visitors. Here the story and goals of the demonstration are told in display, brochures, and by films. Several nature trails lead out from the Center which visitors may hike. Other points of interest include the ruins of historical Center Furnace and other marks of the iron age, the Silo Overlook, and wildlife observation. Almost 60,000 visitors registered at Center Station in 1973.

The Youth Station, which represents the resident portion of the environmental education program, was built to demonstrate approaches to environmental education in school systems. New schools are being introduced to the program each year. The Station has overnight capacity for 72 people and it serves from 7,000 to 10,000 students and adults annually in residents. In addition, 8,000 to 10,000 students make day-use visits to the Station annually. Income from TVA services is estimated at $50,000 for 1975.

Empire Farm was developed as an education station in conjunction with the formalized program conducted at the Youth Station. Here school classes are brought into direct contact with the land and farm animals, and with practical lessons in the production and processing of foods and other farm products. The Farm is open also for general public visitation at scheduled hours. Over 46,000 persons registered here during calendar year 1973.

Environmental education extension is a phase of the program conducted in the Environmental Education Center of Land Between The Lakes. The Environmental Education Center staff assists in developing environmental education programs in school systems. Efforts are primarily directed toward working through regional groupings of schools systems. The approach assures strong leadership, lessened financial obligation for the school involved and enables TVA to contribute its professional and technical assistance to a broader base of community leaders and school administrators involved in environmental education. Many schools have been aided in developing environmental study areas at their school sites or on other community owned lands. Other assistance has included teacher training and curriculum development.

Wildlife management activities are directed to achieving optimum wildlife populations. The work program is directed to improving wildlife food and habitat, thus ensuring bird and animal propagation and enhancing recreation and education opportunities for sightseers, organized study groups, and sportsmen. An annual program provides and maintains cover plantings, wood openings, waterholes, and control of reverting lands and of timber harvests. Investigations are conducted on wildlife species, population densities, levels for harvesting, and disease occurrences and their control.

Approximately 10,000 acres of open lands are devoted to wildlife food crops; about 6,500 acres in annual crops and the remainder in perennial pastures. More than half of the acreage is operated by local farmers under crop-sharing arrangements.

29-353 O - 74 - pt. 5 - 7

Other activities include the operation of subimpoundments and farm ponds for waterfowl and fish management; studies and research on deer, turkey, and other upland game; trapping, tagging, and banding work on upland game, doves, and waterfowl; development of plans for management and distribution to ensure optimum wildlife populations; and management of special features such as the resident flock of Canada geese and the buffalo herd. The herd has increased from 19 young animals in 1969 to 57 animals in 1973.

Managed hunting opportunities are provided on 150 days each calendar year. Hunts are scheduled for deer, wild turkey, ducks, geese, upland birds, and small game. The deer harvest in 1973 was 1,317 animals of which 200 were taken by bow and arrow. Permits for deer hunting were issued to 6,646 persons for bow hunting and 7,425 for gun hunts. For the gun hunt 13,976 persons applied which exceeded the number to be accommodated. The selection was determined by computer.

Cooperative relationships are maintained with representatives of agencies of Kentucky and Tennessee and with other Federal agencies concerned with wildlife resources in this area.

Forest management incorporates the most recent recommendations from research foresters and wildlife biologists. The 145,000 acres of forest serve as a national demonstration of multipurpose management, improving both timber quality and growth, and wildlife habitat. The work includes reforestation, timber stand improvement, timber harvest, and forest fire protection. The latter is accomplished through contracts with the states of Kentucky and Tennessee. Through fiscal year 1973, a total of 2,264,000 seedlings had been planted; about 230,000 pine seedlings are to be planted in fiscal year 1974; and 230,000 pine seedlings in 1975. Long-range plans call for planting 2.1 million more trees in the years ahead. Timber stand improvement work has been completed on 4,237 acres and plans include 900 acres in fiscal year 1974 and an additional 900 acres in 1975. Stand improvement needed on 15,000 acres should be accomplished over the next seven years. Timber sales of 1.9 million feet in 1973 are expected to increase to 2.9 million feet in 1974 and 1975, yielding income estimated at $40,000 each year.

Other forestry program activities include inventory of timbered areas, growth and quality studies on which to base management plans, checking potentials for disease and insect damage and applying control measures if needed, and developing and implementing plans for forestry educational demonstrations in extension of conservation education activities.

Recreation Operations
($609,000)

Recreation operations include management of campgrounds for families and groups and care of day-use areas, overlooks, picnic and lake access areas and associated roads, playgrounds, swimming areas, water supply systems, and sanitary facilities. Services include reception and registration of guests, collection of user fees where appropriate, preparation and

distribution of informational materials, conduct of scheduled group recreational activities, and protection of visitors and their property. Maintenance services ensure clean, safe, and attractive conditions. Over 2.2 million visitors are estimated to be served in 1975. During fiscal year 1975 the following major facilities will be in operation and serve an estimated 502,000 campers. Income from the operation of these facilities is estimated at $235,000 in fiscal year 1975.

–Rushing Creek family camp - 212 campsites, completed in fiscal year 1966; to be upgraded in fiscal years 1974 and 1975

–Hillman Ferry family camp - 310 campsites, completed in fiscal year 1967; 70 to be added in fiscal year 1974

–Piney family camp - 100 campsites completed in fiscal year 1969; and 100 completed in fiscal year 1971

–Camporee area
Camp Energy group camp - 400 capacity, opened in calendar year 1968
Bivouac group camp area - 700 capacity

–Brandon Spring group camp - 128 capacity, to open in fiscal year 1974

–Informal use areas (28) - 3,000 capacity; up to 500 family groups overnight

Other activities include development of plans for maximizing use of outdoor opportunities and facilities; testing of innovative ideas and practices of possible demonstration values; and encouraging and cooperating with other agencies in the conduct of recreational activities of general economic and social benefit to the region. TVA manages special features such as the Off-Road Vehicle (ORV) area and the Wranglers Camp for horseback riders and a trails system consisting of a 26-mile trail complex, a 17-mile trail, and several lesser trails for hiking and nature walks. Cooperative programs include Project Outward Bound for disadvantaged youths, camporees by youth organizations, tree plantings, and other conservation projects by youth groups; and hike days and cleanup days. An annual reunion of former residents of the Land Between The Lakes area attracts up to 2,000 persons.

A work-study program is conducted for college level students taking recreation related courses. The students are assigned to Land Between The Lakes under an agreement between TVA and sponsoring colleges and universities which provide that the students are eligible for academic credit during the employment period of 12 to 14 weeks. During the summer of 1973, seventeen students from 12 universities participated in the program.

3692

Supporting Operations
($846,000)

Supporting operations include diverse activities associated with both the conservation and education and the recreation programs. Major activities include:

–Administration and reception. The field office for the demonstration is located at the geographic center of the area adjacent to U.S. Highway 68. The present base, housed in mobile trailers and other temporary structures, will be removed when a permanent office building is completed in fiscal year 1975. The main reception station for visitors is also located in the complex. Over 44,000 visitors were received in fiscal year 1973 at this station. Pending the relocation, special safety precautions are required to protect employees and visitors from the hazards of congested highway traffic and substandard structures.

To assist visitors entering Land Between The Lakes at the north and south, temporary information booths are manned during periods of heavy visitation. A permanent entrance control facility at the north entrance, to be completed in 1975, will fill a real need at the point where nearly half of all visitors enter Land Between The Lakes.

–Maintenance and additions. This activity provides maintenance and repair services for roads, grounds and other support facilities; grounds development and beautification, supervision of project additions, application of vector control measures, site planning, and development of plans for general betterments to project facilities. A major function is the upkeep of roads and trails. The road system receiving regular maintenance totals 420 miles, consisting of 95 miles of hard surface roads, 290 miles of gravel surface secondary roads, and 35 miles of fire trails. Constructive maintenance is being applied to upgrade most of the secondary roads to make them adequate for recreation vehicular traffic. All roads which serve visitor use require adequate signs for directional and informational purposes.

–Other maintenance activities include (1) elimination of hazards such as open wells and cisterns, old wire fences, and dead and down trees in public-use areas for protection of persons and wildlife in the area; (2) cleanup of drift and flotage at heavy use points along the 300 miles of shoreline; and (3) operation of shops, warehousing, and maintenance bases for the upkeep of grounds, buildings, and equipment and for the construction of additions.

–Property protection and services to visitors. A well-trained, uniformed patrol force is essential for the security of visitors and of their property. They provide services to visitors, protect government property from theft and vandalism, enforce game laws, and respond to emergency situations on land or water. Collaborative relationships are maintained with other law and conservation officers at local, state, and Federal levels.

FERTILIZER AND MUNITIONS DEVELOPMENT

Fertilizer and munitions development is a nationwide program with these broad objectives:

- To develop new and improved fertilizers and processes for their manufacture and use in order to increase their effectiveness and to lower their cost to the farmer; and
- To demonstrate the value of improved methods of using fertilizers.

The ultimate goal is to help the American farmer produce adequate low-cost food and fiber for the Nation while at the same time enjoying an adequate income for himself. The program promotes a more efficient commercial fertilizer industry by making new technology available. It encourages environmental conservation and enhancement through improved manufacturing and agricultural practices. TVA's chemical research, development, and production facilities and staff are available to aid the Department of Defense in times of war or national emergency.

The fertilizer and munitions development program indirectly contributes to other national objectives. It benefits the small business segment of the fertilizer industry by giving it ready access to advanced technology. Agricultural exports made possible by more efficient fertilizer use improve the Nation's balance of international payments. TVA gives technical advice to developing countries, thus helping them feed themselves. The research and development staff is available to give technical help in the solution of enviornmental problems associated with chemical emissions to the air and to water.

New fertilizer development in the United States, including materials more compatible with the environment, depends almost entirely on TVA's National Fertilizer Development Center. Fertilizer is a key material for the support of human life in a crowded world. Fertilizer can be substituted for land, labor, and capital, and thus affords operating economy and flexibility. Up to 45 percent of U.S. farm production gains in the past 30 years have been due to greater use of fertilizers. During the same period, agricultural manpower was cut in half and land in cultivation decreased by 11 percent. As a percentage of family income, food cost in the U.S. is lower than in any other country. Fertilizer use is essential to maintaining plant growth and thus in reducing erosion, flooding, sedimentation, and siltation.

The fertilizer program contains two elements: (1) research and development and (2) fertilizer introduction. Research and development in this context includes basic agronomic and chemical research; fertilizer processes research and development; and sulfur recovery research, sulfur being a major fertilizer chemical. The National Fertilizer Development Center includes laboratory, greenhouse, pilot-plant facilities, and semicommercial-scale fertilizer production units. Land-grant university experiment stations cooperate in research activities. Fertilizer introduction carries the results of research and development to

the farmer and the fertilizer industry through farm test demonstrations and industry demonstrations. Developmental (prototype-scale) production of new and improved fertilizers is the link between research and development and these demonstrations. Demonstrations are conducted in 38 states and Puerto Rico with the land-grant universities and 221 manufacturers and wholesale distributors and their retail dealers.

TVA works closely with farmers, land-grant universities, the fertilizer industry, and with other Federal agencies such as USAID and the Environmental Protection Agency in the conduct of this program.

IMPACT OF TVA'S FERTILIZER PROGRAM

The effects of the program on the U.S. fertilizer industry and the agricultural economy can be measured by these accomplishments:

1. American fertilizer technology has been revolutionized. TVA pioneered and promoted high-analysis fertilizers, developed the granulation method now widely used in making fertilizers, developed superphosphoric acid, stimulated the liquid fertilizer industry, and promoted fertilizer bulk blending. Through June 30, 1973, TVA has granted 549 patent licenses to 329 firms for use in 484 plants in 39 states.

2. The farmer's fertilizer cost has been lowered and his efficiency improved. Plant nutrient costs dropped by 45 percent between 1950 and 1970 while all farm costs increased by 52 percent. If fertilizer costs had also gone up at this rate the farmer's bill for fertilizer in 1970 would have been $5.3 billion, or $3.4 billion higher than it was.

3. Farm fertilizer use has improved. Demonstrations in nearly every state in the Union have helped solve major soil fertility problems, have determined the best methods of fertilizer application, and have fitted fertilizer into balanced whole-farm programs for greater agricultural efficiency.

4. The small business segment of the fertilizer industry has been preserved. The availability of new methods, materials, and technical help from TVA has been a key factor in keeping small fertilizer businesses alive and competitive and in helping them overcome pollution problems.

5. TVA fertilizer technology has helped to keep the U.S. fertilizer industry competitive in the world market. Two fertilizers introduced by TVA accounted for 51 percent of all fertilizer exports from the U.S. in 1972, and U.S. fertilizer exports amounted to about 12 percent of the world market.

3695

BASIC CHANGES IN TVA'S FUTURE PROGRAM

The estimates for 1974 and 1975 continue to reflect basic changes in TVA's fertilizer program as it in turn affects and is affected by the national fertilizer and agricultural situations.

The importance of wet-process phosphoric acid as a phosphate fertilizer intermediate has increased rapidly since the 1960's. Furnace acid has declined in importance. The cost differential between the two continues to widen in favor of wet-process acid. The reasons for this are: (1) sulfur, a major ingredient for wet-process phosphoric acid manufacture, is in plentiful supply and its price has declined sharply; (2) plant investment for wet-process acid production is only half that for furnace acid; and (3) the cost of furnace acid has become prohibitive for fertilizer manufacture because of higher costs of electricity, coke, operating and maintenance labor, and the like. Wet-process acid is selling at a price below the production cost of furnace acid. The low cost of wet-process phosphoric acid makes it less advantageous to use the nitric phosphate method of producing fertilizers (where phosphate rock is treated with nitric acid rather than with sulfuric acid to make the phosphorus available to plants).

Urea fertilizers made from ammonia and byproduct carbon dioxide are expected to replace nitrates as the dominant nitrogen fertilizer form by the late 1970's. Their analysis is higher, their production involves less pollution, and they are less hazardous to handle and store then is ammonium nitrate, the major solid nitrogen material on the U.S. market today.

3696

Beginning in 1969 TVA set out to modify and improve its basic production facilities and to restructure its program in anticipation of the changes expected to occur, as described above. A new ammonia plant and a urea solution unit were built. In 1971 initial steps were taken to secure a supply of wet-process phosphoric acid to replace the electric-furnace acid made by TVA. As commercial sources of acid become available, electric-furnace operation will be eliminated. To simplify plant operating procedures, including storage, TVA will suspend the production of fertilizers containing nitrates and will concentrate on materials containing urea. The following steps are being taken in the current period of transition which began in 1973:

1. Shift production of basic phosphate raw materials and intermediates from TVA to private producers. This will enable TVA to benefit from industry's larger scale of production and more favorable manufacturing locations. It will eliminate TVA's high operating costs for mining, electric-furnace, and acid unit operations; avoid large expenditures for maintenance and replacement of basic facilities; and large outlays for meeting standards for pollution abatement and worker safety will be avoided. Developments in technology and marketing will be more readily adaptable by industry, being directly related to private production capability, and benefits will be more rapidly available to agriculture.

2. Drop production of solid nitrate and nitric-phosphate fertilizers. TVA is concluding its introduction program for these nitrate materials and processes. Because industry has not expanded for several years, there has been some delay in their adoption by private firms. Adoption of nitric phosphate fertilizers has been limited because the process is most advantageous when sulfur prices are high. This move will reduce operating expense and will limit the need for investment in new facilities including those for abating nitric oxide pollution. It will relieve the necessity of adding storage space for fertilizers containing urea. Urea and nitrates are incompatible in common storage.

3. Modify present facilities to produce urea-containing fertilizers with production to begin with fiscal year 1974. Elimination of solid nitrate fertilizers makes it possible to do this by freeing existing production facilities. This will permit savings of about $800,000 in investment and six months construction time. Introduction of the new materials can start that much sooner and in time to meet the heavy spring shipping season. Two fertilizers that could not be made in a separate new facility can be produced in the modified existing unit.

Adoption of this operating plan will save about $6 million in facilities investment through 1978. Appropriation fund requirements for developmental production will decrease in 1975. To make these changes, research and development will heavily emphasize wet-process phosphoric acid use and urea fertilizer technology and sources of wet-process acid supply will be arranged through long-term contracts.

CHEMICAL FACILITIES
(Capital Outlay)

1973 actual	$3,155,577
1974 estimate	4,262,000
1975 estimate	2,959,000

The 1975 estimate for chemical facilities includes no new major starts. This reflects the substantial completion of a plant improvement program begun in 1969 to improve basic production facilities and to revise the fertilizer production and introduction program as described above. These changes primarily concern the substitution of commercial wet-process phosphoric acid for TVA-produced electric-furnace acid as a source of phosphates and a shift from the production of solid nitrates to the use of fertilizers containing urea.

Sulfur-Coated Urea Unit

1973 actual	-
1974 estimate	$500,000
1975 estimate	1,400,000

The 1975 estimate covers the completion of facilities for making sulfur-coated urea (SCU). Design and procurement will be initiated in fiscal year 1974. Total estimated cost of the unit is $1,950,000. TVA developed SCU, a greatly improved nitrogen fertilizer, made by coating urea granules with molten sulfur to delay release of nitrogen to the soil. A wax may be added to seal cracks in the coating. The coating also improves physical properties of the fertilizer; where slow nitrogen release is not desired, only a light coating of sulfur is sufficient.

Greenhouse and field tests indicate that use of SCU in most cropping systems will reduce leaching of fertilizer nitrogen into natural waters without penalizing yields. SCU is the only known low-cost, slow-release product that can be substituted for today's soluble nitrogen fertilizers in the event that restrictions are placed on their use. SCU has been evaluated on a variety of crops in 48 states, 2 territories, and 33 foreign countries. It has produced superior yields and favorable benefit-cost ratios on rice grown under delayed or intermittent flooding. Large responses were obtained on sugar cane and pineapples. Grass forages benefited, especially when SCU was applied for more than one year on the same land. SCU also is excellent for turfs. Single applications in the spring lasted throughout the growing season, whereas two to four applications of conventional fertilizer were needed for the same result. Crops such as corn, small grains, and cotton—whose major nitrogen needs must be met over a short period—usually have responded advantageously to SCU only when grown on porous soils.

SCU also has several beneficial properties other than its slow-release characteristic. The sulfur coating furnishes nutrient sulfur. The danger that applied nitrogen will "burn" germinating seedlings or foliage is greatly reduced with SCU. Excessive (luxury) consumption of nitrogen by crops is minimized. Losses of nitrogen by volatilization should be less and problems of subsoil acidity resulting from nitrate leaching should be avoided. SCU will be useful in bulk blending because of its larger granule size and because the coating prevents undesirable chemical reactions with such other fertilizer materials as triple superphosphate. It has greater crushing strength and resistance to abrasion. The sulfur coating reduces adsorption of moisture and caking, making SCU easier to store and spread. Sulfur coated urea costs more per ton of nitrogen content than does conventional urea because of a difference in analysis (35 percent for SCU vs. 45 percent for urea). However, the improved efficiency of crop production made possible by the slow release capability of SCU far outweighs its greater cost.

An analysis of potential markets identified four major uses for SCU having important national benefits.

1. To improve efficiency of crop production. Because of its controlled-release property, SCU could be expected to replace soluble nitrogen use on at least 14 million acres of farmland eventually.

2. As a nitrogen product with improved physical properties primarily for blending with other materials. SCU lightly coated with sulfur only should find wide use by bulk blenders. It should eventually replace ammonium nitrate in blending and direct application.

3. For export. Lightly coated SCU should be a valuable export material because of its high analysis and excellent physical properties. The United States so far has been unable to capture much of the nitrogen export market using conventional materials.

4. As a substitute for soluble nitrogen fertilizer to reduce potential nitrate pollution from farmlands. Realization of this benefit and its extent would depend upon whether restrictions are placed on use of nitrogen fertilizers.

Because the product and process are unique and the material untried on the market, the fertilizer industry has been reluctant to invest in facilities to produce SCU until TVA completes a demonstration-scale unit to further perfect the process and to introduce the product.

3699

Primary Pollution Abatement Facilities

1973 actual	$943,782
1974 estimate	1,407,000
1975 estimate	939,000

Replacement of acid storage tanks will require $939,000, completing the purchase of six tanks with a combined capacity of 17,600 tons. This is a continuation of a replacement program begun in 1972 and to be completed in 1976. Most of the existing storage tanks were built in the 1930's and 1940's. They leak, often need repair, and are potentially serious pollution hazards. Replacement is needed to provide an adequate supply of wet-process phosphoric acid. Wet-process phosphoric acid is usually not available in the heavy spring fertilizer season and must be obtained in the first part of the fiscal year and stored. There must be enough storage to carry through June.

Improvements and Additions to Production Facilities

1973 actual	$53,314
1974 estimate	1,180,000
1975 estimate	175,000

The estimate for fiscal year 1974 includes two significant additions to facilities for making combination (multinutrient) fertilizers using wet-process phosphoric acid. Additional equipment will be installed for making ammonium polyphosphate, a high analysis (11-57-0) solid material. Raw materials will be black phosphoric acid and gaseous ammonia, the cheapest forms of acid and ammonia. The second addition is equipment for making a 11-39-0 suspension fertilizer from black acid and anhydrous ammonia, which is accounted a major technical breakthrough in the production of a high-analysis, lower cost material. The ammonium polyphosphate facility will cost $600,000 and the suspension fertilizer addition will require $390,000. Both will be begun and completed in 1974, which explains the higher estimate for that year.

Improvements to new production facilities are required to overcome problems and to increase efficiency during preliminary operations. An estimated $125,000 will be required for improvements in the urea-ammonium phosphate and ammonia facilities. Other minor improvements and additions are routinely necessary in a complex, multiproduct chemical plant to improve operating efficiency and reduce maintenance cost; $50,000 is included to allow for this.

Urea, Urea-Ammonium Phosphate Facilities

1973 actual	$1,793,605
1974 estimate	793,000
1975 estimate	-

A project for producing urea and urea-ammonium phosphate fertilizer, initiated in 1970, will be completed in fiscal year 1974, following a delay of some four months. Total estimated cost of the project is $15,658,000. The total project includes replacement of ammonia production facilities and construction of a urea solution unit, both of which are now in service. An existing granular combination fertilizer unit is being modified and necessary service facilities are being provided.

Urea-ammonium phosphate (UAP) is a high-analysis homogeneous fertilizer, not now commercially available, for which TVA developed a low-cost production process. Its agronomic qualities are superior for many U.S. crops and are outstanding for rice. First production of UAP is scheduled for fiscal year 1974.

Plant Replacements

1973 actual	$51,584
1974 estimate	97,000
1975 estimate	65,000

This estimate is for necessary replacements within the TVA chemical plant which cannot be identified and scheduled very far in advance of the need. In a plant the size, complexity, and age of the TVA chemical plant, facilities must often be replaced immediately to continue operations or to protect employee health and safety. Emergency replacements ordinarily cannot be anticipated as individual items but can be budgeted on the basis of cost experience. An allowance of $65,000 is included for emergency plant replacements.

General Equipment, Design Studies, and Administrative Expenses

1973 actual	$313,292
1974 estimate	285,000
1975 estimate	380,000

This category includes mainly continuing needs for uninstalled equipment and work tools (mostly replacements and spares); chemical and agronomic research laboratory equipment; transportation and rehabilitation of surplus property transferred to TVA at no cost from other Federal agencies; preliminary design studies for future chemical facilities; and applicable administrative and general expenses.

FERTILIZER AND MUNITIONS DEVELOPMENT
(Operating Expenses)

	1973 Actual	1974 Estimate	1975 Estimate
Expenditures			
Fertilizer research and development	$5,486,534	$5,761,000	$5,839,000
Fertilizer introduction	28,399,840	32,959,000	36,881,000
Total	33,886,374	38,720,000	42,720,000
Financing			
Appropriated funds	13,462,017	12,786,000	12,426,000
Nonpower proceeds	20,424,357	25,934,000	30,294,000
Total	33,886,374	38,720,000	42,720,000
Income from program	19,956,880	24,637,000	29,364,000

FERTILIZER RESEARCH AND DEVELOPMENT

1973 actual	$5,486,534
1974 estimate	5,761,000
1975 estimate	5,839,000

The National Fertilizer Development Center at Muscle Shoals, Alabama, is the Nation's major source of advanced fertilizer technology and is the world's principal center for fertilizer research and development. TVA's research and development program is strongly mission oriented, involving basic and applied research and continued development of promising new products and processes in pilot plants. Basic research provides the fundamental knowledge for new advances. Applied research operates on known facts and carries the discovery process through laboratory-scale development and evaluation. Small pilot plants permit the solution of some process and equipment problems and provide sufficient material for

initial agronomic evaluation. TVA has a special interest in the preservation of a quality environment, both in the vicinity of plants making fertilizers and in the waters draining from fields to which fertilizer has been applied. This extends to such investigations as to what happens to fertilizer nitrogen, and to heavy metals (e.g., zinc, chromium, lead) reaching soils as contaminants in fertilizers and in organic wastes, to the uptake of these metals, and to their movement in surface and groundwater. Studies also involve ways of recovering sulfur, a raw material in the manufacture of fertilizer, from industrial emissions in which it is a pollutant.

This program generates a wide range of technical advances and inventions and every effort is made to move them into the economy rapidly. Research results are widely publicized, using a variety of ways to obtain a payoff to the national economy by transfer of technology from laboratory, pilot plant, greenhouse, and field test to commercial fertilizer plants and operating farms. TVA patents its discoveries where possible and issues nonexclusive licenses for their use. Articles in professional and trade journals, presentations at technical meetings and training sessions, and published reports keep the interested public informed. Through correspondence and informal discussions TVA assists technical and scientific inquirers all over the world. On-site research and development demonstrations introduce new products and processes. Fertilizer introduction through tests and demonstrations on practical farms and in commercial fertilizer plants throughout the country spreads the results of TVA research and development nationwide.

Basic Agronomic and Chemical Research

1973 actual	$2,153,811
1974 estimate	2,423,000
1975 estimate	2,393,000

Basic Agronomic Research

Basic agronomic research is national in scope and is conducted at both the National Fertilizer Development Center and under cooperative arrangements at the agricultural experiment stations at selected land-grant universities. It has these overall objectives:

1. To obtain information on needs for new types of fertilizers and their desired characteristics.

2. To evaluate new fertilizer materials as to their availability to crops, reactions with soils, and uses for which adapted.

3. To study the most efficient ways to use fertilizer.

4. To study basic soil-plant-fertilizer relationships.

5. To investigate basic plant nutrition problems.

6. To study the relationships between fertilizer use, crop plants, and water quality.

During fiscal year 1975 emphasis will continue to be placed on research to answer questions that have been raised publicly on the effect of fertilizer use on the environment, a relationship about which little is known. Cooperative studies by TVA and the land-grant universities will obtain sound research data to define the problem, and to point to solutions if they are required. Extensive use will be made of stable isotopes of nitrogen under field conditions to identify the presence of fertilizer nitrogen in water. TVA, AEC, EPA, USDA, and selected land-grant universities will cooperate in these studies. The movement of toxic heavy metals into crops and water as influenced by fertilization practices will be studied. Development of new controlled release fertilizers by TVA, such as sulfur-coated urea, can be a key to continued high fertilizer use without risk to the environment.

Laboratory and greenhouse studies are conducted at Muscle Shoals to determine fundamental relationships among crop response, nutrient uptake, and fertilizer and soil characteristics. This research is concerned with micro and secondary nutrients as well as with nitrogen, phosphorus, and potash. Scientists engaged in basic agronomic research work in close cooperation with chemists and chemical engineers engaged in fertilizer research and development and with TVA professional personnel involved in water management, environmental research and development, and forestry.

Soil relationships. These lines of research will be followed during 1975: (1) nitrogen reactions in soils and their relationship to water quality; (2) heavy metals in soils and the degree to which they enter the food chain and water supplies; (3) fertilizer-soil-root and nutrient loss relationships; (4) fertilizer use and nutrient enrichment of surface and groundwater; and (5) fundamental phosphorus-soil relationships.

Cooperative work will be in progress at five to eight land-grant university experiment stations concerned with the more fundamental aspects of soil fertility and environmental problems related to fertilizer use and technology, with emphasis on use of nitrogen isotopes and on management of soils with high accumulations of phosphates. Selected small watersheds, calibrated and instrumented for precise measurements, will be used to determine relationships between fertilizer use and water quality.

Basic Chemical Research

Basic chemical research is conducted to obtain new knowledge pertinent to the development of fertilizer processes and products in immediate problem areas and in areas that will support continuity of advances in fertilizer technology commensurate with advances in other fields.

Major research efforts for development of fertilizer materials and processes will be in support of the shift from electric-furnace acid to economical wet-process phosphoric acid, with emphasis on the separation and utilization of impurities. Cleaning up wet-process acid is a high priority goal related to the preparation of stable liquid fertilizers. Methods will be sought for the production of concentrated solid ammonium polyphosphates with physical properties that make them suitable for use in solid form and solubilities suiting them for use in liquid preparations.

Basic studies will continue on the coating of urea with sulfur. Potassium phosphates have highly desirable properties as liquid fertilizers. Incorporation of the potassium with phosphate rather as a chloride enhances the solubility and allows use of more concentrated but stable fertilizer solutions. An added benefit is the absence of the chloride especially on irrigated fields with high evaporative losses. Study will be continued on electrolytic production of potassium polyphosphate fertilizer materials from impure potassium chloride.

Measurements will be continued on the fundamental physical and chemical properties of fertilizer materials. Means will be sought for control of effluents from fertilizer processes of possible hazard to environmental quality. The behavior and fate of flourine and heavy metals present in fertilizer raw materials will be investigated.

Fertilizer Processes Research and Development

1973 actual	$3,143,156
1974 estimate	3,141,000
1975 estimate	3,245,000

The objectives of applied research and process development work are:

1. To develop more efficient fertilizers and methods for their manufacture.

2. To encourage adoption of the developments by industry with resultant saving to the farmer and increased supply of low-cost food for the consumer.

3. To produce new and improved fertilizers in quantities sufficient for testing of their efficiency in greenhouses and fields.

4. To encourage the adoption by industry of improved manufacturing technology that lessens environmental pollution.

Effort will be concentrated on fertilizer processes that utilize wet-process phosphoric acid or urea or combinations of the two materials because of their inherently favorable economics. Processes for improving the quality of wet-process acid, of urea, and of products from them will be emphasized. This will include producing urea fertilizers with controlled rates of nitrogen release. Processing methods that avoid pollution will be given high priority. Continuing work on wet-process acid technology will include means of purification of the acid, lowering the cost of its production, and abating pollution associated with its processing and use.

Major projects with wet-process phosphoric acid will include production of better quality and lower cost fluid fertilizers. One promising approach for production of liquid fertilizers largely free of the impurities contained in wet-process acid involves reaction of merchant-grade acid with urea to produce urea phosphate in a relatively pure form suitable for processing into clear, stable fertilizer solutions containing polyphosphates which enhance storage qualities. A large pilot plant will be built to continue studies of this system. Preliminary operation of demonstration-scale units for production of high-analysis suspension fertilizers and ammonium polyphosphate entirely from merchant-grade wet-process acid will be carefully studied for possible process improvements. Work on preparation of urea-ammonium nitrate suspension fertilizer will be continued.

Exploratory studies will be started on controlled-release N-K combination products. Sulfur coating of these materials and of potassium chloride will be evaluated as a means of improving efficiency of utilization and decreasing pollution. Development of low-cost coatings of urea to improve its resistance to atmospheric moisture and its compatibility with other materials will be continued. Pilot studies will be made of the inclusion of urea in conventional granulation formulations as a means of decreasing dust and fume. Studies will be continued of means of reducing the volatilization losses from urea applied to the soil surface. One approach involves incorporation of an inhibitor against hydrolysis.

Use of fertilizers tagged with isotopes will be expanded. Tagged nitrogen fertilizers will be used for research on crop utilization and for field research on the extent of fertilizer nitrogen transport into streams, lakes, and groundwater. Extensive effort will be made to find types of fertilizers effective in minimizing problems of pollution of surface and groundwaters as these problems are defined.

Studies of more economical granulation processes and of granulation formulations designed to decrease pollution will involve continued studies of melt-type processes that do not require any drying operation. Since dust-free fertilizers are needed to conform with stringent pollution regulations, increasing attention will be given to measures for alleviating dusting during processing.

Sulfur Recovery Research

1973 actual	$189,567
1974 estimate	197,000
1975 estimate	201,000

Reduction of sulfur oxide emissions has become a major goal in the worldwide effort to improve air quality. As a result of air quality standards set by both Federal and State regulatory agencies, the utility industry is installing gas-cleaning facilities based on technology considered by many to be immature. The process design is not adequately supported by the logical development program that normally is associated with new technology. Fundamental and applied research studies are needed to provide a better understanding of processes being installed if the large-scale facilities are to be efficient and reliable. Moreover, improved processes are needed to recover the sulfur in a useful form to eliminate a major problem of solid waste disposal and to conserve an important natural resource.

TVA is working in cooperation with EPA on development of processes for removal of sulfur oxides from power plant stack gas; this work is described on page 193. In a separate effort, TVA is studying processes which would utilize the sulfur products. Sulfur is a major raw material in fertilizer manufacture and is an essential plant nutrient. TVA is particularly well qualified to do this work, because the agency is involved in both power production and fertilizer research and development.

TVA has under way or has planned several projects related to sulfur recovery:

1. Fundamental studies of solubilities, vapor pressures, rates of reaction, and solids properties for intermediates and products of recovery processes. Modern instrumental techniques are used.

2. Computer simulation of processes to provide guidance on variables to be tested experimentally. This is a low-cost method for screening processes.

3. Basic studies of promoting or inhibiting, at choice, oxidation of products from the absorption of sulfur dioxide. The choice depends upon the particular method of recovery.

4. Development studies of a process for production of sulfur by reducing an alkaline sulfite with low-cost carbon and reacting the resulting sulfide with sulfur dioxide.

5. Small-scale studies of ammonium sulfate crystallization. In ammonia scrubbing processes, oxidation results in production of ammonium sulfate, a useful fertilizer material. Methods for crystallization are being studied. A fundamental study of the properties of solutions in the process is planned.

6. Economic study of recovery of uranium as a byproduct of the production of phosphoric acid. A practical process of recovery would extend greatly the energy resources of the United States.

FERTILIZER INTRODUCTION

	1973 Actual	1974 Estimate	1975 Estimate
Expenses			
Farm test demonstrations	$968,525	$1,038,000	$1,003,000
Fertilizer industry demonstrations	21,039,395	24,652,000	29,748,000
Developmental production	6,391,920	7,269,000	6,130,000
Total	28,399,840	32,959,000	36,881,000
Financing			
Appropriated funds	7,975,483	7,025,000	6,587,000
Nonpower proceeds	20,424,357	25,934,000	30,294,000
Total	28,399,840	32,959,000	36,881,000
Income from program			
Farm test demonstrations	192,021	240,000	197,000
Fertilizer industry demonstrations	19,094,490	22,624,000	27,567,000
Developmental production	643,613	1,768,000	1,595,000
Total	19,930,124	24,632,000	29,359,000

Following the completion of research and development and technical demonstrations of fertilizer processes and production on a pilot-plant scale, fertilizer introduction requires two steps. The first is developmental production of more efficient fertilizers on a semicommercial scale. Pilot plants have low output and product cost is high. They are essential to research and development but are inadequate for assuring the transfer of R&D results into the economy. The second step in fertilizer introduction is a nationwide educational program to carry the results of development to the land-grant universities, the fertilizer industry, and the American farmer. The educational program is made up of two basic components, farm test demonstrations and industry demonstrations.

Developmental Production

	1973 Actual	1974 Estimate	1975 Estimate
Total expenditures for developmental production	$26,715,003	$31,105,000	$34,861,000
Less materials transferred at market prices to educational programs	20,323,083	23,836,000	28,731,000
Remaining expenditures to be financed	6,391,920	7,269,000	6,130,000
Financing:			
From appropriations	5,253,895	4,199,000	3,600,000
From nonpower proceeds	1,138,025	3,070,000	2,530,000
Total	6,391,920	7,269,000	6,130,000

Objectives of developmental production are:

1. To demonstrate practicality and economics of more efficient fertilizer products and processes by scaling up from small pilot plant to semicommercial-scale operation.

2. To provide sufficient quantities of new and improved fertilizers for introduction through educational programs to industry and farmers.

Prototype-scale production of new fertilizers provides an essential link between fertilizer research and development and educational programs. The cycle of research and development, developmental production, field introduction, and phase-out of fertilizers in this national program continues. In 1974, new urea-based fertilizers will enter the program. It is planned that highly concentrated phosphate-nitrogen combination fertilizers, both fluid and solid, will be fully converted to demonstrate the use of low-cost, wet-process phosphoric acid in their production as commercial sources of acid become available. Operation of the remaining phosphorus furnaces is planned to be discontinued at that time, making possible substantial reductions in operating and facilities expenditures. Total distribution of fertilizer materials in 1975 will be 295,360 tons.

Urea-ammonium phosphates (28-28-0) will be produced and distributed in 1974 for the first time. Another grade, 36-18-0, will be introduced in 1975. These are high-analysis homogeneous fertilizers, not now commercially available, for which TVA has developed an efficient production process. Their agronomic qualities are superior for many U.S. crops and are outstanding for rice. Their introduction will contribute much to fertilizer technology and to farm efficiency, will help overcome the world food deficit, and likely will improve the U.S. position on the nitrogen fertilizer export market now dominated by other countries. Production of these materials will be increased in steps to a level adequate for their introduction.

Granular urea (45-0-0) and urea-ammonium sulfate (40-0-0-4S) are other new fertilizers made from the new "building block" urea, which will meet needs for introduction of more efficient solid straight nitrogen and nitrogen-sulfur fertilizers. These two products will be available in the program, beginning in 1974 and 1975, respectively, and continue into subsequent years.

In 1975 developmental production will be initiated of a high-analysis ammonium phosphate suspension fertilizer (11-39-0) made from the lowest cost feed materials, ammonia and black wet-process orthophosphoric acid. It is made in relatively simple and low-cost equipment. It should be a major breakthrough in lowering the cost of fertilizer to the farmer. It is low in cost, high in analysis, has good storage qualities, and is suitable for easy blending with other fertilizer ingredients.

3711

The net expense of developmental production is affected by many constraints, some of which are external in nature and some stem from its experimental nature. The seasonal nature of fertilizer use requires large storage capacity and expense. Industry shortages and surpluses in capacity and markets greatly affect prices for raw materials and fertilizers. The effect of weather extremes on fertilizer demand is unpredictable. The fertilizer use seasons are short, whereas process facilities must operate continuously. TVA experimental production units are of small size and are prototypes. TVA ships nationwide in short seasons and small quantities from one plant, which is not located near raw and intermediate materials sources. During phase-in and phase-out of new fertilizers TVA fertilizer distribution is low in volume. Planned restructuring of the program and shifting to full use of low-cost, wet-process phosphoric acid as commercial sources of acid become available will overcome the last-mentioned constraint and will eliminate the high cost of operating, maintaining, and replacing old phosphorus and auxiliary facilities. An upturn in industry conditions, the receptivity of industry and farmers to new developments, and the new fertilizers and processes coming into developmental production promise an effective lower cost program to help meet the national goals of adequate low-cost food and fiber for consumers and a better economic position for farmers.

The following table lists the fertilizers to be distributed in 1975.

Developmental Production 1975

	Year Introduced	Plant Nutrient Content (N-P-K)	1975 Distribution—Tons			
			Fert. Intro.	Agri. Projs.	Other	Total
Ammonium polyphosphate	1967	15-62-0	39,473	25	2	39,500
Liquid fertilizer	1959	11-37-0	85,700	-	-	85,700
Liquid fertilizer	1970	12-44-0	12,000	-	-	12,000
Suspension fertilizer	1973	11-39-0	44,000	-	-	44,000
Urea-ammonium phosphate	1974	28-28-0	13,399	-	1	13,400
Urea-ammonium phosphate	1974	36-18-0	14,160	150	-	14,310
Granular urea	1974	45-0-0	18,949	650	1	19,600
Urea-ammonium sulfate	1974	40-0-0-4S	9,999	-	1	10,000
UAN solution	1972	32-0-0	40,000	-	-	40,000
Custom blend fertilizers		Various	4,500	1,500	-	6,000
Other			550	50	-	600
Total fertilizers			282,730	2,375	5	285,110
Phosphorus			-	-	800	800
*Phosphoric acid			8,000	-	-	8,000
Ammonia			-	-	350	350
*Nitric acid			-	-	1,100	1,100
Total intermediate products			8,000	-	2,250	10,250
Total all products			290,730	2,375	2,255	295,360

*Tonnage expressed as 100 percent acid.

Farm Test Demonstrations

	1973 Actual	1974 Estimate	1975 Estimate
Fertilizer materials	$345,127	$378,000	$335,000
Educational activities	623,398	660,000	668,000
Total expense	968,525	1,038,000	1,003,000
Less farmer payments for fertilizer (nonpower proceeds)	192,021	240,000	197,000
Net expense financed from appropriations	776,504	798,000	806,000
Participating states and territories	39	42	45
Fertilizer trials and field demonstrations	587	642	764
Test demonstration farms	275	207	167
Fertilizer investigation and use farms	-	21	36
TVA materials (tons)	5,018	4,059	3,272

General Objectives

The nationwide farm test demonstration program was reviewed and evaluated in fiscal 1973. Objectives of the reoriented program are:

1. To investigate specific soil fertilizer use problems of importance to U.S. agriculture.
2. To evaluate new TVA fertilizers and fertilizer technology.
3. To introduce new TVA fertilizers and fertilizer technology to the agricultural sector.
4. To improve fertilizer use efficiency.

Program

The farm test demonstration program is a necessary link between TVA, the state land-grant universities, and the farming community to accomplish rapid evaluation and adoption of new and improved fertilizers and practices. TVA supplies limited amounts of new and experimental fertilizers at a reduced cost for use in state agricultural programs jointly planned by TVA and the universities. Farmers bear all other farm costs and assume the risks involved in conducting the program.

Reflecting changes in American agriculture, the fertilizer industry, and in TVA's research and development and demonstration-scale production activities, priorities for test demonstration activities in the immediate future will be changed. For example, new nitrogen fertilizer materials based on urea instead of ammonium nitrate will be produced by TVA. Because these are new tertilizers to the agricultural sector, greater emphasis will be placed on applied agronomic research on test demonstration farms with careful planning to ensure that sound research principles are followed and reliable information is obtained. Less emphasis will be placed on the demonstration approach on the assumption that increasingly knowledgeable, innovative farmers who produce most of the agricultural output will be more responsive to accurate reports of crop response and economic returns to improved fertilizer use.

Most farm test demonstrations will be conducted on less than a whole-farm basis, usually small plots one acre or less in size. Small plots are very useful for new product evaluation and introduction based on quantitative crop response data. Whole fields will be used when necessary to introduce or evaluate a new TVA fertilizer in combinaton with all recommended practices for a crop or crop-livestock enterprise. This type program activity will be useful in promoting forage fertilization to increase red meat supplies. Whole farms will be used to obtain information for improving fertilizer use and efficiency. A limited number of farms will be carefully selected to ensure they are representative of large numbers of farms having common fertilizer use problems. These farms will serve an innovators. Reliable input-output information will be collected to which cost and price data can be applied to determine relative levels of profitable fertilizer use. These farms will provide information on levels of fertilizer use that (1) maximize economic returns and (2) minimize adverse environmental effects.

3714

Fertilizer Industry Demonstrations

	1973 Actual	1974 Estimate	1975 Estimate
Fertilizer	$19,747,459	$23,213,000	$28,151,000
Educational activities	1,291,936	1,439,000	1,597,000
Total expense	21,039,395	24,652,000	29,748,000
Less distributor payments for fertilizer (nonpower proceeds)	19,094,311	22,624,000	27,567,000
Net expense financed from appropriations	1,945,084	2,028,000	2,181,000

Fertilizer manufacturers, wholesale distributors, retail dealers, farmers, the land-grant universities, and TVA work together in fertilizer industry demonstrations. A feature of this program is the participation of commercial fertilizer distributors and dealers who instruct farmers in the use of more efficient fertilizers and practices recommended by state agricultural universities. Cooperating dealers use a variety of educational techniques such as meetings of farmers, demonstration plots, field trips and schools, radio and television programs, and printed educational materials.

TVA fertilizers are usually sold at prices slightly lower than those of commercial products to fertilizer manufacturers and distributors for use in special introduction activities. These incentive prices encourage them to provide extra services to the farmer and to assume extra obligations in helping TVA introduce new fertilizers and practices. The use of relatively small quantities of fertilizers in educational programs has exerted a great influence in promoting the use of better commercial fertilizers and helping the fertilizer industry reduce fertilizer costs to the farmer.

TVA chemical engineers advise cooperating fertilizer manufacturers and all segments of the fertilizer industry on problems relating to:

1. Changes in design and operation of plants to use new TVA products and technology.

2. Processing and maintaining the quality of finished products.

3. Controlling water and air pollution in bulk blending, fluid, and granulation processes.

4. Developing new or improved application equipment.

5. Developing formulations for more efficient operations to reduce pollution problems and to lower production costs.

TVA provided technical aid to 200 manufacturers in a number of states in modifying processes, plants, and products during 1973. Some were helped to overcome pollution problems and so to avoid the closure of plants by state regulatory agencies. This has been of particular help to members of the small business sector. New technology applied also has saved them money through more efficient operation.

POWER SUPPLY AND USE
(CAPITAL OUTLAY)

The TVA power program provides the Tennessee Valley region with an ample supply of electric power at low cost—a vital tool for social and economic development. The program requires (1) facilities for producing electric power and delivering it to local distribution systems and to Federal and industrial establishments with large or unusual power requirements, and (2) efficient operation of these facilities. The power program discussed on the following pages is financed from power proceeds and from borrowings secured by future revenues.

	1973 Actual	1974 Estimate	1975 Estimate
Generating capacity additions	$338,520,109	$387,581,000	$462,864,000
Transmission system facilities	68,727,422	73,668,000	72,400,000
Land and land rights	9,648,437	19,678,000	21,696,000
Additions and improvements at power facilities	29,717,137	65,177,000	109,936,000
Nuclear fuel	29,229,596	30,213,000	43,740,000
Investigations for future power facilities	1,882,008	834,000	825,000
Total capital outlay	477,724,709	577,151,000	711,461,000

3717

GENERATING CAPACITY ADDITIONS

Capital outlays during fiscal year 1975 for generating facilities to supply the expected future electric power requirements of the area served by TVA are estimated at $462,864,000. TVA system loads are estimated to increase from 18,888 MW in January 1973 to about 29,300 MW by the winter of 1979-1980 and to further increase to about 36,000 MW by the winter of 1983-1984. The rapid buildup of the Atomic Energy Commission's power requirements in addition to the continued growth in farm, home, and industrial use account for these increases during this period. Nuclear generating facilities must be planned eight to ten years in advance of needs and major construction expenditures must begin some six to seven years in advance of operating dates.

To meet the estimated increase in power requirements, the program for expanding power supply for the period fiscal year 1974 through fiscal year 1977 provides for an additional 8,727,160 kilowatts of nameplate capacity. An additional 15,603,800 kW is under construction or planned to meet the requirements through 1984.

The following table summarizes capacity, schedule, and financial data for the major generating capacity additions now scheduled to be made to the TVA power system.

	Fiscal Year Construction Started	Scheduled Commercial Service Date	Nameplate Capacity kW	Expenditures (In Thousands) Actual to 6-30-73	Estimate 1974	1975	To Complete	Total Cost
Cumberland Steam Plant units 1-2	1968	Mar. 1973 Nov. 1973	1,300,000 1,300,000	$392,377	$17,876	-	$-253	$410,000
Browns Ferry Nuclear Plant units 1-3	1967	Jan. 1974 July 1974 Apr. 1975	1,152,000 1,152,000 1,152,000	598,656	93,677	$54,019	3,648	750,000
Sequoyah Nuclear Plant units 1-2	1970	June 1976 Feb. 1977	1,220,580 1,220,580	352,563	96,072	82,673	118,692	650,000
Raccoon Mountain pumped-storage project units 1-4	1971	Nov. 1974 Feb. 1975 May 1975 Aug. 1975	382,500 382,500 382,500 382,500	75,562	58,234	41,013	17,191	192,000
Watts Bar Nuclear Plant units 1-2	1973	Mar. 1978 Dec. 1978	1,269,900 1,269,900	37,327	93,879	195,808	372,986	700,000
Bellefonte Nuclear Plant units 1-2[a]	1975	Sept. 1979 June 1980	1,332,000 1,332,000	10,333	22,374	80,040	612,253	725,000
Hartsville Nuclear Plant units 1-4[a]	1976	Dec. 1980 Dec. 1981 June 1981 June 1982	1,300,000 1,300,000 1,300,000 1,300,000	884	3,554	8,206	1,562,356	1,575,000
Nuclear plants 7 and 8 (undetermined location)[b]	1978	1982-1984	5,200,000	-	152	1,105	1,798,743	1,800,000

a. Site is tentative pending completion of review of environmental impacts.
b. All data preliminary; based on four nuclear units.

Power Exchanges

Seasonal exchanges of generating capacity between TVA and adjacent utilities will provide TVA with additional capacity during the winters when TVA's requirements are highest as shown in the following table.

Winter of	Firm Power Available from Other Utilities - kW			
	Mississippi Power & Light Company	Southern Services, Inc.	Illinois-Missouri Group	Total
1974-1975 and later years	1,500,000	300,000	260,000	2,060,000

TVA will deliver the same amounts of power to these utilities during the summer periods when their requirements are high.

Power Supply and Demand

With the installation of the generating units previously described, the interchange agreements with neighboring utilities, and reflecting the capacity retained by the Southeastern Power Administration from the Corps of Engineers hydroelectric projects on the Cumberland River, the relationships between expected system capacity and predicted power requirements in the winters of 1974-1975 through 1978-1979 are estimated to be as shown in the following table.

Winter of	Approximate System Dependable Capacity - kW	Presently Estimated Demands - kW		Margin	
		Total	Served by TVA Capacity	kW	Percent
1974-1975	24,378,000	22,600,000	20,540,000	3,838,000	18.7
1975-1976	26,283,000	23,700,000	21,640,000	4,643,000	21.5
1976-1977	27,398,000	25,100,000	23,040,000	4,358,000	18.9
1977-1978	28,523,000	26,400,000	24,340,000	4,183,000	17.2
1978-1979	30,863,000	27,750,000	25,690,000	5,173,000	20.1

The margins in the foregoing table reflect the difference between loads which TVA must serve and the dependable capacity available to supply these loads. To provide an acceptable degree of reliability, these margins must be adequate to allow for maintenance and emergency outages of generating capacity, reductions in hydro capacity due to adverse streamflow conditions, and unexpected variations in system loads.

CUMBERLAND STEAM PLANT–UNITS 1-2

1973 actual	$48,761,398
1974 estimate	17,876,000
1975 estimate	-

Two coal-fired generating units totaling 2,600,000 kW capacity at the Cumberland site in middle Tennessee will be completed in 1974. This site is near Cumberland City in Stewart County about 50 miles northwest of Nashville, Tennessee. It is on the Barkley reservoir (Cumberland River) which will serve as the source of cooling water.

On-site construction of the project began in March 1968. The first unit was placed in commercial operation on March 1, 1973, and the second unit on November 1, 1973.

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
	June 30, 1974	June 30, 1975	
Total project	100	100	April 1974
Land acquisition	100	100	June 1969
Powerhouse	100	100	April 1974
Boiler plant	100	100	October 1973
Turbogenerators	100	100	November 1973
Transmission plant	100	100	October 1973

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	1975	To Complete	Total Cost
Relocation of highways, structures, and improvements	$54,418	$3,582	-	-	$58,000
Boiler plant equipment	168,545	3,355	-	-	171,900
Turbogenerator units	45,799	901	-	-	46,700
Accessory electrical and miscellaneous power plant equipment	21,784	1,416	-	-	23,200
Transmission plant	8,753	1,047	-	-	9,800
Construction plant, equipment, and inventories	1,573	-1,440	-	$-133	-
Interest capitalized during construction	52,266	3,034	-	-	55,300
Construction supervision and services, general engineering and design, and general administration	39,239	5,981	-	-120	45,100
Total expenditures	392,377	17,876	-	-253	410,000
Changes in unpaid undelivered orders	2,150	-2,150	-	-	-
Total obligations	394,527	15,726	-	-253	410,000

Cost Estimate. The estimated project cost of $410,000,000 includes an increase of $18,000,000 over that reported in the Budget Program for 1974. This increase reflects (1) additional interest during construction due to delays in unit operation schedules ($11,300,000) and (2) additional preoperational expense and other costs associated with the delayed operating schedules ($6,700,000). Adoption of new water quality standards by the State of Tennessee may require the addition of water cooling facilities. This is not included in the current cost estimate because the scope has not yet been established.

BROWNS FERRY NUCLEAR PLANT–UNITS 1-3

1973 actual	$95,271,105
1974 estimate	93,677,000
1975 estimate	54,019,000

Three identical nuclear power generating units totaling 3,456,000 kW are being installed at Browns Ferry site in northern Alabama. This site, on the north bank of Wheeler reservoir in Limestone County, is about 10 miles northwest of Decatur and about 30 miles west of Huntsville. The General Electric Company is providing the fuel and major components (boiling water nuclear steam supply system, turbogenerator, and some of the auxiliary systems). TVA designs and supplies or constructs other plant facilities.

Construction was started in May 1967, following the granting of a construction permit by the Atomic Energy Commission for the first two units. License to build the third unit was issued on July 31, 1968, and construction on it was started August 1, 1968. Commercial operating dates for the three units were originally scheduled for October 1970, October 1971, and October 1972. Due to delays in equipment deliveries by the manufacturer, modifications in scope of project features, evolving requirements of AEC for environmental protection and engineered safeguards, and other factors, the commercial operating dates have been rescheduled to January 1974, July 1974, and April 1975.

The plant will include a 500-kV switchyard. Auxiliary station service will be supplied from the transmission system at 161 kV. Mechanical draft cooling towers are also included as part of the original construction program.

Plans for 1975

The estimated expenditure of $54,019,000 will be applied as follows:

Completion of reactor, turbine and service buildings, and continuation of general yard improvements	$2,000,000
Completion of reactor plant equipment installations	14,200,000
Completion of turbogenerator installations and continuation of cooling tower system construction	19,900,000
Completion of accessory electrical and miscellaneous power plant equipment installations and contract payments	2,700,000
Completion of transmission plant equipment installations and contract payments	500,000
Construction plant, equipment, and inventories (transfer of depreciation and use to work features)	-5,000,000
Interest capitalized during construction	12,987,000
Construction supervision and services	5,385,000
General engineering and design	1,000,000
General administration	347,000
Total	54,019,000

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
	June 30, 1974	June 30, 1975	
Total project	90	99	March 1976
Land acquisition	100	100	June 1969
Structures and improvements	97	99	March 1976
Reactor plant equipment	90	100	April 1975
Turbogenerator units	88	100	April 1975
Transmission plant	95	100	April 1975

29-353 O - 74 - pt. 5 - 9

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	1975	To Complete	Total Cost
Structures and improvements	$84,365	$6,000	$2,000	$335	$92,700
Reactor plant equipment	174,667	17,700	14,200	4,333	210,900
Turbogenerator units	118,470	27,800	19,900	930	167,100
Accessory electrical and miscellaneous power plant equipment	36,253	6,500	2,700	147	45,600
Transmission plant	15,340	1,000	500	60	16,900
Construction plant, equipment, and inventories	14,150	-4,600	-5,000	-4,550	-
Interest capitalized during construction	89,113	28,900	12,987	-	131,000
Construction supervision and services, general engineering and design, and general administration	66,298	10,377	6,732	2,393	85,800
Total expenditures	598,656	93,677	54,019	3,648	750,000
Changes in unpaid undelivered orders	31,825	-19,025	-10,200	-2,600	-
Total obligations	630,481	74,652	43,819	1,048	750,000

Cost Estimate. The estimated cost of $750,000,000 includes an increase of $50,000,000 over that reported in the Budget Program for 1974. This increase reflects (1) an additional 4,500,000 man-hours of field work plus additional equipment and materials due to continuing revisions, additions, and delays associated with AEC requirements for safeguards and quality assurance ($34,700,000); (2) increased estimates for general costs due to the longer schedule, higher charges by AEC for nuclear license fees, preoperational expense, and additional design cost ($11,400,000); (3) additional interest during construction due to increased project estimate, schedule delays, and higher rates ($14,000,000); and (4) other adjustments ($-10,100,000). The project completion date has been delayed by three months and the scheduled operating dates for the three generating units have been delayed five months, three months, and six months, respectively.

SEQUOYAH NUCLEAR PLANT–UNITS 1-2

1973 actual	$121,732,778
1974 estimate	96,072,000
1975 estimate	82,673,000

Two nuclear generating units with a total rating of 2,441,160 kW are being installed at the Sequoyah site in east Tennessee. This site is about 18 miles northeast of Chattanooga, Tennessee. It is on Chickamauga reservoir (Tennessee River) which will serve as the source of cooling water.

Construction of permanent structures began upon receipt of the Atomic Energy Commission permit May 27, 1970. The two units are scheduled for commercial operation in June 1976 and February 1977, respectively. These dates reflect delays of fourteen months each from the previously reported schedules. The plant will be connected to the transmission system at 161 kV and 500 kV.

Plans for 1975

Estimated expenditures of $82,673,000 will be applied as follows:

Continuation of buildings, miscellaneous structures, and yard improvements	$3,200,000
Continuation of reactor plant equipment installations and contract payments	14,500,000
Continuation of turbogenerator and cooling water facilities installations	15,100,000
Continuation of accessory electric and miscellaneous equipment payments and installations	5,900,000
Construction plant, equipment, and inventories	2,100,000
Interest capitalized during construction	30,500,000
Construction supervision and services	5,985,000
General engineering and design	5,100,000
General administration	288,000
Total	82,673,000

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
	June 30, 1974	June 30, 1975	
Total project	70	85	December 1977
Land acquisition	100	100	June 1971
Structures and improvements	85	95	December 1977
Reactor plant equipment	75	85	February 1977
Turbogenerator units	65	80	February 1977
Transmission plant	99	100	July 1974

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost
Structures and improvements	$57,425	$15,700	$3,200	$3,275	$79,600
Reactor plant equipment	104,772	30,300	14,500	29,528	179,100
Turbogenerator units and cooling water facilities	80,809	3,700	15,100	22,491	122,100
Accessory electrical and miscellaneous power plant equipment	13,623	6,100	5,800	16,877	42,400
Transmission plant	14,575	2,000	100	625	17,300
Construction plant, equipment, and inventories	12,109	2,000	2,100	-16,209	-
Interest capitalized during construction	26,999	24,200	30,500	48,301	130,000
Construction supervision and services, general engineering and design, and general administration	42,251	12,072	11,373	13,804	79,500
Total expenditures	352,563	96,072	82,673	118,692	650,000
Changes in unpaid undelivered orders	24,346	1,823	-8,597	-17,572	-
Total obligations	376,909	97,895	74,076	101,120	650,000

Cost Estimate. The estimated cost of $650,000,000 includes an increase of $180,000,000 over that reported in the Budget Program for 1974. This increase reflects (1) addition of cooling towers to the project scope ($50,000,000); (2) additional interest during construction costs associated with the extended project schedule ($55,000,000); (3) additional craft labor and procurements of materials and equipment due to continuing revisions, additions, and delays associated with AEC requirements for safeguards and quality assurance ($43,200,000); (4) higher estimates for general costs due to the longer schedule, increased nuclear license fees, increased preoperational expense, and greater design and engineering costs ($17,500,000); and (5) adjustments in other allowances to provide for probable additional revisions and for other uncertainties ($14,300,000). The project completion has been delayed one year, and the scheduled operating dates have been delayed fourteen months for each unit. These delays resulted primarily from design changes to the emergency core cooling system and to the tritium drain system in the interest of safety and environmental protection.

RACCOON MOUNTAIN PUMPED-STORAGE PROJECT

1973 actual	$33,670,761
1974 estimate	58,234,000
1975 estimate	41,013,000

Four identical reversible pump-turbine hydroelectric generating units totaling about 1,530,000 kilowatts capacity are being installed at the Raccoon Mountain site, about six miles west of downtown Chattanooga, Tennessee. The plant is on the east bank of the Nickajack reservoir which will serve as the tailpond for Raccoon Mountain discharges. Construction began in July 1970.

The first Raccoon Mountain unit is scheduled for commercial operation in November 1974. The other units are scheduled to follow at three-month intervals.

Plans for 1975

The estimated expenditure of $41,013,000 will be applied as follows:

Complete reservoir preparation and begin construction of public-use facilities	$300,000
Continue construction of power plant chamber, miscellaneous buildings, and general yard improvements	3,500,000
Substantial completion of earth and rockfill dam	1,000,000
Complete construction of intake and continue construction of water conductors	4,900,000
Continue installation of pump/turbines, motor/generators, and accessory equipment; equipment contract payments	10,400,000
Continue transmission plant installations and equipment payments	9,500,000
Construction plant, equipment, and inventories (transfer of depreciation and use to work features)	-1,200,000
Interest capitalized during construction	7,500,000
Construction supervision and services	2,830,000
General engineering and design	2,000,000
General administration	283,000
Total	41,013,000

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
	June 30, 1974	June 30, 1975	
Total project	60	85	June 1976
Land acquisition	100	100	June 1971
Powerhouse	70	90	October 1975
Dam	90	97	August 1974
Generating/pumping units	60	85	August 1975
Transmission plant	45	90	August 1975

Summary of Construction Program

In Thousands

	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost
Land and land acquisition	$1,414	$18	-	-	$1,432
Reservoir clearing, rim treatment, and public-use facilities	271	600	$300	$629	1,800
Powerhouse, miscellaneous structures, and improvements	10,447	4,400	3,500	2,453	20,800
Main and auxiliary dams	13,821	7,800	1,000	579	23,200
Intake and water conductors	9,761	11,800	4,900	639	27,100
Generating/pumping equipment	13,950	14,500	10,400	4,350	43,200
Transmission plant	198	10,200	9,500	2,802	22,700
Construction plant, equipment, and inventories	4,878	-3,700	-1,200	22	-
Interest capitalized during construction	5,611	6,400	7,500	2,489	22,000
Construction supervision and services, general engineering and design, and general administration	15,211	6,216	5,113	3,228	29,768
Total expenditures	75,562	58,234	41,013	17,191	192,000
Changes in unpaid undelivered orders	29,664	-21,277	-6,573	-1,814	-
Total obligations	105,226	36,957	34,440	15,377	192,000

Cost Estimate. The estimated total project cost of $192,000,000 remains unchanged from that presented in the Budget Program for fiscal year 1974.

WATTS BAR NUCLEAR PLANT–UNITS 1-2

1973 actual	$29,341,645
1974 estimate	93,879,000
1975 estimate	195,808,000

Two nuclear generating units with a total rating of 2,539,800 kW are being installed at the Watts Bar site near Spring City, Tennessee. Preliminary on-site work began in December 1972 and full-scale construction began following the granting of a construction permit by AEC on January 23, 1973. The two units are scheduled for commercial operation in March 1978 and December 1978.

As a result of problems with the Westinghouse designs for the ice condenser and emergency core cooling system, scheduled operation of each unit has been delayed by 10 months from the schedule reported in the Budget Program for 1974.

Plans for 1975

Estimated expenditures of $195,808,000 will be applied as follows:

Continue construction of control, auxiliary, turbine, and service buildings	$17,100,000
Continuation of contract payments for reactor equipment and installation of steel containment vessels	58,100,000
Continuation of work on the circulating water systems and cooling towers; begin turbogenerator erection; equipment contract payments	60,100,000
Continuation of contract payments and begin installation of accessory electric and miscellaneous equipment	14,100,000
Continuation of transmission plant construction and contract payments	7,600,000
Construction plant, equipment, and inventories	7,300,000
Interest capitalized during construction	15,500,000
Construction supervision and services	7,088,000
General engineering and design	7,400,000
General administration	1,520,000
Total	195,808,000

Status of Construction

	Estimated Percent Complete		Completion Date
	June 30, 1974	June 30, 1975	
Total project	10	30	March 1980
Land acquisition	100	100	June 1973
Structures and improvements	15	35	March 1980
Reactor plant equipment	10	20	December 1978
Turbogenerator units	5	20	December 1978
Transmission plant	1	30	October 1977

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost
Structures and improvements	$2,391	$12,100	$17,100	$58,809	$90,400
Reactor plant equipment	15,952	46,700	58,100	97,548	218,300
Turbogenerator units and cooling water facilities	624	14,400	60,100	53,376	128,500
Accessory electrical and miscellaneous power plant equipment	748	1,000	14,100	27,952	43,800
Transmission plant	2	200	7,600	6,298	14,100
Construction plant, equipment, and inventories	5,772	1,400	7,300	-14,472	-
Interest capitalized during construction	1,250	5,200	15,500	98,050	120,000
Construction supervision and services, general engineering and design, and general administration	10,588	12,879	16,008	45,425	84,900
Total expenditures	37,327	93,879	195,808	372,986	700,000
Changes in unpaid undelivered orders	183,664	-9,943	-99,354	-74,367	-
Total obligations	220,991	83,936	96,454	298,619	700,000

Cost Estimate. The estimated project cost of $700,000,000 includes an increase of $25,000,000 over that reported in the Budget Program for 1974. This increase reflects (1) additional interest during construction due to schedule delays and higher capitalization rates ($20,000,000) and (2) increased estimates for licensing fees and preoperational expense and other adjustments ($5,000,000). The project completion date has been delayed by nine months and the scheduled operating dates for the two generating units have been revised to March 1978 and December 1978, respectively, reflecting a delay of 10 months for each unit.

BELLEFONTE NUCLEAR PLANT–UNITS 1-2

1973 actual	$7,614,477
1974 estimate	22,374,000
1975 estimate	80,040,000

Two nuclear fueled generating units with a total rating of approximately 2,664,000 kW are to be installed at a tentatively determined site with initial construction beginning in fiscal year 1975. The two units are scheduled for commercial operation in 1979 and 1980. The proposed site is Bellefonte on the Guntersville reservoir near Scottsboro, Alabama. The environmental analyses necessary for final site determination are in process. Contracts have been awarded for the nuclear steam supply systems and for the turbogenerator units.

Plans for 1975

The estimated expenditure of $80,040,000 will be applied as follows:

Begin excavation and concreting for the reactor, auxiliary service control and turbine buildings	$6,800,000
Continue progress payments on reactor equipment	37,200,000
Begin excavation for cooling towers and intake structure; turbogenerator contract payments	14,200,000
Begin mobilization of construction plant and equipment	7,000,000
Interest capitalized during construction	4,900,000
Construction supervision and services	1,717,000
General engineering and design	7,600,000
General administration	623,000
Total	80,040,000

Status of Construction

	Estimated Percent Complete		Estimated Completion Date
	June 30, 1974	June 30, 1975	
Total project	-	5	June 1981
Structures and improvements	-	5	June 1981
Reactor plant equipment	-	5	June 1980
Turbogenerator units	-	2	June 1980
Transmission plant	-	-	March 1979

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	Estimate 1975	Estimate To Complete	Total Cost[1]
Structures and improvements	-	-	$6,800	$72,900	$79,700
Reactor plant equipment	$4,158	$14,800	37,200	191,642	247,800
Turbogenerator units and cooling water facilities	34	100	14,200	125,666	140,000
Accessory electrical and miscellaneous power plant equipment	64	-	-	35,136	35,200
Transmission plant	-	-	-	21,900	21,900
Construction plant, equipment, and inventories	-	-	7,000	-7,000	-
Interest capitalized during construction	368	1,340	4,900	118,392	125,000
Construction supervision and services, general engineering and design, and general administration	5,709	6,134	9,940	53,617	75,400
Total expenditures	10,333	22,374	80,040	612,253	725,000
Changes in unpaid undelivered orders	134,576	37,986	-5,000	-167,562	-
Total obligations	144,909	60,360	75,040	444,691	725,000

1. Tentative.

Cost Estimate. The tentative project cost is $725,000,000, no change from that reported in the Budget Program for 1974. The estimate remains tentative pending project scope determinations and further cost trend developments.

HARTSVILLE NUCLEAR PLANT–UNITS 1-4

1973 actual	$697,039
1974 estimate	3,554,000
1975 estimate	8,206,000

Four nuclear fueled generating units with a total rating of approximately 5,200,000 kW are to be installed for commercial operation in December 1980, June 1981, December 1981, and June 1982, respectively. The tentative site is located on Old Hickory reservoir about 10 miles from Carthage, Tennessee. Environmental analyses necessary for final site determination are in process. A contract has been awarded for the nuclear steam supply systems. On-site construction is scheduled to begin during fiscal year 1976.

Plans for 1975

The estimated expenditure of $8,206,000 will be applied as follows:

Payments on major equipment	$700,000
Interest capitalized during construction	609,000
Preconstruction services	434,000
General engineering and design	6,400,000
General administration	63,000
Total	8,206,000

Status of Construction

	Estimated Percent Complete		Completion Date
	June 30, 1974	June 30, 1975	
Total project	-	-	June 1983
Structures and improvements	-	-	June 1983
Reactor and turbogenerator equipment	-	-	June 1982

Summary of Construction Program

	In Thousands				
	Actual to 6-30-73	Estimate 1974	Estimate 1975	To Complete	Total Cost[1]
Structures and improvements	-	-	-	$172,600	$172,600
Reactor	-	-	$700	547,600	548,300
Turbogenerator	-	-	-	343,100	343,100
Accessory electrical and miscellaneous	-	-	-	76,800	76,800
Transmission plant	-	-	-	46,200	46,200
Interest capitalized during construction	$33	$186	609	234,172	235,000
Construction supervision and services, general engineering and design, and general administration	851	3,368	6,897	141,884	153,000
Total expenditures	884	3,554	8,206	1,562,356	1,575,000
Changes in unpaid undelivered orders	166,361	159,999	40,000	-366,360	-
Total obligations	167,245	163,553	48,206	1,195,996	1,575,000

1. Tentative.

Cost Estimate. The tentative project cost of $1,575,000,000 is unchanged from the estimate presented in the Budget Program for 1974.

NUCLEAR PLANTS 7 AND 8

1973 actual	-
1974 estimate	$152,000
1975 estimate	1,105,000

Additional generating capacity of approximately 5.2 million kW is planned to meet forecasts of load requirements for 1982, 1983, and 1984. Planning and preliminary design will be under way in 1974 and orders for nuclear steam supply systems will be placed in that year. Unpaid undelivered orders at the end of 1974 are expected to total $200 million. Purchase awards for turbogenerating units are scheduled for fiscal year 1976 with construction scheduled to start in fiscal year 1978.

The cost of this additional capacity is tentatively estimated at $1,800 million. The estimate is based on two two-unit nuclear stations with consideration being given to installation of the four units on one site.

TRANSMISSION SYSTEM FACILITIES

1973 actual	$68,727,422
1974 estimate	73,668,000
1975 estimate	72,400,000

TVA energy sales, excluding sales to Federal agencies, have grown at an average annual rate of about 9 percent during the past 10 years. In the next 10 years, these sales are expected to grow about 6 percent annually. Sales to Federal agencies, including interdivisional sales, are expected to increase from 17.7 billion kWh in 1973 to 27.4 billion kWh in 1975, an increase of 55 percent.

To supply the increasing electric energy requirements, TVA is expanding its extensive networks of extra high voltage (500-kV) transmission facilities and supplementing its lower voltage network. The extension and reinforcement of the transmission network will connect new generating plants into the system, improve reliability of power supply to growing area loads, and maintain system efficiency. New interconnections with neighboring utilities will provide improved system stability and economy by limiting the need for additional generation. Delivery of power to ultimate consumers, except for a few directly served industrial and Federal agency customers, is accomplished over distribution systems owned and operated by the municipalities and cooperatives which TVA serves.

The selection of voltage levels for a complex transmission system such as TVA's is a function of the quantities of power to be transmitted, the distance of transmission, and cost. The essential function of transmission substations is to change the voltage level by means of transformers to properly match the voltage to the particular transmission function required, or to a level suitable for delivery to a customer. The higher the voltage at which electric power is transmitted, the less energy waste. Higher voltage transmission demands greater initial investment for individual power lines and substations, but in relation to the lower voltage facilities which would otherwise be required, high voltage systems produce overall economies.

Primary Transmission System Facilities

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
500-kV facilities	25,485	20,165	28,130
161-kV facilities	21,475	32,045	23,525
Total	46,960	52,210	51,655

500-kV Facilities

About 1,485 miles of 500-kV transmission lines are in service or under construction. Approximately 435 miles are planned, for which acquisition of rights of way or construction will be started. The fiscal year 1975 program requires $500,000 to install two 161-kV circuit breakers at the West Point, Mississippi, and Cordova, Tennessee, 500-kV substations; and $2,800,000 to acquire substation sites and rights of way for future 500-kV substations in Madison County, near Jackson, Tennessee, Union County, near Tupelo, Mississippi, and Knox County, near Knoxville, Tennessee. Continued construction of other projects in fiscal year 1975 includes $3,700,000 for the Weakley, Tennessee, 500-kV substation; $5,445,000 for transmission connections for the Raccoon Mountain pumped-storage project; $10,500,000 for the Widows Creek-West Jefferson 500-kV line; $1,200,000 for transmission connections for the Watts Bar Nuclear Plant; $1,000,000 for the Roane, Tennessee, 500-kV substation; $200,000 for the Murphy Hill, Alabama, 500-kV substation; and $510,000 to install 500-kV shunt capacitors at the Cordova, Tennessee, 500-kV substation.

The program also includes $2,275,000 for new starts during fiscal year 1975. They are the Maury, Shelby, and Volunteer, Tennessee, 500-kV substations; the West Point-West Jefferson 500-kV line; capacity increases at the West Point, Mississippi, and Davidson, Tennessee, 500-kV substations; 500-kV facilities at the Shawnee Steam Plant; transmission connections for the proposed Bellefonte Nuclear Plant; and installation of 500-kV capacitors at the Weakley, Tennessee, 500-kV substation and in the Johnsonville-Cordova 500-kV line at the site of the future Jackson, Tennessee, 500-kV substation.

29-353 O - 74 - pt. 5 - 10

161-kV Facilities

To meet the growing demand for power in the TVA service area, $5,245,000 is required in fiscal year 1975 for construction of additional 161-kV lines. As loads grow, the capacities of transmission lines supplying substations are approached. In other instances there are risks that, if for some reason one supply line was temporarily out of service, the capacity of an alternate line would be exceeded. As these circumstances develop, new 161-kV connections are provided to insure adequate supply and reliability. Of the 11 lines under construction during fiscal year 1975, eight will be completed and placed in service, and work will continue on the remaining three lines.

The program includes $13,990,000 for additional 161-kV substations and connections in fiscal year 1975 to provide additional step-down facilities for supplying the subtransmission system and serving new delivery points. Six new substations will be started during fiscal year 1975, and 14 under construction in fiscal year 1974 will be completed.

Plans also provide $3,985,000 to initiate capacity increases and improve service facilities at seven substations and to complete work at six substations during fiscal year 1975.

Planning studies point to the need for additional new primary substations throughout the service area, and $305,000 will provide for surveys and acquisition of sites and related transmission line rights of way to be completed at one location and initiated at another location.

Subtransmission System Facilities

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
69-kV and 46-kV lines, substations, and improvements	8,251	5,940	6,425

When load growth in a distributor's service area approaches the capacity of its 13 or 26-kV service lines, joint studies are undertaken to determine the appropriate location for a new 69-kV or 46-kV substation to provide adequate and economical power supply.

To strengthen or add to the power supply to distributors and directly served industrial power users, work will be started in fiscal year 1975 on two new subtransmission lines and work started in prior years will be completed on four other lines. Also, construction of eight new subtransmission substations will begin in fiscal year 1975 with work being completed on three other similar substations started in prior years. Work on these lines and substations will require $3,375,000 in fiscal year 1975.

Capacity for load growth in the distributors' service areas will be provided at some locations by the installation of higher rated equipment in existing subtransmission substations. Transformer changes and equipment improvements will be initiated at 10 locations, will continue at 8 locations, and be completed at 15 locations in fiscal year 1975. These changes will require expenditures of $2,880,000.

To further increase delivery of power for the growing loads, two subtransmission lines will be uprated through installation of larger conductors during fiscal year 1975. The uprating of two subtransmission lines will be initiated in fiscal year 1975. These improvements to facilities will require $170,000.

Communication Facilities

	X $1,000
1973 actual	225
1974 estimate	1,435
1975 estimate	2,390

Reliability of the electric energy supply of a power system is dependent upon the effectiveness of the communication network which controls it. TVA power facilities are located in an area embracing portions of seven states and the extensive area served requires a similarly extensive communication network. A communication network consisting of voice dispatching, power-flow telemetering, protective relaying, and supervisory control circuits must extend into the far reaches of the system to provide dependable and uninterrupted transmission of voice and electronic signals between central and area dispatching and operating locations and the generating plants, substations, and operating and maintenance personnel. At the close of 1973, TVA had in operation 60 generating plants, 624 substations, 16,544 miles of transmission lines, and numerous interconnections with other utility systems. Constant expansion and improvement to the communication system is required as new substations, transmission lines, generating plants or units, and remote or supervisory control installations are added to the system. Installation will continue during fiscal year 1975 on a power system area dispatching and control plan which will lead eventually to automatic control of all major substations and many generating plants from five area dispatching offices. This

program will further increase power supply reliability by reducing human error to a minimum. The budget program includes $2,390,000 in fiscal year 1975 for communication facilities.

Rehabilitation and Replacements of 69-kV and 46-kV Facilities and Miscellaneous Additions and Improvements

	X $1,000
1973 actual	8,243
1974 estimate	8,375
1975 estimate	6,080

Replacement of transmission system facilities must continually be made following equipment failures, accidents, storm damage, and minor necessary equipment changes. This work is estimated to require $2,915,000 in fiscal year 1975.

Installation of capacitors provides reactive power to improve voltage and increase the load-carrying capacity of transmission and subtransmission lines. Such installations often permit deferring for a time replacement of lines or adding transfer capacity at substations. Terms of the current standard wholesale power contract include a provision for holding delivery voltage to closer tolerance than in past years. To meet this contract requirement, installation of capacitors and voltage regulating equipment will continue for a number of years, requiring $1,090,000 in fiscal year 1975.

TVA maintains a central service shop at Muscle Shoals and smaller repair facilities at numerous field locations where generating plant equipment, transformers, oil circuit breakers, and other power equipment are repaired and overhauled. A central electric and chemical laboratory at Chattanooga is used for testing and maintaining metering and electronic equipment and for performing chemical analyses and research on various materials. Shop and laboratory work requires a great variety of tools, operating equipment, specialized meters, and testing devices. To provide new and replacement items for the shops and laboratory, $375,000 is required in fiscal year 1975.

At many locations power maintenance, construction, and stores personnel are quartered in obsolete buildings acquired years ago, or in rented facilities. These facilities are unsatisfactory. Space for special mobile equipment is restricted, space for outdoor storage of bulky materials and supplies is limited, and indoor provisions for shops, stores items, tools, and equipment are inadequate. An improvement program was started some years ago and several new power service centers have been completed providing adequate office, shop, and storage space at various locations in the service area. Plans are progressing for construction of a new center at Scottsboro, Alabama, an addition to the Tupelo, Mississippi, center in fiscal

year 1974 with design and start of construction on centers at Murfreesboro and Columbia, Tennessee; Russellville, Kentucky; and Philadelphia, Mississippi, in fiscal year 1975. Acquisition of a new site for the Nashville service center is progressing. Completion of an expansion of the Wilson Dam power service shop in fiscal year 1975 will provide additional shop facilities capable of repairing the large electrical equipment now on the system. Work in this category will require $1,700,000 in fiscal year 1975.

SUMMARY OF TRANSMISSION SYSTEM FACILITIES[1]

	X $1,000				
	Actual	Estimate			
	to 6-30-73	1974	1975	To Complete	Total Cost
Primary transmission system facilities:					
500-kV facilities	111,797	20,165	28,130	170,425	330,517
161-kV lines	10,994	10,915	5,245	2,300	29,454
161-kV substations and connections	6,839	18,680	13,990	4,870	44,379
Substation sites and transmission right of way for future use	8	235	305	100	648
Capacity increases and changes at existing primary substations	802	2,215	3,985	3,040	10,042
Total	130,440	52,210	51,655	180,735	415,040
Subtransmission facilities:					
69-kV and 46-kV lines and substations	1,662	3,880	3,375	2,825	11,742
Capacity increases at existing subtransmission substations	664	1,475	2,880	2,365	7,384
Major rebuilding of existing subtransmission facilities	390	585	170	150	1,295
Total	2,716	5,940	6,425	5,340	20,421
Communication facilities	221	1,435	2,390	5,320	9,366
Rehabilitation and replacements of 69-kV and 46-kV facilities and miscellaneous additions and improvements:					
Minor line and substation replacements and improvements	2,838	3,625	2,915	4,995	14,373
Capacitor installations and low-voltage switches for service points	1,293	1,540	1,090	2,135	6,058
Tools and operating equipment	524	410	375	-	1,309
Power service centers, general buildings for construction and operating forces, and related equipment	4,630	2,800	1,700	985	10,115
Total	9,285	8,375	6,080	8,115	31,855
Total transmission system facilities—direct	142,662	67,960	66,550	199,510	476,682
Engineering, design, and general expenses		4,240	4,350		
Distribution of administrative and general expenses		1,468	1,500		
Total transmission system facilities, all from power proceeds and borrowings		73,668	72,400		

1. Actual expenditures to June 30, 1973, estimated expenditures to complete, and total cost estimates relate only to facilities on which work is planned to be done during the period from July 1, 1973, through June 30, 1975.

Summary of Physical Units of Property in Service

	End of Fiscal Year		
	1973 Actual	1974 Estimate	1975 Estimate
Transmission lines (circuit miles):			
500 kilovolts	1,479	1,485	1,486
345 kilovolts	2	2	2
230 kilovolts	30	30	30
161 kilovolts	8,503	8,872	8,976
115 kilovolts	186	186	170
69 kilovolts	3,519	3,540	3,566
46 kilovolts	2,693	2,677	2,678
13 kilovolts	132	132	127
Total transmission lines (circuit miles)	16,544	16,924	17,035
Substations[1]:			
Number	624	649	667
Capacity in megavolt-amperes	55,154	61,135	63,037

1. Exclusive of step-up stations at generating plants.

LAND AND LAND RIGHTS

1973 actual	$9,648,437
1974 estimate	19,678,000
1975 estimate	21,696,000

Land and Rights for Future Fuel Supplies

	X $1,000
1973 actual	8,301
1974 estimate	14,704
1975 estimate	17,695

To help assure the availability of an economical fuel supply for existing and future thermal generating plants in the TVA power system, an estimate of $15,000,000 for fiscal year 1974 and $18,000,000 for fiscal year 1975 provides for exploration and acquisition of additional uranium mineral and mining rights, if suitable reserves are located and available for purchase. TVA, through control of sufficient uranium reserves, hopes to avoid sharp increases in market prices as well as the expected shortage in the early 1980's. Partially offsetting these estimates are estimated credits of $296,000 for fiscal year 1974 and $305,000 for fiscal year 1975 for depletion allowances for coal mined on reserves owned by TVA.

Land for Future Electric Generating Plant Sites

	X $1,000
1973 actual	1,347
1974 estimate	4,974
1975 estimate	4,001

To assure availability of sites for orderly and efficient expansion of the power system, it is prudent to develop and maintain an inventory of suitable sites for the location of future electric generating plants. Acquisition of four inventory sites which began in fiscal year 1972 is continuing in fiscal year 1974. In addition, plans include the purchase of one additional site in fiscal year 1974 and three in fiscal year 1975.

ADDITIONS AND IMPROVEMENTS AT POWER FACILITIES

	1973 Actual	1974 Estimate	1975 Estimate
Modernization and installation of electrostatic precipitators and stacks	$10,294,770	$29,764,000	$61,225,000
Installation of sulfur dioxide removal equipment– Widows Creek unit 8	2,025,714	14,444,000	18,735,000
Rehabilitation of Ocoee No. 1 Dam	384,646	3,436,000	1,842,000
Power production training center	-	535,000	7,305,000
Installation of air preheating coils at Paradise Steam Plant	20,816	1,586,000	3,340,000
Other additions and improvements at generating stations	5,943,820	9,302,000	9,234,000
Power system control center	4,903,726	832,000	172,000
Construction equipment pool	4,516,716	4,540,000	5,270,000
Other additions and improvements	1,626,929	738,000	2,813,000
Total	29,717,137	65,177,000	109,936,000

Modernization and Installation of Electrostatic Precipitators

For a number of years TVA has been engaged in a program of upgrading air pollution control facilities at existing coal-fired generating stations. In January 1973, in response to new air quality requirements set by the states of Alabama, Kentucky, and Tennessee, the program was greatly expanded. The new program will provide for greater fly ash removal efficiencies and in some cases will provide taller stacks for dispersion of sulfur oxides at higher elevations to protect ambient air quality. The total past and current program is expected to cost over $300 million. Major jobs in the 1975 estimate include Johnsonville Steam Plant units 1-6, Widows Creek Steam Plant units 1-6, Colbert Steam Plant unit 5, Shawnee Steam Plant units 1-10, and Kingston Steam Plant units 1-9. The installations at the Shawnee and Kingston plants, requiring $28.8 million in 1975, are in addition to programs completed earlier at these plants at a total cost of $12.4 million.

Installation of Sulfur Dioxide Removal Equipment–Widows Creek Unit 8

Over a period of several years TVA has been involved in research on methods for removing sulfur dioxide from flue gases of coal-fired plants. Methods investigated include dry limestone injection, ammonia scrubbing, and limestone wet scrubbing, the last of which offers the most promising process for full-scale application to a large steam plant. Operations of a pilot scale wet scrubber at TVA's Colbert Steam Plant during fiscal years 1971, 1972, and 1973 have provided information for use in the design of a full-scale unit and such a unit will be installed on the 550 megawatt unit 8 at Widows Creek Steam Plant. It is not contemplated at this time that the installation will include facilities for recovery of sulfur in a usable form. Expenditures through fiscal year 1973 totaled $3.6 million. The $14.4 million estimate for fiscal year 1974 provides for continuing investigations, engineering and design, purchasing of equipment, and construction. Continuation of work including further design and engineering, purchasing of equipment, and construction will require $18.7 million for fiscal year 1975. This facility is scheduled for completion in fiscal year 1976 at an estimated total cost of $42,000,000.

Rehabilitation of Ocoee No. 1 Dam

Ocoee No. 1 Dam was built by Eastern Tennessee Power Company between 1910 and 1914. It was acquired by TVA from Tennessee Electric Power Company in 1939. Concrete surfaces in the intakes are deteriorating and safety factors are below the standards dictated by modern criteria in the event that the maximum probable flood should occur at the site. Strengthening and resurfacing the dam is estimated to cost a total of $5.9 million. The 1975 estimate of $1.8 million will complete the project.

Power Production Training Center

To improve the reliability, operability, and safety of TVA's power plants, it is planned to construct a training center to provide the power plant operators and technicians with the highest quality training available. This will also allow centralization and optimization of power program training activities.

The training center will be located at the Sequoyah Nuclear Plant site and will consist of three simulators, classrooms, and office facilities.

These facilities will assure TVA of the availability of training facilities for fulfilling AEC's training and retraining requirements for licensing of nuclear plant operators. The inclusion of a fossil-fueled plant simulator will enable TVA to conduct a comprehensive fossil plant operator training program at this facility. The $7.3 million estimate for fiscal year 1975 provides for construction requirements and payments on a contract for the simulators. This facility is scheduled for completion in fiscal year 1977 at a tentative total cost estimate of $16.9 million.

Installation of Air Preheating Coils at Paradise Steam Plant

Heating coils are being installed in the air preheater inlet ducts on all three units at Paradise Steam Plant. Cool air entering the preheaters has caused corrosion in the tubes and damage to electrostatic precipitators resulting in excessive maintenance costs and load reductions on the generating units. Installation of heating coils is expected to eliminate these difficulties. The project will be completed in 1975 at a total cost of $5.0 million.

Other Additions and Improvements at Generating Stations

In 1975, the continuing program of installing supervisory control at Norris, Cherokee, and Douglas hydro plants will require $0.3 million. Generator stator windings will be replaced in Guntersville unit 3 and Nickajack unit 1 requiring $0.5 million. Miscellaneous work at hydro plants, including work to comply with water quality laws and standards, will require $0.2 million.

The 1975 estimate includes $0.4 million for purchase of equipment for handling coal and ash at Gallatin, John Sevier, and Paradise steam plants. An estimate of $2.2 million for additional ash pond capacity will complete the new Widows Creek ash pond, continue construction of the John Sevier pond, and provide for a start on raising the dikes at Allen.

Air monitoring equipment, improvements to ash disposal systems, peaking modifications, fire protection facilities, dust control systems, and other miscellaneous improvements at steam plants will require $1.6 million in 1975.

The estimates include $3.1 million for replacement of units 1 and 2 turbine spindles at Gallatin Steam Plant and a spare spindle to serve Shawnee units 2 to 7 and Kingston units 1-4.

Additional soot blowing equipment for Paradise Steam Plant will require $0.7 million. Miscellaneous small additions and improvements totaling $0.2 million account for the balance of the estimate.

Power System Control Center

Completion of work which began in fiscal year 1970 on the Power System Control Center will require $0.2 million in fiscal year 1975. This facility on Chickamauga Dam reservation is scheduled for operation in fiscal year 1975 at a total cost of $11.2 million.

Construction Equipment Pool

In order to achieve efficient utilization of construction equipment, major equipment is held in a single pool. Projects are charged a rental rate for equipment which reflects an appropriate allowance for depreciation. The estimated net expenditure of $5.3 million for fiscal year 1975 reflects the excess of purchases over depreciation charges for that year.

Other Additions and Improvements

The estimate of $2.8 million for fiscal year 1975 includes $1.4 million for the completion of a dragline facility at Paradise Steam Plant which is being deferred from 1974 and a $1.1 million payment to the Bureau of Employees' Compensation related to claims for injuries sustained by TVA personnel while at work on projects in this budget category completed or under construction. The remainder of the estimate, $0.3 million, is required for miscellaneous additions and replacements at various power plants.

NUCLEAR FUEL

1973 actual	$29,229,596
1974 estimate	30,213,000
1975 estimate	43,740,000

The nuclear fuel supply contracts for Browns Ferry and Sequoyah nuclear plants provide for progress payments to be made to the suppliers as the fuel is fabricated. Progress and interest payments and charges for inspection of nuclear fuel through June 30, 1973, total $93,089,994. Total estimated expenditures which include estimated payments to the Atomic Energy Commission for uranium enrichment services for the nuclear plant tentatively located at Hartsville and for nuclear plants 7 and 8 for fiscal years 1974 and 1975 are $37,679,000 and $70,649,000, respectively. After accounting for estimated nuclear fuel burnup, net expenditures for fiscal years 1974 and 1975 are estimated at $30,213,000 and $43,740,000, respectively.

INVESTIGATIONS FOR FUTURE POWER FACILITIES

Increasing demands for power require that TVA constantly explore alternative plans for future generating facilities. Investigations in progress will be continued and new investigations started on facilities necessary to meet future power loads. Expenditures for the demonstration plant liquid metal fast breeder reactor which appear here in 1973 are being budgeted for future years in reimbursable services.

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Hydro generating facilities	5	141	77
Steam generating facilities	1,109	693	748
Demonstration liquid metal fast breeder reactor	768	-	-
Total investigations for future power facilities	1,882	834	825

Schedule B-3. Power Operations
(For fiscal years ending June 30, 1973, 1974, and 1975)

	1973 actual		1974 estimate		1975 estimate	
Operating revenues						
Sales of electric energy:						
Municipalities and cooperatives	$476,354,399		$597,410,000		$692,300,000	
Federal agencies	103,165,615		168,405,000		207,605,000	
Industries	144,732,337		184,530,000		209,415,000	
Electric utilities	790,841		1,110,000		1,595,000	
Total outside sales	725,043,192		951,455,000		1,110,915,000	
Interdivisional sales	3,988,230		4,330,000		2,375,000	
Total sales of electric energy		$729,031,422		$955,785,000		$1,113,290,000
Rents and other revenues		20,348,593		21,564,000		22,581,000
Total operating revenues		749,380,015		977,349,000		1,135,871
Operating expenses						
Production	408,765,380		541,194,000		566,537,000	
Transmission	18,921,004		20,437,000		21,895,000	
Customer accounts	498,404		527,000		553,000	
Demonstration of power use	1,271,576		1,231,000		1,325,000	
Administrative and general	27,378,562		31,145,000		34,609,000	
Payments in lieu of taxes	27,310,061		31,119,000		39,185,000	
Social Security taxes	3,816,311		4,763,000		5,239,000	
Provision for depreciation	89,468,110		105,191,000		121,775,000	
Total operating expenses		577,429,408		735,607,000		791,118,000
Operating income		171,950,607		241,742,000		344,753,000
Other income and deductions						
Interest charged to construction	73,356,862		77,100,000		85,250,000	
Other	444,009	73,800,871	225,000	77,325,000	370,000	85,620,000
Total income		245,751,478		319,067,000		430,373,000
Interest charges		139,330,514		180,200,000		208,200,000
Net income from power operations		106,420,964		138,867,000		222,173,000
Operating margin						
Net income from power operations		106,420,964		138,867,000		222,173,000
Treasury dividend (return on appropriation investment)		53,784,451		63,422,241		70,000,000
Operating margin		52,636,513		75,444,759		152,173,000

Reconciliation of Schedule B-3 with Budgeted Income and Expenses

	1973 Actual	1974 Estimate	1975 Estimate
Budget income			
Operating revenues	$749,380,015	$977,349,000	$1,135,871,000
Interchange power delivered	27,295,325	15,471,000	16,797,000
Incidental income	25,712	-	-
Interdivisional sales and rents	-4,107,239	-4,450,000	-2,485,000
Total budgeted income	772,593,813	988,370,000	1,150,183,000
Budgeted expenses			
Operating expenses	577,429,408	735,607,000	791,118,000
Interest charges less other income and deductions	65,529,643	102,875,000	122,580,000
Interchange power delivered	27,295,325	15,471,000	16,797,000
Incidental income	25,712	-	-
Interdivisional sales and rents	-4,107,239	-4,450,000	-2,485,000
Provision for depreciation	-89,468,110	-105,191,000	-121,775,000
Total budgeted expenses	576,704,739	744,312,000	806,235,000

POWER SUPPLY AND USE
(OPERATING EXPENSES AND INCOME)

POWER OPERATIONS
(Schedule B-3)

Net income from power operations for fiscal year 1975 is estimated to be $222.2 million compared with $106.4 million in fiscal year 1973 and an estimated $138.9 million in fiscal year 1974. The increase in net income reflects two rate adjustments, one in January 1973 and the other in January 1974. Together these rate adjustments provide estimated additional revenues of about $164.7 million and $267.9 million in fiscal years 1974 and 1975, respectively. The rate adjustments were necessary in order for TVA to meet its financial responsibility.

These adjustments will provide sufficient revenues for TVA to meet the requirements of the TVA Act and the basic bond resolutions during fiscal years 1974 and 1975. The rate test requires that TVA's rates be sufficient in each year to cover current costs of operations plus all interest and principal payments on its debts and payments to the Treasury. The rate test provides for an alternate computation which substitutes equal annual debt requirements if they are higher than actual. In addition to these costs, rates are required to provide a margin for reinvestment in power system assets.

The purpose of a second financial requirement of the bond financing amendment is to protect the bondholders' investment. This test is required for five-year periods and not for each separate year as is the case for the rate test. The bondholders' test requires in effect that the net income at least equal the Treasury dividends in each successive five-year period beginning in fiscal year 1961. The sum of annual operating margins, as shown on schedule B-3, for the appropriate five-year period is the bondholders' investment test margin.

To afford additional protection to the bondholders, the basic bond resolution added another test. This test must be met before additional bonds can be issued on an equal rank with outstanding bonds. It provides, in effect, that net income at least equal the Treasury dividends on the appropriation investment if the appropriation investment were not reduced by the repayments. This test applies to running five-year periods. The margins above these requirements provide capital for investment in new power facilities. The growing indebtedness of the system and high interest rates on borrowings make it necessary to finance more from earnings than has been the practice in order to avoid excessive future costs.

The actual rate test margins for fiscal years 1971, 1972, and 1973 and estimated margins for fiscal years 1974 and 1975 are shown below.

	X $1,000,000				
	Actual			Estimated	
	1971	1972	1973	1974	1975
Rate test margin (based on actual debt service)					
Revenues	598.0	641.9	749.4	977.3	1,135.9
Requirements:					
Operation, maintenance, and administration	349.5	372.0	460.4	599.0	629.9
Payments in lieu of taxes	20.0	25.7	27.3	31.1	39.2
Actual debt service	77.6	100.2	139.0	179.9	207.7
Payments to Treasury:					
Dividend (return on appropriation investment)	65.1	55.8	53.8	63.4	70.0
Reduction of appropriation investment	20.0	20.0	20.0	20.0	20.0
Total requirements	532.2	573.7	700.5	893.4	966.8
Margin	65.8	68.2	48.9	83.9	169.1
Rate test margin (based on level debt service)					
Revenues	598.0	641.9	749.4	977.3	1,135.9
Requirements:					
Operation, maintenance, and administration	349.5	372.0	460.4	599.0	629.9
Payments in lieu of taxes	20.0	25.7	27.3	31.1	39.2
Level debt service	87.6	99.3	137.8	187.3	222.3
Payments to Treasury:					
Dividend (return on appropriation investment)	65.1	55.8	53.8	63.4	70.0
Reduction of appropriation investment	20.0	20.0	20.0	20.0	20.0
Total requirements	542.2	572.8	699.3	900.8	981.4
Margin	55.8	69.1	50.1	76.5	154.5

Power Revenues

Power revenues are expected to increase from the actual of $749.4 million in fiscal year 1973 to $977.3 million in fiscal year 1974 and $1,135.9 million in fiscal year 1975. Details are shown in the following table.

	1973 Actual			1974 Estimate			1975 Estimate		
	Million kWh	X $1,000	Mills/kWh	Million kWh	X $1,000	Mills/kWh	Million kWh	X $1,000	Mills/kWh
Sales of electric energy									
Municipalities	47,716	350,331	7.34	51,338	441,327	8.60	54,810	511,362	9.33
Cooperatives	16,106	126,023	7.82	17,277	156,083	9.03	18,610	180,938	9.72
Federal agencies:									
AEC	15,747	91,507	5.81	22,627	155,055	6.85	25,804	193,595	7.50
AEDC	683	6,328	9.27	658	7,275	11.06	658	7,785	11.83
Other	683	5,331	7.81	700	6,075	8.68	653	6,225	9.53
Total	17,113	103,166	6.03	23,985	168,405	7.02	27,115	207,605	7.66
Commercial and industrial:									
Aluminums	8,570	55,396	6.46	10,555	77,517	7.34	10,750	87,053	8.10
Chemicals	8,515	57,167	6.71	8,620	67,046	7.78	8,590	71,110	8.28
Ferroalloys	2,468	16,416	6.65	2,655	20,349	7.66	2,710	22,892	8.45
Other	2,312	15,753	6.81	2,485	19,618	7.89	3,310	28,360	8.57
Total	21,865	144,732	6.62	24,315	184,530	7.59	25,360	209,415	8.26
Electric utilities	92	791	8.60	115	1,110	9.65	165	1,595	9.67
Total outside sales	102,892	725,043	7.05	117,030	951,455	8.13	126,060	1,110,915	8.81
Interdivisional	581	3,988	6.86	645	4,330	6.71	275	2,375	8.64
Total sales	103,473	729,031	7.05	117,675	955,785	8.12	126,335	1,113,290	8.81
Rent from electric property and other revenues		20,349			21,564			22,581	
Total revenues		749,380	7.24		977,349	8.31		1,135,871	8.99

29-353 O - 74 - pt.5 - 11

Revenues from sales to municipal and cooperative distributors in 1975 are estimated to increase by $215.9 million over 1973. The increase is due to the estimated load growth over the two-year period of 15 percent for residential, business, and industry loads and to the wholesale rate adjustments of January 1973 and January 1974.

Residential load growth is based on (1) continued growth in number of households and new housing construction, (2) continued growth of family incomes and concurrent increases in use of appliances, and (3) increased use of electrical heat resulting from the gas shortage. The average number of residential customers in 1975 is expected to be about 120,000 more than in fiscal year 1973. The average annual use is expected to increase by 1,200 kWh above the fiscal year 1973 level. Residential average use of electricity in the TVA area continues to be approximately twice that of the United States. The following table shows several years of comparison of residential average annual use and cost per kWh in the TVA area and in the United States.

12 Months Ended	United States[1]		TVA	
	kWh Use	Avg. Price Per kWh (¢)	kWh Use	Avg. Price Per kWh (¢)
June 1965	4,814	2.28	10,831	0.92
June 1966	5,072	2.22	11,294	0.90
June 1967	5,434	2.18	11,680	0.89
June 1968	5,788	2.14	12,668	0.93
June 1969	6,259	2.11	13,600	0.95
June 1970	6,810	2.09	14,560	1.03
June 1971	7,243	2.14	14,400	1.22
June 1972	7,496	2.25	14,040	1.28
June 1973	7,882	2.32	15,080	1.30

1. Total electric utility industry.

Growth in business and industry loads served by distributors is based on (1) growth of the service-type business to meet the demands created by industrial expansion and a growing population, (2) expansion of industry in the region in step with the national growth, and (3) an increasing demand for electricity resulting from the natural gas shortage.

Revenues from direct sales to Federal agencies in 1975 are estimated to be $207.6 million, an increase of $104.4 million from the actual for fiscal year 1973. The increase results from expanding power needs at AEC to meet the demand for

nuclear materials and from the effect of rate adjustments. AEC loads are expected to increase from 15,747 million kWh in fiscal year 1973 to 25,804 million kWh in fiscal year 1975, an increase of 64 percent.

Revenues from direct sales by TVA to industrial customers are expected to be $209.4 million in fiscal year 1975. The increase of $64.7 million over the 1973 level reflects the rate adjustments and expected load growth, especially in the aluminum industry. About 60 percent of the load growth is the result of the expansion of production facilities by ALCOA and the return to normal production levels by the other aluminum producers in the area. The remainder of the increase in revenue results from expected load increases by the other industries in the area.

Revenues from sales to electric utilities will continue at very low levels compared to past years. The 1975 estimate is $1.6 million, about $0.8 million more than the 1973 level. This is a result of the tight power supply situation which continues to limit commitments for firm power sales to utilities in fiscal year 1975.

Interdivisional sales are estimated to be $2.4 million in 1975, about $1.6 million less than the 1973 level.

Estimated rent from electric property and other revenues in fiscal year 1975 total $22.6 million, an increase of $2.2 million over the 1973 level. Most of the increase is due to growth in facilities rental charges to municipalities and cooperatives under the TVA wholesale rate schedules and to directly served customers under the TVA general power rate schedule. Both schedules are designed for delivery at not less than 161 kilovolts. When deliveries are made at lower voltages, the wholesale rate schedules provide for a charge based upon the highest hourly demand during the past 12 months. The general power rates provide for a charge to the directly served customers based on their contract demand. As loads grow, the facilities rental charges increase.

3756

Power Expenses

Production Expense

Total energy requirements for fiscal year 1975 are estimated to be 138.4 billion kWh, an increase of 21.3 billion kWh over the actual for fiscal year 1973 and 9.0 billion kWh more than estimated for fiscal year 1974. With above normal rainfall and streamflow conditions in fiscal year 1973, hydro generation was 24.5 billion kWh, a record high, exceeding the previous year's high of 21.3 billion kWh. Hydro generation in 1973 was 6.5 billion kWh above normal, resulting in less than normal generation by fuel-fired plants. Assuming about normal hydroelectric generation and a small change in power from other utilities for fiscal years 1974 and 1975, steam-electric generation, including that from gas turbines, is estimated to be 114.2 billion kWh in 1975, an increase of 29.6 billion kWh or about one-third more than was generated in fiscal year 1973 and 10.6 billion kWh or 10 percent more than is estimated for fiscal year 1974. The following tables provide a summary of the source and disposition of energy and the expenses for production.

Source and Disposition of Energy

	Million kWh		
	1973 Actual	1974 Estimate	1975 Estimate
Input			
Hydroelectric generation:			
TVA hydro and pumped storage	18,141	13,738	13,488
Cumberland	3,693	2,812	2,690
ALCOA	2,623	2,090	1,975
Total hydroelectric generation	24,457	18,640	18,153
Steam-electric generation:			
Coal-fired	84,384	98,169	96,366
Nuclear	-	4,981	17,386
Total steam-electric generation	84,384	103,150	113,752
Gas turbine generation	254	437	450
Total generation	109,095	122,227	132,355
Purchased power	670	930	540
Interchange and exchange receipts from other utilities:			
Seasonal	2,799	2,913	2,799
Other	831	805	176
Concurrent and inadvertent	3,659	2,500	2,500
Total interchange and exchange	7,289	6,218	5,475
Total input	117,054	129,375	138,370
Output			
Sales:			
Municipalities	47,716	51,338	54,810
Cooperatives	16,106	17,277	18,610
Total municipalities and cooperatives	63,822	68,615	73,420
Other electric utilities	92	115	165
Commercial and industries	21,865	24,315	25,360
Federal agencies	17,113	23,985	27,115
Interdivisional	581	645	275
Total sales	103,473	117,675	126,335
Interchange and exchange delivered to other utilities:			
Seasonal	2,052	462	611
Other	2,484	2,913	2,799
Concurrent and inadvertent	3,667	2,500	2,500
Total interchange and exchange	8,203	5,875	5,910
Deliveries to Aluminum Company of America—ALCOA agreement	1,820	1,850	1,850
Transmission losses and shop use	3,558	3,975	4,275
Total output	117,054	129,375	138,370

Production Expenses before Depreciation

	1973 Actual			1974 Estimate			1975 Estimate		
	Million kWh	X $1,000	Mills/kWh	Million kWh	X $1,000	Mills/kWh	Million kWh	X $1,000	Mills/kWh
Hydroelectric:									
TVA hydro and pumped-storage	18,141	9,881	.54	13,738	9,067	.66	13,488	8,438	.63
Cumberland	3,693	10,572	2.86	2,812	10,560	3.76	2,690	11,447	4.26
ALCOA	(2,623)[a]	-	-	(2,090)[a]	-	-	(1,972)[a]	-	-
Total	21,834	20,453	.94	15,550	19,627	1.19	16,178	19,885	1.23
Steam-electric and gas turbine:									
Coal-fired fuel	79,862	267,649	3.35	97,043	364,590	3.76	96,366	377,548	3.92
Nuclear fuel	-	-	-	3,742	5,630	1.50	16,949	26,112	1.54
Gas turbine fuel	254	2,437	9.59	437	7,428	17.00	450	8,707	19.35
Subtotal	80,116	270,086	3.37	101,222	377,648	3.73	113,765	412,367	3.62
Other expenses	-	82,336	1.03	-	95,687	.95	-	105,033	.93
Total	80,116	352,422	4.40	101,222	473,335	4.68	113,765	517,400	4.55
Purchased power	670	8,123	12.12	930	13,160	14.15	540	4,412	8.17
Interchange receipts:									
Seasonal	2,799	9,797[b]	3.50	2,913	10,196[b]	3.50	2,799	9,797[b]	3.50
Other	831	6,116	7.36	805	6,383	7.93	176	2,640	15.00
Concurrent and inadvertent	(3,659)[c]	-	-	(2,500)[c]	-	-	(2,500)[c]	-	-
Total	3,630	15,913	4.38	3,718	16,579	4.46	2,975	12,437	4.18
Interchange deliveries:									
Seasonal	-2,484	-7,787[b]	-3.13	-2,913	-10,196	-3.50	-2,799	-9,797	-3.50
Other	-2,052	-19,508	-9.51	-462	-5,275	-11.41	-611	-7,000	-11.46
Concurrent and inadvertent	(-3,667)[c]	-	-	(-2,500)[c]	-	-	(-2,500)[c]	-	-
Total	-4,536	-27,295	-6.02	-3,375	-15,471	-4.58	-3,410	-16,797	-4.93
Other production expense:									
LMFBR contributions and other R&D expenses		5,263			7,141			8,220	
Production administration		5,882			7,143			8,503	
Employee training		3,080			4,300			4,890	
Nuclear fuel purchasing and engineering studies and other		1,396			868			818	
Preliminary operations:									
Browns Ferry		2,655		1,239	3,635		437	1,296	
Cumberland	4,522	20,996		1,126	5,953			-	
Sequoyah		856			1,433			1,581	
Raccoon Mountain		-			180			-	
Watts Bar		-			-			175	
Value of initial power credited to construction		16,729			8,868			1,639	
Amount charged to construction		-20,943			-9,388			-1,296	
Net preliminary operations	4,522	20,293		2,365	10,681		437	3,395	
Total other production	4,522	35,914		2,365	30,133		437	25,826	
Allocation of multipurpose reservoir operations		3,435			3,831			3,374	
Total production expenses before depreciation	106,236	408,765	3.85	121,410	541,194	4.46	130,485	566,537	4.34
Thousand tons of coal burned (including inventory adjustments)	35,413			42,841			42,527		
Fuel expense as percent of total steam-electric and gas turbine expense	76.6			79.8			79.7		

a. Not included in expenses as this power is exchanged under terms of ALCOA agreement.

b. No payments are made for seasonal interchange and the amounts of deliveries and receipts are balanced out in time. The dollars shown represent TVA's estimate of the value for accounting purposes.

c. Not included in expenses as no money is involved and the receipts and deliveries balance out.

Steam-electric generation and gas turbine costs, which represent about 90 percent of total production expense, are estimated to increase from $352.4 million in fiscal year 1973 to $473.3 million in fiscal year 1974 and to $517.4 million in fiscal year 1975. These expenses would have been greater in fiscal years 1974 and 1975 without the scheduled operation of the first nuclear plant in the system. During fiscal year 1974, one unit of Browns Ferry Nuclear Plant is scheduled for commercial operation with three units scheduled to be in commercial operation in fiscal year 1975. Fuel expense for nuclear generation is estimated to be 1.54 mills per kWh generated compared with 3.92 mills per kWh generated for coal-fired plants. Coal prices, which have been rising rapidly for several years, are estimated to continue to rise. Fuel expense for coal is estimated to be 3.92 mills per kWh in fiscal year 1975 as compared with 3.35 mills per kWh in fiscal year 1973, more than a 17 percent increase. Also fuel expense for gas turbine generation is estimated to increase, reflecting expected increases in oil and gas prices. Other expenses for steam-electric and gas turbine generation are expected to decrease from 1.03 mills per kWh generated in fiscal year 1973 to .93 mills per kWh generated in fiscal year 1975.

Hydroelectric expenses vary from year to year, depending primarily upon streamflow conditions for the Cumberland plants and maintenance requirements for the TVA plants. Fiscal year 1975 total hydroelectric expense is estimated to be $19.9 million, an increase of $0.3 million over the estimate for fiscal year 1974. Payments for power from the Cumberland River projects will increase by $0.9 million reflecting a full year of generation from the new Cordell Hull plant. Operations and maintenance costs for TVA hydro plants are estimated to decrease $0.6 million in fiscal year 1975 reflecting completion of Nolichucky repairs.

The estimate for purchased power for fiscal year 1975 is reduced from the estimate for fiscal year 1974, reflecting a full year of commercial operation of the Cumberland Steam Plant and Browns Ferry unit 1 and a partial year for Browns Ferry units 2 and 3.

The decrease in net interchange expense results primarily from lower levels of economy and emergency interchange receipts and higher deliveries of the same kind. This also reflects anticipation of commercial operation of the new units mentioned above.

Excluding expenditures for preliminary operations, other production expenses are expected to increase from $19.5 million in 1974 to $22.4 million in 1975. This increase reflects rising expenditures for research and development and training activities to provide generating plant operators, craft employees, engineering, and administrative employees to compensate for attrition and to provide for manning of new plants. Rising training costs relate to new nuclear units scheduled for operation over the next few years. Partially offsetting these increases are expenses related to preliminary operations. These expenses vary considerably from year to year, depending upon the number of new plant units being staffed before commercial operations and the timing of initial generation of the units during a fiscal year. All costs incurred for new units before commercial operation are charged to other production expense. For that portion of the preliminary operation period from initial

generation for coal-fired units and fuel load for nuclear units to commercial operation, all operation and maintenance expenses are transferred to construction costs and the value of power generated during initial generation is charged to other production and credited to construction costs. For fiscal year 1975 net preliminary operations reflect a $7.3 million decrease from the estimate for 1974.

Transmission Expense

	1973 Actual		1974 Estimate		1975 Estimate	
	X $1,000	Mills/kWh Sales	X $1,000	Mills/kWh Sales	X $1,000	Mills/kWh Sales
Supervision and administration	3,898	.038	4,086	.035	4,217	.033
Substation operations and maintenance	6,895	.066	7,256	.061	7,686	.061
Line operations and maintenance	1,943	.019	1,977	.017	2,041	.016
Dispatching and protection	2,002	.019	2,126	.018	2,281	.018
Right of way clearing	1,420	.014	1,524	.013	1,712	.014
Research and development activities	318	.003	925	.008	1,301	.010
Other transmission expense	2,445	.024	2,543	.022	2,657	.021
Total transmission	18,921	.183	20,437	.174	21,895	.173

The increases in transmission expense reflect past experience with cost trends in operations and maintenance of the system, coupled with additional manpower requirements, materials, and related expenses associated with the operations and maintenance of the growing transmission system.

When related to power sales, expenses actually show a decline on a unit basis. Continuing efforts are directed toward improvements in equipment and techniques for better utilization of manpower in keeping expenses at a minimum consistent with the maintenance of reliable electric service.

Customer Accounts Expense

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Total	498	527	553

TVA delivers power to about 825 different metering points to TVA power distributors, directly served industries, Federal agencies, and neighboring utilities with which TVA has interchange agreements. From the metering points, information is gathered, analyzed, and processed monthly for the purpose of sending invoices to TVA power customers. The increases from year to year reflect rising costs of services and materials used in this activity.

Demonstration of Power Use

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Gross expenses	1,766	1,748	1,850
Reimbursement	-494	-517	-525
Net expenses	1,272	1,231	1,325

Estimates for demonstration of power use provide for studies, research, experiments, and demonstration programs which help the users of an important resource, electricity, accomplish better and more economical applications of electric power for agricultural and domestic use and for production processes by small industries. These activities are carried out in cooperation with agricultural extension services, vocational education departments, state universities, state and county health departments, and distributors of TVA power. Technical and advisory services are provided for distributors of TVA power on a reimbursable basis because many distributors are not large enough to maintain complete technical staffs and the cooperative approach provides these services economically. TVA provides such services to about 140 of the 160 distributors served. The amount of reimbursement is determined by contract. The increases in estimated net expenses in fiscal year 1975 over estimated expenses in fiscal year 1974 reflect general cost trends, primarily increasing costs for labor and materials.

Administrative and General Expenses

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Executive administration and central management	5,206	5,673	5,722
Bureau of Employee Compensation payments	1,249	1,431	1,617
Power research related activities	708	1,042	1,269
Other general supervision and administration	8,727	9,864	11,251
Subtotal	15,890	18,010	19,859
Fringe benefits:			
Welfare funds	959	1,085	1,205
FEGLI	340	375	408
Hospitalization	2,396	3,075	3,644
Retirement plan	7,793	8,600	9,493
Subtotal fringe benefits	11,488	13,135	14,750
Total administrative and general expenses	27,378	31,145	34,609

Administrative and general expenses consist of costs of an administrative, supervisory, or general nature incurred in conducting the TVA power program. Almost half of the increase from 1973 to 1975 reflects increases in employee fringe benefits. The remainder results from increases in other administrative and general expenses, reflecting rising salaries and wages, coupled with slightly higher requirements for manpower, office supplies and materials, and other related items.

The increased expenses for fringe benefits primarily reflect larger employee benefits resulting from wage and salary negotiations. TVA contributes to union pension and welfare funds on behalf of hourly employees, the amount of payment depending upon classification of work and the union involved. Increases in contributions to the Federal Employees Group Life Insurance plan reflect additional insurance coverage. The increase in TVA's payments for hospitalization coverage for annual salary policy and annual trades and labor employees reflects changes in amounts of payments for each employee as well as coverage for additional employees in power operations. Retirement plan expenses reflect continuing increases in salaries, as well as additional manpower requirements needed in operating the expanding power system. Based on actuarial studies, TVA's contributions to the retirement system in fiscal year 1974 are estimated to be about 10.75 percent of the basic straight-time earnings of employees in the retirement system.

Payments in Lieu of Taxes

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Payment based on 5 percent of revenues[1]	27,302	31,109	39,175
Minimum payments related to mineral rights	8	10	10
Total payments in lieu of taxes	27,310	31,119	39,185

1. Revenues subject to 5 percent payment	1972 Actual	1973 Actual	1974 Estimate
Sales of electric energy:			
Municipalities and cooperatives	415,349	476,354	597,410
Electric utilities	6,250	791	1,110
Industrials	124,306	144,732	184,530
Customers' forfeited discounts and penalties	141	304	450
Total	546,046	622,181	783,500

Estimates of payments in lieu of taxes are based on revenues from the sale of electricity, exclusive of deliveries to Federal agencies, in accordance with provisions of Section 13 of the TVA Act. The payments represent 5 percent of such revenues for the preceding fiscal year. Payments for fiscal year 1974 are based on actual revenues from the sale of electricity in fiscal year 1973. Estimated payments for fiscal year 1975 are based on expected revenues for fiscal year 1974.

Social Security Taxes

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Total	3,817	4,763	5,239

Social Security tax payments will increase over the 2-year period as a result of changes in the tax law. Both the tax rate and the amount of wages subject to tax are increased over the 1973 level. Effective with wages paid on and after January 1, 1973, the Social Security tax rate is increased from 5.2 percent to 5.85 percent of taxable wages. The amount of wages subject to tax in calendar year 1973 is increased from $9,000 to $10,800 and to $13,200 in calendar years 1974 and 1975. Maximum Social Security taxes per employee will increase from $631.80 in calendar year 1973 to $772.20 in calendar years 1974 and 1975.

Provision for Depreciation

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Hydro plants	7,852	7,676	8,809
Steam plants	50,476	59,210	61,260
Gas turbines	2,302	2,615	2,615
Nuclear plants	-	4,420	15,910
Transmission facilities and other electric plant	28,838	31,270	33,181
Total provision for depreciation	89,468	105,191	121,775

The allowance for depreciation expense is based on the amount of completed plant utilized in the power program. As of the end of fiscal year 1973, this completed plant amounted to $3.8 billion and is expected to reach about $5.1 billion by the end of fiscal year 1975. The increases in depreciation provision reflect additions in assets of approximately $1.3 billion to the power program. Major additions include Cumberland Steam Plant unit 2; Browns Ferry Nuclear Plant units 1, 2, and 3; Raccoon Mountain units 1, 2, and 3; additions to the transmission facilities, primarily transmission lines and substations; and other additions and improvements at generating plants, including such facilities as ash ponds and electrostatic precipitators.

Interest Charges

Interest on borrowed funds is one of the most rapidly rising elements of cost in the TVA power program. The details of interest on outstanding and new borrowings are shown below. The increases reflect both growth in borrowings outstanding and increases in the effective rate of interest.

	1973 Actual		1974 Estimate		1975 Estimate	
	Interest (X $1,000)	Rate (Percent)	Interest (X $1,000)	Rate (Percent)	Interest (X $1,000)	Rate (Percent)
Interest on debt outstanding at beginning of fiscal year						
Long-term debt	88,562	7.23	128,486	7.27	154,839	7.29
Short-term notes	5,518	4.43	7,130	7.63	9,198	7.50
Total	94,080	6.97	135,616	7.29	164,037	7.30
Interest on additional borrowings during fiscal year						
Long-term debt	23,127	7.38	19,742	7.50	19,018	7.00
Short-term notes:						
Payable to public	20,542	5.61	21,677	7.50	22,282	7.00
Payable to U.S. Treasury	1,518	4.97	3,100	7.50	2,800	7.00
Total	45,187	6.36	44,519	7.50	44,100	7.00
Interest on coal land reclamation	22		25		25	
Interest on Memphis pipeline	42		40		38	
Total interest charges	139,331	6.76	180,200	7.34	208,200	7.24
Summary of interest charges						
Long-term debt	111,689	7.26	148,228	7.30	173,857	7.26
Short-term notes:						
Payable to public	26,060	5.31	28,807	7.53	31,480	7.14
Payable to U.S. Treasury	1,518	4.97	3,100	7.50	2,800	7.00
Memphis pipeline	42		40		38	
Interest on coal land reclamation	22		25		25	
Total interest charges	139,331	6.76	180,200	7.34	208,200	7.24

BORROWINGS

Proceeds from borrowings during 1975 are estimated to be $480.0 million, compared with $400.0 million in 1973 and $420.0 million in 1974. These proceeds are required to finance that portion of capital outlay in excess of available net power proceeds, after interest to operations, Treasury payments, changes in working capital, and discount on power bonds. Available net power proceeds are expected to be $234.8 million in 1975, compared with $82.7 million in 1973 and $162.9 million in 1974. Capital outlay during fiscal year 1975 is estimated to be $714.8 million, compared with $482.7 million in 1973 and $582.9 million in 1974.

Section 15d of the TVA Act authorizes TVA to issue bonds, notes, and other evidences of indebtedness to assist in financing its power program. The amount authorized to be outstanding at any one time is $5 billion. At the end of fiscal year 1975 this indebtedness is estimated to be $3.255 billion.

	X $1,000					
	1973 actual		1974 estimate		1975 estimate	
Borrowings outstanding						
Beginning of fiscal year:						
Long-term debt	1,225,000		1,775,000		2,125,000	
Short-term notes:						
Payable to public	630,000		480,000		550,000	
Payable to U.S. Treasury	100,000		100,000		100,000	
Total		1,955,000		2,355,000		2,775,000
Changes in borrowings						
During fiscal year:						
Long-term debt issues	550,000		450,000		500,000	
Long-term debt refunded	-		-100,000		-50,000	
Short-term notes	-150,000		70,000		30,000	
Net change		400,000		420,000		480,000
Borrowings outstanding						
End of fiscal year:						
Long-term debt	1,775,000		2,125,000		2,575,000	
Short-term notes:						
Payable to public	480,000		550,000		580,000	
Payable to U.S. Treasury	100,000		100,000		100,000	
Total		2,355,000		2,775,000		3,255,000

POWER RESEARCH AND DEVELOPMENT ACTIVITIES

1973 actual	$10,126,000
1974 estimate	24,126,000
1975 estimate	30,010,000

TVA conducts research and development in its own laboratories and facilities and provides financial support to pertinent research performed by others. Funds required for these activities are budgeted in other sections of Power Supply and Use.

Research and Development Activities
(Financed from Power Proceeds and Borrowings)

	X $1,000		
	1973 Actual	1974 Estimate	1975 Estimate
Research facilities[1]			
Sulfur dioxide removal equipment–Widows Creek unit 8	2,026	14,444	18,735
Miscellaneous equipment for air pollution studies	85	132	41
Total research facilities	2,111	14,576	18,776
Research expenses[2]			
Air pollution studies	2,032	1,964	1,554
Contributions to Electric Power Research Institute	1,220	3,881	5,817
Contributions to LMFBR demonstration project	3,255	2,370	2,370
Cooperative research on advanced energy concepts	172	448	653
Strip mine reclamation	1,134	645	665
Heated water discharges	202	242	175
Total research expenses	8,015	9,550	11,234
Total research and development activities	10,126	24,126	30,010

1. Included in Additions and Improvements at Power Facilities, page 153-154.
2. Included in Schedule B-3, page 158.

Research Facilities

The estimate for fiscal year 1975 includes $18.7 million for continuing the installation of an experimental full-scale sulfur dioxide scrubber on the 550-megawatt unit at Widows Creek Steam Plant. This project is scheduled for completion in fiscal year 1976 at a total estimated cost of $42 million.

The estimate of $41,000 for equipment for air pollution studies will provide an array of analyzers, recorders, and monitors required for continuation of studies of processes in the atmosphere.

Research Expenses

The $1,554,000 estimate for air pollution studies provides for studies necessary to furnish data for use in establishing sulfur dioxide emission control programs at TVA's coal-fired steam plants and to evaluate cooling tower plume behavior. Also included in this category is the continuation of the operations of the advanced concept pilot plant for sulfur dioxide removal at Colbert Steam Plant.

The $5,817,000 estimated contribution to the Electric Power Research Institute is based upon the formula for utility subscription rates. The institute is an outgrowth of the Electric Research Council which became operational in fiscal year 1973. It serves as the research organization for the electric utility industry.

The $2,370,000 estimate for contributions to the LMFBR demonstration project includes one-tenth of TVA's total contribution plus $200,000 in services which will be rendered without cost to the project.

Cooperative research on advanced energy concepts includes financial support to research projects on magneto-hydrodynamics, electrochemical energy conversion devices, nonconventional energy sources, coal processing, and the breeder reactor. The $653,000 estimate for fiscal year 1975 includes $540,000 for research on processing coal to make clean fuel. The remainder of the estimate will be used to support a number of projects in the areas mentioned above.

Strip mine reclamation. TVA has entered into a contract with Long Pit Mining Company to carry out a mining and reclamation project in mountainous terrain. The project will test the technical and economic feasibility of handling spoil materials in a manner that will create no significant out-slope fill and virtually eliminate the high wall. The 1975 estimate of $665,000 provides for the cost of this project in excess of the value of coal produced.

Heated water discharges. In 1975 the estimate of $175,000 will provide continuation of research on beneficial uses of waste heat from steam plants. The estimate includes $100,000 for the Gallatin catfish project. It has been determined that the growth rate of catfish can be significantly improved by using heated water. Further research is needed to determine optimum stocking rates, feeding rates, disease and waste control methods, and the economics of the process. The remainder of

the estimate, $75,000, will provide for greenhouse studies, heat dissipation studies, and other general research in the area of heated water discharges.

POWER INVENTORIES AND DEFERRED ITEMS

Power inventories are estimated to increase by $3,670,000 during fiscal year 1975.

Coal stockpiles at steam-electric generating plants were above normal operating levels at the end of fiscal year 1973 because of better than expected hydro conditions and higher than expected coal receipts. During fiscal year 1973 inventory stockpiles had increased to about 12.775 million tons, an increase of 2.370 million tons. Reflecting this greater tonnage and higher cost of coal, the value of coal in stockpile increased by $27,502,000. Receipts and issues are expected in amounts that will reduce the stockpile to nearer the normal level in fiscal year 1974 and a normal level is planned for fiscal year 1975. The value of coal inventories is expected to decrease by $13,597,000 in fiscal year 1974 and $455,000 in fiscal year 1975.

Oil inventories are expected to increase by $1,590,000 in fiscal year 1974 because of higher cost of oil and the addition of oil to bring oil inventories to full capacity. Oil inventories are expected to remain near current levels, increasing by $450,000 in fiscal year 1975, reflecting cost trends.

General storeroom supplies of operating, maintenance, and construction materials are expected to increase in fiscal year 1975 by a net of $515,000 to provide for increased construction and maintenance required by the expanding transmission system. Spare parts for new 500-kV substations and transmission lines and various types of steel for general use plants are estimated to increase by $3,160,000, about two-thirds of which is required to continue the initial stock buildup at Browns Ferry, Cumberland, and Sequoyah plants. The remaining increase primarily provides spare parts for new fly ash precipitators, gas turbines, coal pulverizers, and ash disposal systems.

Deferred charges result from the incurring of certain expenditures which are appropriately amortized over a period of years. Expenditures consist primarily of expenses of issuing bonds and the discount at which bonds and notes are sold. Total expenditures are estimated at $33,941,000 in fiscal year 1975, mostly for note discount expense, and amortization is estimated at $32,028,000 resulting in an estimated increase in deferred charges of $1,913,000 in fiscal year 1975.

Deferred credits consist of the premium at which the bonds are sold less the expenses of issuing bonds sold at a premium, and less amounts equal to the yearly amortization of bond premium and issue expense. The estimates of $66,000 for fiscal year 1974 and $30,000 for fiscal year 1975 provide for amortization of bond premium and issue expense relating to the 1969 Series A, and the 1970 Series C, both 5-year term bond issues. The 1969 Series A matures June 1, 1974, and the 1970 Series C matures June 15, 1974.

PAYMENTS TO THE TREASURY

Payments to the Treasury for fiscal year 1975 are estimated at $90,020,000. This will bring total cumulative payments from TVA to the Treasury to $1,273,187,611 of which $1,231,541,137 is from power proceeds and $41,646,474 from nonpower proceeds. Of the payments from power proceeds, $65,072,500 represents retirement of bonds issued prior to 1942, $410,059,019 represents reduction of the appropriation investment in power facilities, and $756,409,618 represents a return on that investment in the nature of dividends.

PAYMENTS FROM POWER PROCEEDS

Prior to August 6, 1959, payments to the Treasury from power proceeds were made pursuant to Section 26 of the TVA Act and Title II of the Government Corporations Appropriation Act, 1948. Under this legislation, payments totaling $250,131,519 were made toward reduction of the Treasury's investment in TVA power facilities. Of these payments, $185,059,019 represented reduction of the appropriation investment in power facilities and $65,072,500 represented retirement of bonds sold by TVA to the Treasury prior to 1942 under Sections 15, 15a, and 15c of the TVA Act.

As amended on August 6, 1959, the Tennessee Valley Authority Act provides for payments, beginning in fiscal year 1961, of stipulated minimum annual amounts as reductions of the appropriation investment in TVA power facilities until a total of $1,000,000,000, in addition to previous payments, shall have been repaid. The amended act also provides for payments to the Treasury of a return on the unrepaid appropriation investment in the power program. The total to be paid annually is determined by applying to the unrepaid appropriation investment the computed average interest rate payable by the Treasury upon its total marketable public obligations as of the beginning of each fiscal year. Actual and estimated payments through fiscal year 1975 under the provisions of the amended TVA Act total $981,409,618 and are presented in the following table:

Fiscal Year	Total Payments	Return on Appropriation Investment		Repayment of Appropriation Investment	Repayable Investment as of June 30
		Computed Average Interest Rate	Amount		
1960					$1,000,000,000
1961	$51,432,398	3.449	$41,432,398	$10,000,000	990,000,000
1962	46,541,639	3.063	36,541,639	10,000,000	980,000,000
1963	48,874,543	3.285	38,874,543	10,000,000	970,000,000
1964	50,206,432	3.425	40,206,432	10,000,000	960,000,000
1965	52,599,978	3.659	42,599,978	10,000,000	950,000,000
1966	58,873,084	3.800	43,873,084	15,000,000	935,000,000
1967	62,124,973	4.134	47,124,973	15,000,000	920,000,000
1968	61,861,924	4.165	46,861,924	15,000,000	905,000,000
1969	68,082,238	4,757	53,082,238	15,000,000	890,000,000
1970	72,648,798	5.232	57,648,798	15,000,000	875,000,000
1971	85,146,529	5.986	65,146,529	20,000,000	855,000,000
1972	75,810,390	5.210	55,810,390	20,000,000	835,000,000
1973	73,784,451	5.099	53,784,451	20,000,000	815,000,000
1974	83,422,241	6.129	63,422,241	20,000,000	795,000,000
1975[a]	90,000,000	6.900	70,000,000	20,000,000	775,000,000
	981,409,618		756,409,618	225,000,000	

a. Estimated.

GENERAL SERVICE ACTIVITIES

General service activities include (1) a bridge replacement in the Great Falls reservoir area; (2) general facilities used in all TVA programs; (3) valley mapping and remote sensing which serve all TVA programs; (4) miscellaneous expenses; (5) reimbursable services; and (6) administrative and general expenses. These are described in the following sections.

RENO BRIDGE–GREAT FALLS RESERVOIR

1973 actual	-
1974 estimate	$2,200,000
1975 estimate	300,000

The Reno Bridge will span the Great Falls reservoir on the Caney Fork River to provide an additional connection between White and Van Buren counties, Tennessee. It will be located approximately on the site of an inadequate and unsafe bridge removed in 1972 under a contract between TVA and the counties. Preliminary design work for the bridge began in August 1973; construction is scheduled to begin late in fiscal year 1974. The project will be completed by June 1976. The estimated total cost of the bridge is $2,500,000, to be financed from appropriated funds.

GENERAL FACILITIES

General facilities include capital outlays for office facilities and equipment, transportation facilities and equipment, and other general-use facilities and equipment. Acquisitions of general facilities are financed largely from power funds, since the power program is the principal user of them.

	Summary (In Thousands)								
	1973 Actual and Financing			1974 Estimates and Financing			1975 Estimates and Financing		
	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total
Facilities									
Office facilities and equipment	$116	$962	$1,078	$177	$2,737	$2,914	$257	$1,749	$2,006
Transportation facilities and equipment	607	2,626	3,233	695	2,846	3,541	753	3,468	4,221
Other general facilities and equipment	778	-	778	1,823	-	1,823	890	-	890
Subtotal obligations	1,501	3,588	5,089	2,695	5,583	8,278	1,900	5,217	7,117
Less depreciation[1]	2,435	974	3,409	2,325	1,350	3,675	1,900	1,900	3,800
Total obligations	-934	2,614	1,680	370	4,233	4,603	-	3,317	3,317
Changes in unpaid undelivered orders	-231	2,347	2,116	839	1,518	2,357	-	-	-
Total expenditures	-1,165	4,961	3,796	1,209	5,751	6,960	-	3,317	3,317

1. See note on page 189.

Office Facilities and Equipment

	In Thousands								
	1973 Actual and Financing			1974 Estimates and Financing			1975 Estimates and Financing		
	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total
Electronic computing equipment	-	$24	$24	$3	$1,612	$1,615	-	$828	$828
Other office facilities and equipment	$116	938	1,054	174	1,125	1,299	$257	921	1,178
Subtotal obligations	116	962	1,078	177	2,737	2,914	257	1,749	2,006
Less depreciation[1]	647	289	936	625	500	1,125	600	600	1,200
Total obligations	-531	673	142	-448	2,237	1,789	-343	1,149	806
Changes in unpaid undelivered orders	-17	3,083	3,066	-	534	534	-	-	-
Total expenditures	-548	3,756	3,208	-448	2,771	2,323	-343	1,149	806

The $828,000 estimate for computing equipment provides $255,000 for expansion of storage for the IBM 370/165 computing system, $170,000 for tape-to-tape data transmission equipment, $153,000 for expansion of an automated drafting system, $150,000 for remote batch processors, and $100,000 for other needed miscellaneous equipment additions.

TVA has several bases of complex data that must be readily accessible for analysis. Efficient use of these data necessitates their rearrangement and consolidation on fast online storage devices with associated equipment capable of providing high speed response and retrieval and data collection from remote locations. Additional storage equipment will be needed for transmitting construction payroll data and construction schedule management information by telephone lines to the computer. The automated drafting system will provide detailed engineering and architectural construction and procurement drawings from computer stored design data.

1. See note on page 189.

The $1,178,000 estimate for other office facilities and equipment provides $900,000 for replacing worn-out or obsolete office furniture and equipment and the acquisition of additional equipment and facilities. TVA owns approximately 95,000 pieces of office furniture and equipment having an original investment value in excess of $7 million. Continued use of old and worn-out equipment results in inefficiency, excessive costs for repair and maintenance, and excessive downtime. Equipment breakdowns and related production losses are costly. Rehabilitation is no longer possible for much of the equipment as some of it is obsolete. At least 45 percent of TVA's furniture and equipment is over 20 years old and far beyond its normal, useful life. All office furniture and equipment to be replaced in 1975 meets or exceeds the GSA standards for replacements. Timely replacement of these facilities is needed for the efficient and economical performance of many activities within TVA.

In addition to usual office furniture and equipment requirements, a $278,000 estimate provides for replacements and additions of specialized equipment used in reproduction shops and for additional building and shop equipment and facilities such as air-conditioning equipment, stokers, boilers, fire-protective devices, power tools, pumps, motors, vacuum cleaners, and similar equipment.

The $2,006,000 estimate for office facilities and equipment is partially offset by a $1,200,000 depreciation credit leaving net budget requirements of $806,000.

Transportation Facilities and Equipment

	In Thousands								
	1973 Actual and Financing			1974 Estimates and Financing			1975 Estimates and Financing		
	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total	Appr.	Power Proceeds	Total
Trucks, trailers, and construction machines	$669	$1,819	$2,488	$515	$1,908	$2,423	$630	$2,607	$3,237
Passenger vehicles	-	671	671	-	677	677	-	642	642
Aircraft	-	56	56	-	60	60	-	75	75
Shop work and equipment	-62	80	18	180	201	381	123	144	267
Subtotal obligations	607	2,626	3,233	695	2,846	3,541	753	3,468	4,221
Less depreciation[1]	1,575	685	2,260	1,500	850	2,350	1,100	1,300	2,400
Total obligations	-968	1,941	973	-805	1,996	1,191	-347	2,168	1,821
Changes in unpaid undelivered orders	-142	-736	-878	595	984	1,579	-	-	-
Total expenditures	-1,110	1,205	95	-210	2,980	2,770	-347	2,168	1,821

A $3,237,000 estimate provides for replacements only of trucks, trailers, and construction machines for use in rough off-highway operating, maintenance, and construction activities. In 1975 a total of 386 units which are worn beyond economical repair will be replaced. Use of worn units results in equipment failures which tie up work crews, thus causing job delays and expensive repairs to units with a limited remaining service life. All units to be replaced for which a GSA retirement standard exists will meet or exceed those standards. Much of this additional equipment reflects the trend toward heavier units that provide more production per unit and savings in manpower and cost. New work techniques specifically designed for cost savings frequently require special equipment. Also much of the latest model equipment comes with safety features and devices designed to reduce accidents.

1. See note on page 189.

The estimate of $642,000 provides for the replacement of 224 passenger sedans. These units will meet or exceed GSA retirement standards and will have reached the point where replacement is more economical than cost of repairs required for continued use. The replacements will be compact models equipped with 6-cylinder 225 CID engines. They will replace older model V-8's with engines of 302 and 307 CID. The older model sedans average 16 miles per gallon at best while the compact 6-cylinder sedans will average at least 19, representing a fuel saving of approximately 36,900 gallons annually.

	1973 Actual	1974 Estimate	1975 Estimate
Passenger vehicles:			
Acquisitions (sedans)	258	236	224
Disposals (sedans)	228	236	224
Net additions	30	0	0
Total fleet	942	942	942

The $75,000 estimate for aircraft provides for replacement of an 18-year-old Bell model 47J helicopter acquired by TVA from military service. The replacement helicopter will have a more powerful engine and weighted blades which provide a better safety factor in helicopter operations. The older model helicopters are limited in use as their lifting capacity is much less than that of the new models. The replacement helicopter's faster speed is a significant feature for transmission line patrol work. The greater lifting capacity of the new helicopter will also be advantageous in construction work for transporting men and materials between jobs.

A $267,000 estimate for shop work and equipment covers installation of bodies, winches, and other special equipment to equip new fleet units; replacement of worn-out shop equipment; and the purchase of additional garage equipment.

The foregoing estimates for transportation facilities and equipment which total $4,221,000 are partly offset by a $2,400,000 depreciation credit on facilities in service, leaving net budget requirements of $1,821,000.

Other General Facilities and Equipment

	Appropriation Financed
1973 actual	$778,339
1974 estimate	1,823,000
1975 estimate	890,000

The Nolichucky dam and reservoir has been retired from service. An estimate of $332,000 in fiscal year 1974 provides for acquiring outstanding rights on TVA shoreline lands and purchasing additional acres to convert the installation into a waterfowl development. An estimate of $85,000 in fiscal year 1975 provides for environmental education facilities including foot trails, walks, bridges, interpretive stations, picnic shelters, road and parking lot, outdoor amphitheatre, observation tower, and sanitary facilities. The powerhouse and switchyard will be made safe for visitor use.

The other principal general purpose facilities and equipment requirements totaling $805,000 are estimated as follows: $201,000 for analytical equipment needed to assure improved water quality standards; $100,000 for medical facilities and equipment; $30,000 for field and laboratory equipment for fish and wildlife work; $106,000 for air quality equipment; $60,000 for industrial hygiene equipment; $50,000 for facilities and equipment for reproduction and blueprint work; $20,000 for equipment and facilities primarily for property protection work; $73,000 for mapping and surveying equipment; and $165,000 for numerous small items for use in geologic and soils work, engineering drafting, and hydrology work.

These items totaling $890,000 are partly offset by a depreciation credit[1] of $200,000 leaving a net estimate of $690,000 to be financed.

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1. In the interest of economy and efficiency, TVA general facilities and equipment are "pooled" and made available to programs and projects on a rental basis. The rental rates include appropriate provision for depreciation; therefore, budget requirements for each program and project include charges for depreciation. Since depreciaton is a type of expense not requiring current outlay of funds, the total depreciation charges must be deducted to avoid overstatement of fund requirements. The credits estimated for fiscal year 1975 of $1,200,000 for office facilities and equipment, $2,400,000 for transportation facilities and equipment, and $200,000 for other general facilities and equipment offset total charges included in program and project estimates as depreciation on TVA pooled general facilities.

VALLEY MAPPING AND REMOTE SENSING

1973 actual	$456,256
1974 estimate	415,000
1975 estimate	395,000

To aid in planning and executing resource development programs, TVA, in cooperation with other agencies and organizations, provides topographic maps and other forms of information relating to the quantity, quality, and location of resources.

Valley Mapping

1973 actual	$370,178
1974 estimate	309,000
1975 estimate	293,000

In 1962 TVA completed the 775 topographic quadrangles covering the Valley using the national map series standards. These are the only available large-scale maps that provide complete coverage of the Valley region. The present objective is to update the 7-1/2-minute topographic quadrangles as they are made obsolete by the Valley's rapid industrial and urban development. Topographic maps are in continuing demand and are widely used by Federal and state agencies, engineering firms, industrial organizations, and private individuals. The newly formed public and quasi-public development groups are creating demands for up-to-date maps to use in their resource development planning.

An economical method of map revision is the overprinting on existing maps of up-to-date information taken from recent aerial photographs. However, standard map revision methods must continue because updating by overprinting can be used only once and retain legibility. During the 1966-1973 period 258 quadrangles have been revised by overprinting and 115 by the standard method. At this time 450 maps of the series are out of date and have limited usefulness. During 1974, $309,000 will be used for completing the revision of 33 quadrangles, 9 by the standard method, and 24 by overprinting.

The 1975 estimate of $293,000 provides for topographic map revision work, including publication of 37 quadrangles, 28 by overprinting, and nine by the standard method.

Remote Sensing

1973 actual	$86,078
1974 estimate	106,000
1975 estimate	102,000

The value and reliability of data obtained by such remote sensing techniques as conventional aerial photography have been firmly recognized and established. Because of the relatively recent availability of both extremely high altitude and satellite imagery, TVA, individually and jointly with other agencies, is investigating the utility of such imagery in TVA programs.

Hyperaltitude aerial photography has already become a tool in inventorying forests, agriculture, hydrology, geology, surface mining, mineral resources, and land use and its changes. TVA has been designated for an Earth Resources Observations System (EROS) Regional Browse File. In the establishment of this file in Chattanooga, TVA has compiled a microfilm file of the Earth Resources Technical Satellite (ERTS) imagery for the United States and other parts of the world, as well as originals of selected hyperaltitude aerial photography—all of which is available for viewing by the public and private sector.

TVA continues to perform basic research in and investigate the application of airborne thermal scanning for water temperature determination in an effort to meet Federal and state water quality standards. As a result, an atlas of thermal imagery of specific locations in the Tennessee Valley has been created which is continually being updated. The atlas has been used by engineers and environmental biologists for assessing design criterion and biotic effects of warm water effluents. Operational aspects of this activity directly related to thermal power generating plants are funded under the power program.

The 1975 estimate of $102,000 provides for more efficient data-gathering methods and application, together with further cooperative development and demonstration.

3780

OTHER EXPENSES

1973 actual	$51,761
1974 estimate	148,000
1975 estimate	160,000

The Tennessee Valley Authority has important emergency preparedness assignments in the area of logistic support for the military services and for the civilian economy. Fallout shelter space has been prepared at selected points in the TVA service area under a reimbursable arrangement with the Department of Defense. These installations must have certain equipment and supplies on hand at all times, including office and communications equipment, medical supplies, food and water, bedding, lockers, and washing and drying machines. An estimate of $10,000 provides for continuing maintenance of these items.

Pursuant to Public Law 79-561 (23 U.S.C., sec. 320), five bridges financed by the Bureau of Public Roads have been constructed across TVA's Kentucky, Chickamauga, Watts Bar, Fort Loudoun, and Pickwick Landing dams. The public law provides that bridges so constructed become a part of the dam structures with responsibility for maintenance of the bridges being assigned to the agency having custody of the dams. The law further provides for separate accounting of expenditures in connection with the maintenance of such bridges with no portion thereof being charged or allocated to other programs of the agency. A $150,000 estimate provides for routine maintenance of the five bridges in 1975.

REIMBURSABLE SERVICES

This category includes (1) services which TVA performs at the request and expense of other agencies, and (2) the recovery of indirect expenses by income received from others. All expenses included in the category are offset by income and there is no net cost to TVA.

	1973 Actual	1974 Estimate	1975 Estimate
Mapping work for other Federal, state, and local agencies	$822,345	$551,000	$667,000
Continuing air pollution research and development on controlling SO_2 from coal-fired power plant stacks including dry limestone process and wet scrubbers, and on other contaminants of such emissions, in cooperation with Environmental Protection Agency	2,982,927	2,542,000	2,200,000
Environmental research and development in cooperation with the Environmental Protection Agency to construct and operate the biothermal research facilities at Browns Ferry Nuclear Plant	142,429	1,934,000	397,000
Plan, design, and construct the liquid metal fast breeder reactor demonstration plant	-	809,000	1,028,000
Continuing field experiments to evaluate agronomic response to compost processed at the joint U.S. Public Health Service-TVA composting plant at Johnson City, Tennessee	66,318	39,000	-
Continuing cooperation with AID and other foreign assistance program agencies for which TVA's fertilizer program personnel provide training, research, and technical advisory services	585,645	697,000	658,000
Maintaining in standby service the Phosphate Development Works at Muscle Shoals, Alabama, for the Department of Defense	96,925	98,000	98,000
Miscellaneous reimbursements and recoveries of expenses:			
–Back charges to contractors for assistance furnished by TVA	3,248,906	1,661,000	800,000
–Technical advisory assistance for power distributors	494,088	517,000	525,000
–Financial and accounting services to TVA Retirement System	308,566	349,000	355,000
–Other miscellaneous reimbursements and recoveries of expenses	1,344,329	1,309,000	1,045,000
Total reimbursable services	10,092,478	10,506,000	7,773,000

Schedule B-4. Administrative and General Expenses
(For fiscal years ending June 30, 1973, 1974, and 1975)

	1973 actual	1974 estimate	1975 estimate
Executive direction	$250,366	$272,000	$272,000
General management	402,799	412,000	412,000
Planning and budgeting	362,197	382,000	382,000
Equal employment opportunity	300,066	420,000	390,000
Technical library and information services	1,091,114	1,220,000	1,250,000
Personnel services	2,678,513	2,900,000	2,875,000
Fiscal and accounting services	3,377,885	3,650,000	3,725,000
Legal services	1,443,032	1,565,000	1,640,000
Medical and safety services	1,363,226	1,571,000	1,543,000
Office and electronic computing services	1,253,297	1,255,000	1,255,000
Other services	215,605	214,000	220,000
Total administrative and general expenses	12,738,100	13,861,000	13,964,000

Distribution of Administrative and General Expenses

	1973 actual		1974 estimate		1975 estimate	
	Appropriations	Proceeds	Appropriations	Proceeds	Appropriations	Proceeds
REGIONAL DEVELOPMENT PROGRAM						
Water resources development						
Capital outlay	$320,179	-	$349,000	-	$336,000	-
Expenses	485,218	$128,887	529,000	$140,000	533,000	$142,000
General resources development						
Expenses	413,258	-	450,000	-	458,000	-
Land Between The Lakes						
Capital outlay	51,850	-	76,000	-	60,000	-
Expenses	61,536	-	67,000	-	68,000	-
FERTILIZER AND MUNITIONS DEVELOPMENT						
Capital outlay	62,918	-	68,000	-	70,000	-
Expenses	298,231	547,389	325,000	595,000	327,000	600,000
POWER SUPPLY AND USE						
Capital outlay	-	5,061,979	-	5,506,000	-	5,580,000
Expenses	-	5,077,356	-	5,533,000	-	5,580,000
GENERAL SERVICE ACTIVITIES						
Capital outlay	11,520	12,693	15,000	11,000	33,000	5,000
Expenses	20,314	184,772	22,000	175,000	22,000	150,000
Total distribution by funds	1,725,024	11,013,076	1,901,000	11,960,000	1,907,000	12,057,000
Total distribution	12,738,100		13,861,000		13,964,000	

ADMINISTRATIVE AND GENERAL EXPENSES
(Schedule B-4)

Administrative and general expenses are estimated at $13,964,000 for fiscal year 1975. This is less than one percent of the total TVA expenditures for 1975. These expenses include the cost of executive direction, general management, and centralized services that are required by all projects and programs and are listed in schedule B-4.

Administrative and general expenses are distributed to all TVA projects and programs so that the entire cost of each activity may be properly reported. Distribution is primarily on a direction of effort basis. The distribution is summarized at the bottom of schedule B-4, and the amounts distributed are included as an indirect expense in estimates for each project and program throughout the budget.

The activities and services included as administrative and general expenses are described below.

Executive direction of TVA is provided by a three-man Board of Directors created by the Tennessee Valley Authority Act. The Board is a full-time governing body appointed by the President and approved by the Senate. The Board establishes general policies and programs, provides general guidance, and reviews and appraises progress and results. The 1975 estimate for executive direction is $272,000, the same as for 1974.

General management activities provide for the administrative supervision of TVA. They provide for carrying out the objectives, policies, and directives of the Board of Directors and for coordinating all TVA projects and programs. They include also the provision of liaison between TVA and the Executive Office of the President, the Congress, and the Federal departments and agencies in the Washington area. The 1975 estimate for general management is $412,000, the same as for 1974.

Planning and budgeting activities assist management in developing program plans, evaluating program accomplishments, and administratively controlling funds. These activities include the development and implementation of TVA's system of corporate planning. They include also the preparation and continual review of the TVA budget. The 1975 estimate for planning and budgeting is $382,000, the same as for 1974.

Equal employment opportunity activities implement TVA's equal employment opportunity program by providing leadership and guidance in the development and execution of EEO action plans; informing employees and management about equal employment opportunity; counseling employees and qualified applicants who claim discrimination because of race, color, religion, sex, or national origin; handling formal complaints of discrimination; aiding minority group employees to advance to

higher level positions; administering civil rights compliance in TVA contracts; and enforcing nondiscrimination in TVA-assisted programs. To further its EEO program, TVA takes part in local community activities that are designed to upgrade the employability of minorities and women. The 1975 estimate for equal employment opportunity activities is $390,000, slightly under the 1974 estimate.

Technical library and information services provide technical library services at Chattanooga and Knoxville, Tennessee; supervise technical library services at TVA's National Fertilizer Development Center at Muscle Shoals, Alabama; arrange schedules for official visitors and trainees; and supply information about TVA and its activities.

The three technical libraries provide the information needed by managers, engineers, scientists, and other professional people in the daily operations of TVA. This information is located and supplied by trained librarians, thus saving the time of the higher paid specialists. The libraries provide library research on technical and scientific problems. They keep TVA employees informed of research and studies conducted elsewhere so that full advantage may be taken of the results of projects conducted outside of TVA.

Each of the three technical libraries specializes in the materials needed by the employees in the area in which it serves. The library at Knoxville specializes in management and engineering materials; the library at Chattanooga specializes in medical, safety, and power engineering materials; and the library at Muscle Shoals specializes in fertilizer and agricultural materials. The TVA technical libraries are augmented by exchange arrangements with the Library of Congress and with the libraries of universities and colleges in the states where TVA operates.

Schedules and programs are arranged for official visitors who wish to consult with TVA staff members and inspect TVA projects. Training schedules are prepared for official trainees who wish to spend a longer period of time studying TVA and its operations. For fiscal year 1973, the total number of foreign official visitors was 1,095, and these came from 104 countries. The number of official United States visitors was 5,517. In addition, 28 trainees from 19 foreign countries spent two weeks or more training with TVA. The number of official visitors and trainees for 1974 and 1975 is expected to remain at the 1973 level.

Information services keep TVA employees informed about TVA activities and respond to requests for information about TVA and its activities. Requests for information number about 20,000 annually and are received from members of the Congress, other public officials and agencies, the press, and the general public.

The 1975 estimate for technical library and information services is $1,250,000. The increase over the 1974 estimate is for higher costs of books and publications, for additional publications in the nuclear and environmental fields, and for growth in the information services workload.

Personnel services involve (1) employee recruitment and selection; (2) employee development, education, and training; (3) union-management relations; and (4) organization and administrative relations.

TVA has over 24,000 employees of many specialties and skills scattered over an area of 80,000 square miles. About one-third are craftsmen hired on temporary appointments of one year or less for work on construction projects throughout the Valley. Thus, the hiring, termination, and rehiring of such employees entail repetitious recruitment, selection, and detailed employment processing.

Centralized employment services recruit, examine, and maintain registers of qualified applicants. TVA makes appointments on the basis of merit and efficiency and without political bias. It promotes employment of minority group members, and its selection procedures are aimed to eliminate any form of prejudice or discrimination. It maintains an Employee Skills Utilization System to identify, appraise, and counsel on employee utilization and placement. To aid in the manpower planning, selection, and utilization processes, plans are being developed to integrate and automate the functions of the occupational register and personal history records systems to provide a mesh with personnel management information services.

TVA has a system of employee development, education, and training, including a managerial development program for employees with high managerial potential, which serves to integrate the attainment of its and individual employee objectives and maximize the utilization of its human resource. It provides an apprenticeship program for trades and labor employees.

As an aid to provision of a total compensation program and system of employer-employee relationships to help attract, retain, and motivate valuable employees, TVA carries out collective bargaining with the unions that represent its employees. Trades and labor (blue collar) employees are represented by the Tennessee Valley Trades and Labor Council composed of 16 international craft unions, 15 of which are affiliated with the AFL-CIO. Salary policy (white collar) employees are represented by the Salary Policy Employee Panel composed of five unions, three of which are AFL-CIO affiliated. The agreements with these bodies establish procedures to determine rates of pay, hours of work, working conditions, and adjustment of grievances.

TVA negotiates salary and wage agreements annually with these bodies. Negotiations are based on annual surveys of wages, salaries, and fringe benefits in the Tennessee Valley and the surrounding area. This is done to assure that its employees are paid the prevailing rates of pay.

3786

29-353 O - 74 - pt. 5 - 13

The agreements with employee organizations also include provision for a system of year-round union-management cooperation. It is carried out through 89 cooperative groups made up of employee and management representatives who meet regularly. Among other benefits, this system produces employee suggestions for work improvements and cost-cutting without cash award incentives.

TVA assures full manpower utilization and maximum productivity by frequent reviews of organization and administrative relationships.

The 1975 estimate for personnel services is $2,875,000, slightly less than the 1974 estimate.

Fiscal and accounting services provide accounting, auditing, disbursing, financial reporting, and other fiscal services to assist in administering the financial aspects of TVA projects and programs. They protect TVA's financial interest by auditing financial transactions, verifying accounting records and financial statements, and maintaining a system of internal controls.

An effective financial management system has always had a high priority within TVA. A single integrated system of financial control was completed 35 years ago. At the same time, accrual accounting and cost based budgetary practices were installed. The same program structure is used for budgeting, accounting, reporting, and control, and this structure assures that all costs are charged to appropriate program element and budget classifications. The General Accounting Office audits annually the accounts and reviews the system of internal control and financial reporting, and an annual audit is made also by a firm of independent certified public accountants.

3787

The 1975 estimate for fiscal and accounting services is $3,725,000. The increase over the 1974 estimate is for nuclear fuel and coal contract audits and for management audits.

Legal services provide legal advice and assistance to TVA on every phase of its activities. This includes defending TVA in all suits brought against it; the prosecution of suits for TVA (other than condemnation suits which are charged directly to construction projects) when necessary to protect TVA's interest; and the preparation of contracts, deeds, bills of sale, leases, and other legal documents, including those related to power bond financing. Legal services assist in proceedings before the Atomic Energy Commission to obtain licenses for the construction and operation of nuclear power plants and aid in conferences and negotiations with other governmental and nongovernmental agencies.

The 1975 estimate for legal services is $1,640,000. The increase over the 1974 estimate provides for growth in general litigation work; for additional legal work related to the regulation of TVA programs concerned with nuclear and environmental matters; and for legal work in fields such as pollution control, bond financing, and uranium procurement.

Medical and safety services protect the health of employees and reduce service-connected injuries and illness. These services help to hold down costs by reducing the number of man-hours lost by illness or accidents and by reducing employee compensation costs arising from on-the-job injuries.

Medical services for TVA employees include preplacement and periodic health examinations, health counseling, immunization, and treatment of service-connected injuries and illness. TVA employees are counseled and referred to private physicians for treatment of nonservice-related injuries or illness.

TVA medical offices are located at Chattanooga, Knoxville, and Nashville, Tennessee, and at Muscle Shoals, Alabama, where there are large concentration of employees. At major operating steam-electric plants, health stations are maintained by a resident nurse under the supervision of one of the medical offices. Medical facilities are established at major construction projects for the duration of the construction phase and the cost of operating these facilities is charged to the construction project. A mobile health clinic and mobile health stations are used to bring health services to employees in locations distant from TVA medical offices, health stations, or project health stations.

TVA promotes safety by conducting its operations so as to protect employees, the public, and property from accidents. It emphasizes hazard control in design, purchasing, construction, maintenance, and operating activities. TVA conducts both an on-the-job and an off-the-job safety program and a vehicular safety program among its employees and it cooperates with others in conducting a water safety program for users of TVA lakes.

TVA's disabling injury frequency rate for fiscal year 1973 was about 15 percent below the rate for the past ten-year period. During fiscal year 1973 TVA received six National Safety Council Awards of Merit: one was for the entire agency, four for power operations, and one for a construction project.

The 1975 estimate for medical and safety services is $1,543,000, slightly below the 1974 estimate.

Office and electronic computing services include stenographic and clerical pools, maintenance and disposal of records, and assistance in office management practices and methods. Special office training is given minority group members and preassignment training is given to potential employees who have little or no experience to qualify them for TVA stenographic and clerical positions. Technical assistance in the use of TVA's electronic data processing equipment is provided also; this assistance includes system analyses and programming services. The 1975 estimate for office and electronic computing services is $1,255,000, the same as for 1974.

Other services include the cost of annual audits by the General Accounting Office and by an independent firm of certified public accountants, office space and services provided to employee credit unions, and the TVA U.S. Savings Bond promotion program. The 1975 estimate for other services is $220,000; the increase over the 1974 estimate is for increased cost of the GAO and the independent audits.

Number of Employees
(At end of fiscal years 1973, 1974, and 1975)

	1973 Actual	1974 Estimate	1975 Estimate
Permanent white collar and blue collar employees	13,995	14,000	14,350
Hourly construction employees and other temporary, part-time, and intermittent employees	9,451	12,000	11,650
Total employment included in ceilings	23,446	26,000	26,000
Disadvantaged youth employees	205	240	240
Total employment	23,651	26,240	26,240

INTRODUCTION OF ASSOCIATES

Senator STENNIS. We are glad to have those who are here with you. I want the record to include the names of these gentlemen. You did not bring the ladies on your staff with you at this time?

Mr. WAGNER. No, we did not.

Senator STENNIS. We have here today Don McBride, a Director, in addition to Chairman Wagner; William Jenkins, also a Director; Lynn Seeber, General Manager; John S. Barron, assistant to the General Manager, Planning and Budget; Lawrence L. Calvert, Washington representative; Leon Edward Ellis, Chief of the Budget Staff; Robert H. Marquis, General Counsel; Lewis B. Nelson, Manager of Agricultural and Chemical Development; James E. Watson, Manager of Power; James L. Williams, Jr., Director of Purchasing.

All right, we are glad to have you gentlemen here and anyone else who might have come in representing your group. All right, Mr. Wagner, if you will proceed?

OPENING REMARKS

Mr. WAGNER. Thank you very much, Mr. Chairman.

We welcome the opportunity to come before you again, and I should say we are particularly pleased with the circumstances and situation which have brought you back to the committee this year. We are delighted to have you with us again.

Senator STENNIS. Well thank you very much. I am very fortunate and very much pleased to be back here.

Mr. WAGNER. We followed your progress with interest and great satisfaction.

Senator STENNIS. Thank you very much.

Mr. WAGNER. Mr. Chairman, I will briefly cover the points that are in my statement.

TVA PROGRESS

First of all, I think the TVA region is one area which demonstrates quite clearly that people can live in a period of economic growth and economic improvement, and at the same time, have a good environment.

As you will remember and as you have remarked, 40 years ago, the Tennessee Valley was not an area of good environment. Through development of the river, the provision of low-cost power, and the development of forest and land resources, it now is an area which is in much better condition than it was before.

We are proud of the fact that this past year, for the first time, we have had new industrial projects in the valley which represent an investment of more than $1 billion. Now in these times of growth, I should perhaps emphasize that this is not just for growth's sake or development's sake, but I think sometimes people lose sight of the fact that the population of this country is growing still, quite rapidly, and as these people grow up they need jobs, places to work, sources of employment and income, and they need new homes and they need equipment that goes in them, and this is what constitutes growth and is the kind of growth that we are developing in the valley.

There are other changes evident, of course. Agriculture is much improved. It is a land of pastures now, rather than corn and cotton. Farm incomes are up. The number of people on farms are down. Instead, they are working in manufacturing generally, and in trades and services.

Major floods have largely been controlled in the area. The development of the river navigation has added greatly to the economic strength of the region. Last year we had $329 million of private industrial development on the waterfront alone, and this also is a new record. It brings to nearly $2½ billion the investment in waterfront industries.

We are proud of the fact, also, that as growth has taken place, mostly it has taken place in the small towns and in the rural areas, so that we are not developing centers of industrial slums and industrial pollution.

The residential situation and the job situation both have been spread into the rural areas, into the smaller towns, and we think that this is a good pattern for the future in the whole nation.

As we turn more and more industrial, we must still preserve good quality living. To help accomplish this goal, we have been working with Valley institutions and agencies to build new communities and upgrade the existing towns.

TOWNLIFT PROGRAM

Our Townlift project is a very popular one. Here we furnish ideas for people and some preliminary notions as to how they might improve their towns, and they take it from there and go on to improve in important ways.

As you indicated at the beginning, we do continue to be an important center of fertilizer research and development. And our National Fertilizer Development Center at Muscle Shoals is certainly the most important one in the Nation, and for that matter, in the entire world.

It has benefited, primarily, the farmers. We have worked through land grant colleges and with the fertilizer industry. As the developments we make prove to be useful, the fertilizer industry picks them up and a great deal of the fertilizer that is produced in this country is now produced by processes and with patents that were developed by TVA.

We continue to be concerned about the total environment. We are concerned with water, with air, with fish and with the water fowl, qualities of lakes, streams and fields, energy and the economy. Primarily, though, we are working for a quality environment and prosperous people and the projects which this Committee and this Congress have funded for us in the past, and continue to fund, help us to reach that general goal.

Our appropriation request this year is for $74,600,000. This is one of the larger requests in recent years, in terms of new money, but the total obligation will be not significantly larger than in 1974, when it was a little over $70 million, largely using carryover funds from preceding years. There are no new starts in our construction program from appropriated funds this year.

Our primary emphasis is going to be on trying to finish, on more advantageous schedules than we have been able to in the past, the projects that we have started.

We have some overdue projects that are now under construction, and completing them will save us money at a time when construction costs are rising, and, of course, will make the benefits available that much sooner.

TELLICO PROJECT

The Tellico Dam and Reservoir in east Tennessee is one of those that has been under construction since 1967 and we scheduled it for closure in April 1970. A suit involving the National Environmental Policy Act has kept the Tellico project a subject of litigation for several years.

It was enjoined, but the injunction has now been lifted and the district court and an appeals court have found in favor of TVA. If we can have the level of funding that this budget provides for 1975, and what we plan for 1976, and assuming no additional setbacks, we expect to close the dam in the winter of 1976 and 1977.

It is important to know, I think, that the dam will add 200 million kilowatt-hours of clean electric energy annually to our output. It has other benefits, of course, that are enumerated in the budget document, and in my statement.

DUCK RIVER PROJECT

Construction of the Duck River project began in 1972. This project is also the subject of litigation under the National Environmental Policy Act. A Federal court enjoined further construction of the project as of March 30, 1974, because of certain inadequacies in TVA's environmental impact statement, but on April 1, stayed the injunction until May 4, to give TVA an opportunity to comply fully with NEPA.

BEAR CREEK PROJECT

Construction of the multipurpose water control project on Bear Creek in northwest Alabama and northeast Mississippi has been under way since 1967. One dam of four has been put in operation and channel improvement has been completed, affording some benefit for flood control and recreation. Our present schedule projects completion of the whole project by the summer of 1978. It will provide flood control, water supply, recreational opportunities, and area economic benefits.

Our appropriation, financed operating programs, will require $35,200,000 in 1975. These are the programs that we have described to you before, Mr. Chairman, and they are described fully in the budget document.

In the interest of saving time, I will not enumerate them here.

Senator STENNIS. Pardon me. What programs were those?

Mr. WAGNER. Those are in agriculture, forestry, and recreation, our general operating programs—the funds for operating the dams and reservoirs, water control operations, and malaria control, mosquito control, that sort of thing.

Senator STENNIS. Well, would you mind covering that, at some point, in a little more detail?

TVA POWER PROGRAM

Mr. WAGNER. I would be glad to do that.

Although the TVA power program is not financed by appropriations, I would like to discuss it briefly in light of the present national and world energy situation.

Senator STENNIS. Why do you not discuss it fully?

Mr. WAGNER. On balance, TVA as a producer of electric power is in a better situation than most utilities in the United States. This is because about 80 percent of our system production comes from coal and about 20 percent from hydroelectric plants. Therefore, the shortages in oil and natural gas have not directly and immediately affected our system's dependability or its operating costs, but we do have some real problems with coal.

Half of TVA's total system operating cost at present is represented by the cost of coal. In other words, half of the money that we have to collect from our distributors for power, goes to pay our coal bill.

INCREASED COAL COSTS

And, despite efforts on our part to encourage restraint, we have seen the price of coal advance by jolting increments, urged upward by various factors, including the general inflationary pressures and increasing demand.

In 1969, the coal that we burned cost us about $4.50 a ton, and now it is costing on the average of about $9 a ton, just double that. And, as we use up the coal that we bought under old contracts, the rate per ton goes up with the rising price of new purchases.

For instance, we understand some of our neighboring utilities have contracted for low-sulphur coal at costs as high as $30 a ton. Just last week, we bought about 5½ million tons of coal, and we paid more than $13 a ton for it. This is to replace the coal costing about $9 a ton now.

The importance of this is underscored when you recognize that each dollar per ton increase in the price of coal adds $40 million a year to our power bill and consequently, $40 million a year to the bills of the consumers of electric power in the region. So the matter of price is of considerable concern to us.

Senator STENNIS. Pardon me? How much did you say was added?

Mr. WAGNER. $1 per ton adds $40 million to our cost of the region's power. So, if $13 should become the average instead of $9 as it is now, that is $4 a ton, and that is $160 million a year more that would have to be collected from our power customers. And if it should, God forbid, go to $30 a ton, as some utilities are paying, the figure becomes astronomical.

It is not only a matter of price, but a matter of supply that concerns us. Getting new contracts to replace those that expire, is becoming increasingly difficult. Very few mines are being opened at present, but there are many new customers as people convert from oil-fired and gas-fired—oil-fired particularly—to coal-fired plants, the demand has outrun production and the result is showing up in higher prices for new purchases.

Other costs in our power system are rising, too. There are increases in costs of materials, equipment, and wages, and they are reflected in greater project costs. As you know, we have had to increase our wholesale rates, and consequently the retail rates of our distributors have also increased.

But in spite of that the unit cost of electricity in the TVA area to the ultimate consumer, is still low. It averages about 1½ cents a kilowatt hour presently.

Ten years ago it was a little less than 1 cent and the current average is about the same as it was about 20 years ago. It is, nevertheless, considerably less than the national average which is around 2½ cents. In spite of these increases, I think there is no other consumer item that has done so well in the face of inflationary pressures in holding the line on costs.

ENVIRONMENTAL COSTS

The total cost of environmental quality controls, leaving the matter of fuel supply for the moment, for projects now in operation or under construction can hardly be measured at this time, because we are still debating what needs to be done. But it is clear that it will be very substantial.

Basic to the solution of energy and environmental problems is a vigorous program of research and development. And we are active in that field. For instance, we and the Department of Interior's Office of Coal Research are cooperating in a project to produce a clean fuel gas from coal for producing electric power.

We would design, install, and test two or more large coal gasifiers with desulfurization systems at a TVA powerplant. This would enable us to investigate and hopefully solve engineering and environmental problems associated with industrial use of high-sulfur coals. In other words, how can we burn high-sulfur coals and still meet air quality standards as the amount of coal that is burned increases in the years ahead of us.

We will also continue to investigate the possibilities of using municipal wastes as fuel for large steam-electric plants. We hope to use our Allen Steam Plant at Memphis working with the city of Memphis, for prototype tests.

As you perhaps know, the research and development in support of the liquid metal fast breeder nuclear reactor is underway. We are building a demonstration plant in conjunction with AEC and the electrical utility industry.

Now despite the problems which confront the entire energy industry, we will continue to meet the power demand of the region and we will do so efficiently. We have our problems, but we are doing our best to solve them, and we think that we can. We are concerned, as I think we indicated, with what the increase in the price of fuel will do to us.

TORNADO DAMAGE

I should say, Mr. Chairman, today while the news is fresh, that we had extensive tornados in our area just this last week and they caused the most extensive and substantial damage to our transmission system that we have ever sustained.

For instance, we have about 1,500 miles of 500 kV transmission lines—this is the backbone of our heavy transmission system—and about one-third of that was knocked out of service.

We had some 58 big steel towers taken down along our 500 kV system. Extensive damage was also sustained on our 161 kV transmission lines. The last of these tornados struck Wednesday night and Thursday morning. As an indication of the excellent job that our power operations people do, we had service restored to all of our distributors by Thursday night about 7:30.

That does not mean that every consumer had power restored, because there were many residential situations where distribution lines were destroyed completely and it was a longer job there, but nevertheless service came back very quickly.

I think this damage illustrates two points. First of all, when we make our forecast for each year and for the years ahead as to what our picture will be in terms of revenues and costs, we must allow a margin, the law says that we must allow a margin. That margin furnishes funds to reinvest in the system, but it also serves as a contingency item.

And, when a tornado like this strikes—we do not know yet what the damage will be, but it will be many millions of dollars—we must have the funds to cover it.

The second point illustrated, is the growing problem of a shortage of construction materials, and particularly steel for transmission line towers. The steel that we need to rebuild these 58 large towers is going to take some effort to acquire, to find and to buy.

Following a damaging situation like this, the lines are put back up on wood poles, with temporary arrangements. That does keep service intact. But we have to get about the business of restoring the lines permanently and we are concerned about where we will find the steel.

Now, Mr. Chairman, that completes what I wanted to say in these opening remarks. If you would like something further, on our general expense programs, Mr. Seeber might like to talk about that.

Senator STENNIS. All right, just a minute.

Commissioner McBride, do you have something to say?

POWER SYSTEM PROBLEMS

Mr. MCBRIDE. Mr. Chairman, we certainly appreciate the opportunity of coming before you and, as the Chairman said, we are glad to see you and have you back after your experience.

Senator STENNIS. Thank you, sir.

Mr. MCBRIDE. We have problems in connection with this power situation, in connection with the accelerated cost of coal and the scarcity of coal, and the delay that we have encountered in connection with construction of our atomic plants and so on.

It all creates problems and in spite of that, we are still on top of it. And, by comparison, we are doing as well or better, than other utilities.

We just appreciate the opportunity of crying on your shoulder a little bit about some of these problems, because we know that it takes understanding for us to work together, and I think that is how I would want to see it this time.

Senator STENNIS. Well, if I may comment on what you said. Your last sentence sized it up. Understanding is what you need, gentlemen. That is what you need. I do not say you are short of it, but once you understand the purposes of the Tennessee Valley Authority, well, without flattering you any, the way you and your predecessors over the years, carried it out as I see it, you have a very bright picture, and a productive program.

I had, heretofore, had time to work, but I had never had much time to think until this thing happened to me a little over a year ago. I was in the hospital about 7 months, and that will give you the time necessary to think things over.

I remember your growth in the 1930's, I am talking about now, and the development and the trust, just old-fashioned common garden variety of trust, that you gentlemen have built up in the minds of the people that know your program, that is a great thing. I commend you for it.

We need more of it scattered all around. Now, Mr. Jenkins, when did your term start?

Mr. JENKINS. I took office in December a year ago.

Senator STENNIS. You have served 1 year?

Mr. JENKINS. One year and three or four months.

Senator STENNIS. Well, I missed you last year, where are you from?

Mr. JENKINS. I am from Tennessee.

Senator STENNIS. I am glad to see you and I certainly wish you well. Is there anything you wish to say at this point?

ENVIRONMENTAL REGULATIONS

Mr. JENKINS. Well, I would like to reiterate what Mr. Wagner and Mr. McBride said, that we are glad that you are back and well and I am sorry I missed you last year, my first year at these hearings.

There are some things—when you speak of understanding, that Mr. McBride touched on a little bit—and the year I have worked for it, I suppose it has been the worst year as far as TVA is concerned insofar as we are faced with these problems.

Senator STENNIS. Yes, problems.

Mr. JENKINS. And in some instances, delays and cost overruns that can be traced back, in some instances, to regulations and controls that relate to the environment. Problems that sometimes appear to be a little bit unreasonable. And I think not only in the TVA area—if we are going to maintain the trust of the people in keeping the utility rates at levels that can be tolerated in their pocketbook—that we do need to talk more and more with the Congress about some of the things that are taking place and about some of the rules and regulations that need to be promulgated.

Senator STENNIS. Well, I think I know what you are hinting at. If you are going to bring it up at all, you better make it a little stronger than that. These restrictions you are talking about are environmental restrictions?

Mr. JENKINS. Yes, sir.

Senator STENNIS. Well, to a degree, that is being reappraised and reevaluated, without any purpose of destroying the environmental improvements and I think we were late getting started with the

environmental programs. But we overran ourselves some—in my opinion—when we did start. It is just like lots of other things, you know, you get interested in football and you overdo it, maybe.

Mr. WAGNER. Mr. Chairman, if you want me to give you a single example of this?

Senator STENNIS. Well I wish you would, if Mr. Jenkins is through. Are you through, sir?

Mr. JENKINS. Yes, sir.

Senator STENNIS. Thank you.

SULFUR DIOXIDE CONTROL

Mr. WAGNER. Now one example is the question of sulfur dioxide control at coal-burning steamplants. Now the coal in our area, most of it is high-sulfur coal. There is not enough low-sulfur coal to burn to meet our needs.

The present requirements for air quality control have an ambient standard which is the quality of control at ground level, where we live and breathe and work, and the emissions standard which controls the amount of sulfur dioxide that can come out of the top of the stack, regardless of how it gets to the ground and in what shape it gets to the ground and in what concentration it gets to the ground. We have felt as far as the air can be maintained as clean as it needs to be at ground level, this should be enough.

We have developed a system to do that which would cost us $17 million a year to operate. It would cost more than that to install it, but the annual cost would be $17 million a year and we have tested this at one of our plants for 4 years and we know it will work, and work all of the time.

On the other hand, the general pressure now for environmental reasons is to require that we install wet limestone scrubbers, or some kind of scrubbers, to take the sulfur dioxide out of the stacks.

Senator STENNIS. That is what they are called? Cleaning up the coal?

Mr. WAGNER. Cleaning up the stack of gases after you burn it. We have resisted doing this because we think it is not necessary. First of all, we think installing scrubbers is not necessary to meet the air quality standards at ground level, which we think are the important ones.

In the second place, we are convinced—and we studied this as thoroughly as anyone in the world, I believe—we are convinced that satisfactory technology has not been developed so that you know that the equipment that you put in will work.

And, in the third place, it would be very expensive to do it, too. Instead of $17 million a year, if we were to put scrubbers on all of our plants, it would cost us about $225 million a year, which is just a tremendous addition to our annual costs and to the cost of power in our area, for equipment that we think first of all is not needed, and for which we think there is no assurance it would work if it were installed. So we are resisting that. This is one example, there are others.

It should be recognized that this is in an area where these plants have been operating for up to 20 years now with almost no visible damage.

We can control sulfur dioxide with this alternate method that we have. We think this is a waste of funds, and not only that, it is a waste of natural resources to install scrubbers. A scrubber—people who do not know what they are, may think all this is a big brush and some water that you wash the stack gases with—a scrubber is a large chemical plant in itself that would require tremendous quantities of steel and other scarce metals and materials; a great input of design talent and construction effort. These resources could be used for other things that the Nation needs.

Scrubbers also would require the mining of additional quantities of coal and limestone and involve problems that go with mining. Scrubbers also will produce literally mountains of a polluting sludge which has to be taken care of.

Now let me say, again, that if this had to be done to meet the quality of air, to provide the quality of air that we need at ground level, we would say that we have no alternative. But, if we can meet the ground level quality by other methods, scrubbers constitute a waste in our judgement.

Now I can give you another example from thermal control, but this is one of the worst ones and one of the most significant ones.

AIR QUALITY CONTROL

Senator STENNIS. Well, that gets the idea across. Now let me ask you this and I am not versed in environmental requirements. I get the idea that you think the requirements are too severe; that there has been very little damage anyway over the years.

Now who determines, in the first place, what the test shall be? That is the environmental people?

Mr. WAGNER. The Environmental Protection Agency.

Senator STENNIS. Now, what is the answer? You have got to offset that, or contradict it? How do you?

Mr. WAGNER. Well we are still debating with them, arguing with them and trying to persuade them. We believe, Mr. Chairman, that TVA is a Federal agency. That we are basically a conservation agency, a power producer only incidentally, and that we are concerned with the quality of the environment and have been from the beginning of our operation.

We believe that our area ought to be used as a testing ground, a demonstration if you will, to find these things out. If we can demonstrate that, under certain circumstances, you do not need scrubbers, then it will be useful for the entire country.

Now I would say, quickly, that there may well be situations in this Nation where emissions standards must be observed, because the sources are so many and the pollution is so great. But to say that simply because you must do something in the heart of a large, industrial city, and therefore must do it across the whole country, is a mistake.

Senator STENNIS. Well, I have had a thought along this line. Our country is 3,000 miles from shore to shore; 2,000 miles from north to south, and to see how they could get uniform requirements throughout the country.

But, as I see it, you do not have any technical way to refute their findings? You argue, but——

Mr. WAGNER. We have technical data that we collect from our system, yes. We have large quantities of it. We have some of the best air quality information that is available anywhere.

Senator STENNIS. Well, that is fine.

Mr. WAGNER. And we have been gathering it for many years and we will argue on the basis of facts and data and not opinion.

Senator STENNIS. Well I am glad you have it.

Mr. WAGNER. We may need legislative assistance on this. I think there are some amendments that have been proposed to the Clean Air Act now which would help to solve some of these problems.

TVA BOARD SALARIES

Senator STENNIS. Well I am not on the committee that deals with that problem. All right, let us move along, now to these other questions.

Well let me ask this, gentlemen. This is a matter of public record, I am not asking personal questions, now what is the salary—what is the salary that you gentlemen are allowed? I mean——

Mr. WAGNER. My salary, Mr. Chairman, is $40,000 a year.

Senator STENNIS. As I say, I am not asking a personal question, it is a matter of public record, just like mine is.

Mr. WAGNER. And the salaries in the entire organization are scaled below that.

Senator STENNIS. All of you receive the same?

Mr. MCBRIDE. $38,000.

Senator STENNIS. $38,000, all right, I am just trying to get at this thing.

Have you got some positions up here that are highly important, for which the salaries are frozen? We are losing some of our best men and I am just trying to pick up some information where I can about these salaries.

Now you had a suggestion to make here. We are going to give everybody time, all right. But let us move right along now. Who did you call on, when I asked you to wait?

Mr. WAGNER. Well, Mr. Seeber can discuss some of these general expense items. They are all enumerated in the blue book here and we can brief them for you if you want, or you can take them from the book itself.

POWER FINANCING

Senator STENNIS. Well, let us see what our friend here, Mr. Jones has, and I will ask a few questions anyway so he can be looking into that part of it and you can too.

You refer to your financing, that is your powerplant money, I call it, and your generating money and all, is not appropriated like it was in the old days when we used to fight over that here, 30 days, the equivalent of 30 days it would be in the committee.

You now finance it with bonds?

Mr. WAGNER. That is right, with bonds and our revenues.

Senator STENNIS. What is your current bond rate or interest rate on the bonds, those you are issuing now?

Mr. WAGNER. About 8 percent, I believe, the last bonds we sold were 8.05 and we will sell some more next week, probably in the same general neighborhood.

Senator STENNIS. Well, you do not want to predict it will be more, but as I read the paper, the banks are upping their rates.

Mr. WAGNER. Yes, sir, that is the way it has looked the last few days.

Senator STENNIS. Now this legislation, when the late Senator Kerr was here, that has worked out all right, is that correct?

Mr. WAGNER. Yes, sir, that has worked very well, very well.

Senator STENNIS. Do you want to say the word on that? You helped make it, you might as well condemn it if it hasn't worked right. Do you want to say a word about it?

Mr. MCBRIDE. Well, actually, we would not have the kind of power system we have today if it had not been for that legislation.

Senator STENNIS. Well, as I say, I come right out of that TVA area, down there in Mississippi where I was once a judge, and all the people know me personally and I know them and they jumped all over me about that, requiring they issue on bonds. But I thought it would be a better system for you in the long run.

Mr. WAGNER. It has given us interest costs that we have to meet, but we think it is a fair system and without it we would not have been able to, as Don said, to go to the generating plants that we have now and that we have underway. You simply cannot be dependent upon appropriations for that sort of thing.

Mr. MCBRIDE. You know, Senator, when we were writing and planning this bill, I do not think there was any of us that were working on it who felt the interest rates that we would have to pay would ever be above 3 or 3½ percent.

Senator STENNIS. That is true.

Mr. MCBRIDE. And the trouble is we are having a rate of interest that is far in excess of what we thought that we would have. But that is all right. We are still able to operate better than if we had not had the legislation.

Senator STENNIS. I do not see how you lived with it, with the interest rates going up and the cost of energy going up.

I am very much concerned about the inflation. It is just destroying our financial system, our economic system. Values are just getting all out of proportion. When you get it up, you know, it is hard to get it down—almost impossible to get it down.

Mr. WAGNER. Well these astronomical increases in the price of coal that I mentioned earlier are an example of inflation. The interest rates, also, are an example of inflation.

Our first bonds had a 4⅛ percent interest rate, the maximum was about 9¼ percent and it is running about 8 percent now. And when we are borrowing $400 or $500 million a year, this adds tremendously to the cost of the power system.

Senator STENNIS. I saw some figures the other day about oil that Saudi Arabia, for instance, has been getting $3 to $4 billion, I believe, for their oil.

Now a like amount, according to the estimates now, the same amount of oil, they will get $60 to $70 billion in 15 years from now, something like that. Just think what that will do to their economy, our economy, Western Europe, and everything else. It has been destroying values.

Mr. MCBRIDE. The balance of payments——

Senator STENNIS. Yes, yes.

Mr. WAGNER. Mr. Chairman, we have said many times that electric energy is so valuable to the economy, to the Nation, for our whole social attitude, to the whole quality of life in this country, that energy costs, whether you are talking about coal, oil, or electricity or whatever, must be kept as close to the cost of producing as possible. This is not a luxury item and I think it is important in controlling inflation and some of it starts with the basic sources of energy that really feeds into our whole economy. It is not a luxury item at all, it is an essential. It is as essential as air and water.

CLEAN COAL

Senator STENNIS. Now I want to ask you one more question about this coal. I heard a speaker just make the flat statement that we could clean up this coal and make it a suitable material, you know, for energy-burning fuel.

Now the way you talk, that is no "oratorese" proposition of cleaning up coal, so to speak. What do you say on that?

Mr. WAGNER. Well, the situation I was talking about was cleaning up the stack gases after you burn the coal. An alternative to that is to synthesize the coal, either to liquify it or to gasify it, and in the process, you can remove some of the impurities and get a clean fuel.

I mentioned—just barely mentioned—we have a project underway working with the Office of Coal Research in the Department of the Interior, to manufacture a low Btu fuel gas that we would burn in one or two of our units to try this out. And this would give us a clean-burning fuel and could solve the problems of the air quality control, in the future.

But the system has not been perfected so you can go and buy one of these things and fasten it on and in addition it is very expensive. All the figures that I have seen on clean fuels from coal are in the neighborhood of $1 to $1.50 per million Btu. By comparison, our coal cost for the last coal we bought was 60 cents per million Btu, but 5 years ago it was 20 cents a million Btu. So you are talking about going from 20 cents a million Btu to $1.50.

Now we may have to do it but this, Senator, is one reason we are relying so heavily in our future planning on nuclear plants. Our fuel costs are lower and the environmental problems are less.

INDUSTRIAL DEVELOPMENT

Senator STENNIS. We have been over that, some, on this bill.

Now you mention something about river terminals. Go back over that again.

Mr. WAGNER. On the main stem of the Tennessee River, in 1973, private interests invested about $329 million in plants and river terminal facilities there, which was a new record.

These industries, will be creating new industrial jobs and jobs in related trades and services. The only river terminal in which we have a direct interest, or a financial interest, currently is the Yellow Creek project where we are working with local people to develop terminal facilities, as you know.

Senator STENNIS. Tell me where that is, so we will know.

Mr. WAGNER. This is on Yellow Creek, in northeast Mississippi.

Senator STENNIS. Yes.

Mr. WAGNER. And it is moving along very well. The railroad is not quite finished, to serve it, because of the steel shortage, but the port and its industrial sites are receiving great interest in the industrial and the shipping world.

The port authority has reached agreement in principle on the location of two wood products manufacturing plants with the handling and storage of 30,000 to 40,000 tons of wood products a year at this point.

The existing firms in the area indicate that inbound steel movements through the port will reach 30,000 tons in the first year—now that should be probably in 1975 or 1976 at the latest—and, outbound steel pipe shipments will reach 3,000 to 4,000 tons. There are negotiations now going on with a chemical company for space at the port for storage and distribution. The port authority—this is the State port authority—is working with a number of other prospects. This is a valuable addition to that area.

Senator STENNIS. All right, I want to bring that up. We had a Senator here once and he listened closely to all the testimony. He was from Texas and he would tell what all he was going to do and everything, he said, what I want to know is what are you going to do in Texas.

We have to be, and should be, interested in our States and I want to especially thank you for cooperating and taking a good, solid lead in helping get that port.

Mr. WAGNER. That was mainly what we did—provide some leadership and guidance on it. A great deal—most of the work, most of the investment was by people in Mississippi, the people who operate the terminal.

Senator STENNIS. Well, I remember the late Senator Ellender, he did not favor the project at first, but when he got deeper into it and he saw what, you know, he realized——

Mr. WAGNER. He misunderstood it. He thought it was warehousing, but it was not.

Senator STENNIS. That is right, he got very much interested in it and helped out and I want to mention that because I still have a feeling of appreciation to him, too.

TELLICO PROJECT

Now you mention these projects here by name. Tellico, I know where that is. How much time was it? You said you started in 1967? How much time in court? I mean the time it was in court?

Mr. WAGNER. About 3 years, sir. It has been in the court about 3 years.

Senator STENNIS. Now anything started in 1967, I do not have to ask you, I know you have an overrun in costs and all. What about that?

Mr. WAGNER. We have not revised our estimate since last year. The original estimate, I believe, was about $42 million and we have, in previous years, increased that to $69 million.

As quick as we find where we come out with the current lawsuit, and can get a firm completion date, we will have to revise that cost estimate again, and I expect it to go above $69 million, but we have not changed it as of this time.

Senator STENNIS. Well that reminds me about a ship contract having some overruns down in my State. Part of the answer—anything started in 1967, still going, building on it in 1974, well a character in the funny paper almost could tell you, well you are going to have an overrun.

Mr. WAGNER. Well, two things get you, of course. The inflation and then just dragging it out, your overhead costs will run up.

DUCK RIVER PROJECT

Senator STENNIS. And then you mention Duck River. Where is that?

Mr. WAGNER. That is in middle Tennessee and includes two dam and reservoir projects. One of them, the Normandy Dam, has a very good start on it; and then the Columbia Dam which has been started.

Senator STENNIS. Are these financed under your bond plan?

Mr. WAGNER. No, these are general water resource development projects. There is no power.

Senator STENNIS. General resource like you mentioned? Agriculture and forestry?

Mr. WAGNER. They are financed through appropriation.

Senator STENNIS. Well you finance only the actual electricity producing plants through your bonds?

Mr. WAGNER. That is right. The bonds are used only in the electric power program.

FORESTRY PROGRAM

Senator STENNIS. Well you mentioned the Agricultural and Forestry programs, call some of those over a little bit more, specifically? I want to, now what you are doing in forestry, for instance. Just briefly, just briefly.

Mr. WAGNER. Well, Mr. Barron is our budget officer now, but that was his profession.

Mr. BARRON. Mr. Chairman, the forestry program is intended to bring about a maximum contribution by forest resources to the development of the Tennessee Valley region. In this connection, as in any other effort that we undertake, we worked through the appropriate other Federal agencies concerned; in this case, the U.S. Forest Service, and also with the states and with the local colleges and their forestry schools, to bring about ways in which this resource can be upgraded and can be maximized in terms of its contribution.

Specifically, among the things that we are in to in a very big way, is the production of a superior grade of hard wood species that would be used in the furniture business.

Over the last several years, perhaps 15 to 20 years, there has been a concentrated effort in pine, largely because it is a greater producer of bulk fiber for paper and things of this nature.

But, the Tennessee Valley region also is an excellent site to grow quality hard woods and we are working in this area. In that connection, we are also trying to improve the quality of the forest industry in the area.

If you have a raw material and you do not have the place in which to convert it into a finished product, then you are not realizing the maximum of what you call value added, or the opportunity to take the raw material and produce a finished product from it. We are also

using our forestry people in connection with strip mine reclamation efforts, improving the quality of wild life in the valley region.

Mr. WAGNER. I think, Mr. Chairman, if I could interrupt just to give you a broad measure of this, you will remember as I do that in the mid thirties, the Tennessee Valley forests were producing a little bit of rough sawed lumber and railroad ties. We have worked with owners of forest land and managers of forestry plants so that currently the forest industries in the valley have an annual product of about $1 billion.

They have an investment of about $768 million and about a $258 million a year payroll. Now the forest industry is among the most important industries in the valley.

Senator STENNIS. Well you overlooked those fine long-leafed pines we had in Mississippi back in 1930. We have hardwood in north Mississippi and some on down in central, but we produce all kinds of it.

We are still receving about the same price for our pulp wood that we did at the end of World War II. Now you know that that is ridiculous, not getting any more for it than that.

There are plenty of buyers but they all offer about the same thing. Pulp wood, you know, hardwood and pine.

Mr. BARRON. Senator, you would be interested—one of the projects we have is a means of increasing the harvest, where the pulp wood producer can harvest more cords per day. That, in connection with the greater stumpage price, can increase his income.

Senator STENNIS. Well, I have a little timber, not a great deal, but I brought up a little bit at a time farm land, you know, is being converted over to timber. But I do not sell pulpwood, except thinning. I do not fool with it.

Let me ask you now—I notice where Weyerhauser is going to put in a wood products plant in Columbus, Miss., sometime soon, on the Tombigbee, and they operate in that area already, but that is going to increase the competition for the forest product all around there in west Alabama and eastern Mississippi.

Mr. WAGNER. There have been regular additions to the forest products plants in the valley as time has gone on. There is more competition for the available wood product.

Senator STENNIS. What is your stand on this clear-cutting?

CLEAR CUTTING

Mr. BARRON. I am both for it and against it. I am for it in very small quantities and against it in large.

Senator STENNIS. Well, I started to say answer yes or no. They are about to take my home county—you talk about this giving land back to the Indians. They are going to be doing worse than that. It is a bad thing when it is in large quantities. I think you are right.

Mr. BARRON. As we mentioned in connection with other environmental concerns, sometimes there is a tendency to go overboard with a new device, and perhaps this is the case. I think in small areas it has a distinct advantage.

Senator STENNIS. I would think so.

Mr. WAGNER. TVA has traditionally promoted sustained yield harvesting rather than clear-cutting. The only clear-cutting we are having anything to do with is patches of just a few acres in the middle of a heavy woodland where it will help wildlife.

Senator STENNIS. The best money I ever spent in connection with forestry and forestry operations was this TSI we called it, timber stand improvement, girdling the wolf trees and cutting out the scrubs.

All right.

Now, I have a few more—anything that you want to say on that?

Mr. BARRON. No, sir.

LIQUID METAL FAST BREEDER REACTOR

Senator STENNIS. Now, you mentioned this nuclear reactor, the liquid metal fast breeder. How much are you into that?

Mr. WAGNER. Well, first of all, we were invited by AEC, along with many other utilities, to make propositions for building a demonstration plant. The purpose of this plant was to try it on a larger scale than it had ever been tried.

We and Commonwealth Edison Co. of Chicago made a proposition which AEC accepted. The entire utility industry is supporting it, and it is being built on our system. We will buy the power from it and pay for it at a price that makes sense to us. When the plant is completed, if it is a good power producer, we will buy it and use it as a part of our system.

Our contribution to it from our system is about $22 million over a 10-year period, which is our fair share. We also are furnishing some management assistance. We are very anxious that the project shall succeed.

Senator STENNIS. Now, you will excuse me now. I have to go up to the floor and vote. I will come back as soon as I can.

Now, we are not going to rush you, but we do not want to lose any time. So suppose you get your heads together while I am gone and decide what you would like to emphasize.

Excuse me now. I will be back.

[A brief recess was taken.]

STEEL SHORTAGES

Senator STENNIS. Gentlemen, I do not know whether we will have other votes or not. We will just wait and see.

Now, what else do you have to present, if anything?

We have a few more questions.

Mr. WAGNER. Well, I think we have nothing except any questions that you might have, Mr. Chairman.

Senator STENNIS. All right. Now, you mentioned about your shortages and everything, shortage of steel in your towers and everything.

Give us a little more on how you are overcoming that?

How are you going to get out of the hole that you are already into?

Mr. WAGNER. We have problems of coal supply, which is our basic energy supply. We have given up on trying to get competitive bids and we are out negotiating for coal. In the long pull, in the long run

we are relying more heavily on nuclear energy. In view of the fact that we have been delayed on some of those projects by licensing problems and changes in design that we estimate to need to meet changing standards, we have had to buy some gas turbines, which are oil-fired, for peaking. We have had in some instances to go out and buy power from some of our utility neighbors to fill in the gaps. So that we are doing those things.

Now, in addition we are urging conservation, Mr. Chairman. We are doing some extensive work on that.

Mr. McBRIDE. Mr. Chairman, if I may, I think one thing that helped us is the water supply we had, because we have had the best two consecutive water years right during this time when coal was going up, so actually we have been able to use the maximum of hydroelectric power, which of course we wish we had more of.

Senator STENNIS. Well, how are you going to cope with this $13 per ton for coal?

To replace what you use now you say that is going to cost, you estimate, $13.

How far did you run that on up when you go to, say 2 or 3 years from now?

Will you give a figure above $13 a ton?

Mr. WAGNER. $13 a ton is what our last coal cost.

Senator STENNIS. It is already costing you that?

Mr. WAGNER. Yes, sir. And the new coal, that is $4 a ton above our average cost at the present time. So that if it stays at $13, that is already built into our future cost picture.

We also, Mr. Chairman, have bought coal reserves, as you know, and we are contracting to have our own coal mined to have some hold on this cost.

Senator STENNIS. Where is this?

Mr. WAGNER. There is some in west Kentucky, and some in east Tennessee, and I believe one small reserve in southern Illinois.

Senator STENNIS. How long would it take you to get into that operation of your own?

Mr. WAGNER. We are into it already, and that is helping us to some extent. But it is hard to buy coal reserves now, and the amount of coal that we buy—the amount of coal that we burn is more than we are able to mine from our own sources. But we hope to be able to get that cost of mining that coal and get some kind of measure of what costs should be, so we will know whether the price is in reasonable relationship to it.

NATIONAL ENVIRONMENTAL POLICY ACT

Senator STENNIS. We will slip around on you now.

Have you suggested any amendments to this National Environmental Policy Act?

You say you are having trouble with it.

Mr. WAGNER. We have discussed it at their request with members of Congress from time to time. There are some amendments that have been proposed by the administration, I believe, to the Clean Air Act that would be helpful.

Senator STENNIS. Well, the Congress is here. We need suggestions from you people if you think it is too severe. Why, let us know more than just telling us. Give us some language if you feel like you can.

Mr. WAGNER. Well, we will do that. We will be glad to do it.

Senator STENNIS. I do not know enough about it. I am not trying to barge in and sponsor an amendment myself. But if you tell us this thing is choking you down, with all of the other things that you have, too, why, we can maybe impress someone.

BEAR CREEK PROJECT

I have had conversations, a little, and letters of a good number about this Bear Creek project down there. It seems they need a little more money. Now, you are requesting $2.9 million for fiscal 1975.

Mr. WAGNER. That is correct.

Senator STENNIS. Now, as I understand, you are going to use all of that just to complete the Little Bear Creek Dam?

Mr. WAGNER. That is correct.

Senator STENNIS. And what about now, you talk about your capabilities and all. If the Congress is going to put in additional money, how much could you effectively and wisely use for this next fiscal year?

Mr. WAGNER. Well, Mr. Chairman, as you indicated, the $2.9 million would finish the Little Bear Creek Dam. We have already finished the Big Bear Creek Dam. There are two more dams left in the system, the Upper Bear Dam and the Cedar Dam. These are small dams, I should say.

Senator STENNIS. Yes.

Mr. WAGNER. And if we were asked to start construction on those in fiscal 1975 we could probably use about $5 million more than the $2.9 million, a total of about $7.9 million to get them underway.

Senator STENNIS. Added $5 million?

Mr. WAGNER. Yes, sir, that is about all we could use.

Senator STENNIS. Well, we have a dam of a different type and so forth down in the southern part of the State. They decided they do not want it, you see. They had the thing authorized and I think it was a multiple-purpose project. But they decided they did not want it. So that might move things around a little bit here. I wanted to know your capability and all.

Mr. WAGNER. The people in Bear Creek have been very, very strong for this project, and we have had very close cooperation with them. They are doing many things themselves, and they have been very anxious that we should move a bit faster. But we moved as fast as we could within the limits of the appropriation.

Senator STENNIS. Well, that is all right. That is fine. They are doing their part and they are living up, what they promised to do.

Mr. WAGNER. Yes; they have.

JUNK CAR REMOVAL

Senator STENNIS. Well, if they do not, you let me know. I am not their boss, but I will be frank with them. Now, I was trying to give somebody else credit here. I missed last year that you have already

referred to. I was trying to give someone credit during some of these hearings for removing these junked cars. And they said, "oh, the TVA is doing that." And then, give us a progress report on that.

Mr. WAGNER. Well, Mr. Chairman, we have had a program where we have developed some equipment that could be operated by one man to go out and collect junk cars, and we would loan that to people in a given community if they were interested in a junk car collection program. And they developed all sorts of methods for locating these junk cars. They had rural mail carriers tell them where they were and so on. So they found where they were.

We found that if you could get as many as about 200 junk cars together at one point, then you could get somebody to come in with either a bailer or a shredder, and he could take it from there on and make a profitable operation out of it. That was even when the scrap steel prices were down much lower than they are now.

As a consequence of that, over 30,000 junk cars have been collected in the Tennessee Valley now in I do not know how many communities. And we also make available these designs so that people can take an old truck and convert it to one of these pickup vehicles quite easily. A number of people have built their own. We have had inquiries from all across the United States. I just happen to remember that the city of Philadelphia got information from us and undertook a program of their own. The entire State of Pennsylvania, I think, has followed up on that. So that the thing has spread.

It is a good environmental move. I do not know, Mr. Barron might know whether the price of scrap steel has made it profitable now or not. But originally the price of a junk car was about $7 if they could get it to a collection point, and that had to be dug up from local sources at some other point. I think now they can sell them and probably break even on it, and even make a little bit of money.

Senator STENNIS. With the price going up?

Mr. WAGNER. That is right. But it has taken hold nationwide now. In fact, TVA got a special award from the Keep America Beautiful Committee.

Senator STENNIS. Is that right?

Mr. WAGNER. A little over a year ago, for our work on that.

Senator STENNIS. Well, that is fine. I am glad to hear that. They might be a little stingy with their comments, but they thanked you for making a contribution.

But you originated this plan, worked it out, and showed how it could be done?

Mr. WAGNER. Yes, sir. Our people developed the equipment and then helped to organize it in local communities, and we do it as a demonstration.

Senator STENNIS. Well, I heard of someplace which is plagued with these old used cars stored along the highway. Then all of a sudden, they just disappeared, they are gone.

All right, is there anything else?

I will start with the newest member of the court.

Do you have anything else that you want to say, Mr. Jenkins?

Mr. JENKINS. No, sir.

Mr. MCBRIDE. I do want to add something.

Senator STENNIS. All right, sir.

Mr. McBride. In connection with the Yellow Creek port, we have just within the last few weeks transferred to the Corps of Engineers the land that we own in connection with the Pickwick Landing Reservoir where the Tennessee-Tombigbee Waterway enters the Tennessee River. We have made an arrangement with the Corps of Engineers whereby, as they dredge that channel for the entrance to the Tennessee Tombigbee, that they will put the spoil over in some lowlands at the port, at Yellow Creek port, which will create additional industrial site that can be built there, and I think it is a very fine cooperative program between the Corps and the TVA and the State of Mississippi in order to develop additional industrial sites there at the port, servicing two purposes, of course.

Senator Stennis. Well, I am very interested and I appreciate it, too, what you are looking forward to. If we get the Tennessee Tombigbee built and come up the river, even if it is in a sidewheeler, you gonna let us through.

All right, is there anything else, gentlemen, that you wish to cover?

QUESTIONS AND ANSWERS

Well, we certainly thank you very much. I do have some additional questions here that we will put in the record for you to answer.

Can you do that?

Mr. Wagner. Yes, Mr. Chairman.

Senator Stennis. All right, thank you very much for being here today.

[The questions and answers follow:]

WATER RESOURCES DEVELOPMENT

Question. It is noted that $34.4 million is requested for Water Resources Development capital outlay. Most of this request is for the Duck River project and the Tellico Dam and Reservoir project. Please bring us up to date on the status of both these projects and your fiscal year 1975 plans.

Answer. The Duck River project consists of two units, the Normandy Dam and the Columbia Dam. The on-site construction for the Normandy Dam started in June 1972. The concreting for the spillway and non overflow section of the dam is practically completed, and treatment and preparation of the foundation for the earth dam section is now under way. Also under way are land acquisition and highway and utility relocations in the reservoir area. Within the next few months we expect to divert the river through the spillway section and intensify work on the earth fill portion of the dam. In 1975 we plan to complete the spillway gate and equipment installation, continue the earth dam fill, reservoir relocations and land acquisition, and begin reservoir clearing and public-use facilities. By the end of that year the project will be about 80 percent complete with dam closure scheduled for January 1976.

With respect to the Columbia Dam unit, on-site construction started in August 1973 with a modest beginning of construction plant assembly, access road construction and stripping of overburden at the dam site. In fiscal year 1975, land acquisition and dam foundation preparation will continue at a relatively low level, because of fund limitations, with some intensification in the spring of 1975 when we plan to begin excavation for the spillway and highway relocations in the reservoir area. By the end of fiscal year 1975, the project will be about 10 percent complete.

At the Tellico project, the concrete section of the dam has been completed for several years and several highway relocation projects in the reservoir have been completed. Work on the project was resumed in November 1973 after dissolution of a temporary court injunction which arose from an environmental court suit and which interrupted the construction work for about 18 months. Currently,

work is under way on land acquisition, foundation preparation for the earth dam section, and relocation of highways and utilities in the reservoir area. In fiscal year 1975 work will continue on land acquisition, the numerous reservoir road, bridge and utility relocations, and construction of the main earth dam and saddle dams. By the end of that year, the project is expected to be about 75 percent complete with closure of the dam scheduled for January 1977.

Question. Why do you have an increase of $10 million on the Duck River project?

Answer. This increase relates to the Normandy Dam and includes about $3 million in price escalation and other costs associated with a two-year delay in the project's schedule since the previous project estimate of $25 million was prepared in September 1969. It also includes about $7 million for design and scope changes including a change from the planned earth fill dam with a chute spillway to an earth fill and concrete dam with a concrete ogee spillway, addition of gates for water quality, changes in the road relocation plans, and foundation conditions encountered during construction.

Question. Why was there a two-year delay in the construction schedule of the Duck River project?

Answer. As previously mentioned, the present schedule for the Normandy Dam is two years later than the schedule assumed when the previous estimate of $25 million for Normandy was prepared. However, the delay since we presented the budget program last year consists of a one-year delay in the closure of the Normandy Dam which is now scheduled for January 1976. This delay has arisen from frequent flooding of the area in the intense floods in the spring of 1973, late deliveries of concrete for the spillway and non overflow section of the dam, and unfavorable dam foundation conditions encountered during construction. No change has been made in the January 1979 scheduled closure of the Columbia Dam.

Question. On the expenses side of Water Resources Development, $11.575 million is requested, a slight decrease from last year. Would you briefly review this operation and maintenance and planning item, particularly navigation operation, water quality management, and the multiple purpose reservoir operation for which $6.4 million is requested?

Answer. One of TVA's primary objectives is development of the Tennessee River for navigation. Through a series of multipurpose dam and reservoir projects a nine-foot navigable channel is provided. The navigation operations program provides for operating and coordinating the existing navigation system; planning for necessary navigation improvements to keep pace with rapidly expanding use of the waterway; and to provide a wide variety of technical assistance to transportation interests, state agencies, subregional planning and development agencies, and waterfront communities. These activities seek to maximize the contribution that low-cost water transportation be a highly effective tool in regional development. Tennessee River freight traffic has grown from 900,000 tons in 1933 to 3 million tons in 1943, to 7 million tons in 1953, to 14 million tons in 1963, and to a preliminary estimate of 29 million tons in 1973.

The objective of regional water quality management is to secure the optimum benefits of the region's water resource for municipal, industrial, and agricultural water supply; for fish and wildlife propagation; for recreation; and for aesthetic satisfaction. We work with state and local agencies, with other Federal agencies, with industries, and with private citizens to secure these benefits. TVA's principal input is in the areas of planning, collection and analysis of data and making these data available to the public, investigation of special water pollution problems, and special studies and demonstrations in response to problems arising in water quality management.

Multipurpose reservoir operations relate to the management, operation, and maintenance of TVA's multipurpose projects. The system is managed primarily for navigation, flood control, and power. But other benefits are created by a reservoir system with more than 10,000 miles of shoreline and 347,000 acres of surrounding land under TVA ownership or control. The $6.4 million referred to is that part of total net operating expenses distributed to the water resources development program.

Operating programs for this budget category involve activities that collect and analyze data that aid in the forecasting of reservoir operations for storing or releasing water; control mosquito and aquatic weeds, principally watermilfoil, that make the reservoir system unpleasant to use; and provide protection and upkeep of TVA facilities and lands. All of these contribute to a pleasant atmosphere for visitors seeking information about TVA or the enjoyment of outdoor activities such as picknicking, boating, and fishing.

Maintenance activities include both routine and extraordinary items. Routine maintenance activities consist mainly of painting spillway gates, maintaining spillway gate operating devices and other equipment and structures at multipurpose dams; maintaining visitor buildings located on the reservations; and other needed repairs such as resurfacing roads, walks, and parking areas.

Extraordinary maintenance items sometimes require immediate attention. Such a situation presently exists at Fontana Dam. Cracking in concrete near the top of the dam was discovered in October 1972. The damaged section has been stabilized by tensioning cables being installed to anchor this section and the crack grouted with concrete. This one item is primarily responsible for the decrease from fiscal year 1974 as remedial repairs are almost complete. Further studies are in progress to determine the definitive cause of the cracking and the additional corrective work required to prevent it from recurring.

Land Between the Lakes

Question. How will the request of $2 million be utilized for the Land Between The Lakes?

Answer. Of the $2,041,000 requested for Land Between The Lakes in 1975, conservation and education additions total $187,000 with most of the estimate being used for improvement of upland game and migratory waterfowl habitat. Recreation additions total $840,000 with emphasis placed on completion of the first phase construction of Brandon Spring group camp, upgrading and expanding camping and day-use areas, and continuing work on a major trails system. General support additions total $1,014,000 with major work items being completion of the Golden Pond office building, continuing road improvements, and general cleanup and improvement of lands along main roads.

General Resources Development

Question. For General Resources Development, a total of $8,322,000 is requested, an increase of a little better than $500,000. Briefly review the agricultural projects, forest and wild land resources development, development of tributary areas, and demonstration and education and manpower development items.

Answer. The general resources development category relates principally to the development of the land and its products and to the people of the region and their institutions. Agriculture is one of the leading enterprises of the Valley region, although it is not a major employer directly. It takes fewer farmers to feed our population these days, and those who remain on the farm, whether as full-time or part-time farmers, must be encouraged to use their land resource and their other inputs to best advantage. The Tennessee Valley remains an area of relatively small farms with regional problems and opportunities not characteristic of the difficulties and prospects of sections of the country where large commercial farm operations are possible. Of particulr concern in the Valley region is the promotion of that kind of agriculture that will produce a decent income without damage to the land base.

We work with the land-grant universities and with practical farmers to promote agricultural resource development, using new and improved fertilizer as an educational tool, encouraging practices that will expand livestock production, introduce new specialty crops, and solve problems of soil fertility. We tailor individual projects to specific area situations.

The development of forests and wild lands is likewise a cooperative enterprise. Most of the forest land, like the arable farm land, is privately owned. Any proposals to promote a better conservation and use of woodlands must be made in the context of private ownership and individual aspirations.

Like all other TVA activities, we begin with an adequate working knowledge of the quality and quantity of the resource and with the preparation of plans, and then move to demonstrations of the best ways of using the resource without destroying it. We are concerned with forests and wildlands as significant contributors to good regional hydrologic conditions, as important to aesthetics, as havens for wildlife, and as a source of raw materials of great economic benefit to the region and to the Nation. Our interests go beyond the conservation of resources, something to which we firmly subscribe. We are also interested in an economically productive resource, consistent with sound conservation practices. We expect the forests to continue to provide satisfaction to those who see them and visit them. We also expect the forests to continue to support an industry with a product value of around a billion dollars a year.

As a part of forest and wildland resources development we do research and demonstrations on strip mine reclamation, working with the states, with mining companies, and with landowners.

Although the Tennessee Valley region is relatively small—some 41,000 square miles—it includes a wide variety of subregional resource situations. As we suggested with reference to agricultural resource development, there is no recognized general solution to specific local problems, no common opportunity for all. Programs must be tailored. Tributary area development is the process whereby the expertise of TVA in many fields is made available to the people in local areas to equip them to help themselves as they solve their problems and realize their opportunities. Here again we rely on cooperation. We expect local groups and agencies to be the originators of projects. TVA helps with technical assistance, working with local people in each tributary area.

A problem in any developing area such as the Tennessee Valley is the maintenance of an effective system whereby educated and trained people can be brought into the regional work force. Our demonstrations in education and manpower development are aimed at promoting improvements in Valley education and at helping to develop training programs for skills now needed in the region. This is a cooperative undertaking.

Question. Explain the $747,000 request for Townlift Community Improvement.

Answer. Townlift community improvement covers two broad categories of work: the physical improvement of existing communities and the development of new ones. Our request for $747,000 for fiscal year 1975 includes $515,000 for improving existing communities. This involves encouraging orderly development, improved appearance, efficiency of services, the development of a viable economic base, and the provision of adequate public service facilities. We would like to underscore the word "encouragement." TVA does not do these things for a passive community. We give them technical assistance. We help them help themselves. We expect to help with some 40 to 45 community plans in 1975.

The estimate includes $200,000 for planning the development of new communities, one in east Tennessee on what will be a TVA reservoir, and one in northern Alabama on the lower reaches of the Elk River. These areas are going to experience community growth. The question is, what kind of communities will they be? We believe that where community development can be anticipated, it should be guided. In this way, obvious problems of unplanned or disorderly growth can be avoided. Supervision and general services for townlift community development accounts for the remaining $32,000 of the estimate.

Fertilizer and Munitions Development

Question. The fertilizer and munitions development activity contains two items: $5.8 million for fertilizer research and development, and $6.5 million for fertilizer introduction. This is a highly important program and we ask that you elaborate on what is being done in the R&D program, as well as the fertilizer introduction program.

Answer. Our fertilizer and munitions development program has a nationwide peacetime mission to develop new and improved fertilizers and fertilizer processes of increased effectiveness and economy and to demonstrate the value of these materials and of improved methods of fertilizer use. The ultimate goal is to help the farmer feed and clothe an increasing number of Americans while at the same time enjoying an adequate income for himself and his family. In time of national emergency, and upon request by defense agencies, TVA's research staff and production facilities are available for production of munitions.

TVA's National Fertilizer Development Center at Muscle Shoals, Alabama, is the world's principal center for fertilizer research and development. Major effort in 1975 will be concentrated on fertilizer processes that use wet-process phosphoric acid or urea or combinations of these two materials. We are giving special attention to producing urea fertilizers with controlled rates of nitrogen release, and on controlled release combinations of nitrogen and potash. Research and development will continue on the manufacture of high-analysis suspension fertilizers and other high-analysis combination fertilizers using merchant-grade wet-process phosphoric acid. This acid is the least expensive form of phosphoric acid available to the fertilizer industry and its importance as an intermediate material is increasing rapidly.

TVA also conducts research on the recovery in usable form of sulfur in stack gases. The purpose of this research is the conservation of a valuable resource of

importance to the fertilizer industry while at the same time promoting the improvement of air quality in the vicinity of power plants using high-sulfur fossil fuels.

All of our research and development findings are made available to industry on a nonexclusive license basis at a nominal fee.

The payoff in fertilizer research and development is the acceptance of new products and practices by the farmer and the adoption of new materials and processes by the fertilizer industry. TVA follows two steps in bridging the gap between research and development and wide-scale acceptance and use. The first step is developmental production. The second is fertilizer introduction through educational programs.

The significance of developmental production is in the novelty of the products and processes, not in the tonnage made. During 1975 we will manufacture varying quantities of nine fertilizers or fertilizer types, of which seven have been introduced in the first four years of this decade. The total 1975 production, some 295,000 tons, will be less than one percent of the Nation's fertilizer output.

Developmental production has two objectives. The first is to demonstrate the practicality and economics of improved fertilizer products and processes by scaling up from pilot-plant to a semicommercial scale operation. This is important in "debugging" a process and in showing industry the process in operation at a scale approaching that of a commercial unit. The second objective of developmental production is to provide enough material for introduction to the industry and to farmers.

The first element in fertilizer introduction is what we call farm test demonstrations. In this program activity, limited quantities of material are distributed to farmers for use on their farms in programs jointly planned by the farmer, his land-grant university, and TVA. Beyond the matter of introduction, the material is evaluated, specific soil and fertilizer use problems are evaluated, and efficient fertilizer practices are demonstrated. Most farm test demonstrations are conducted on plots of no more than an acre in size. The fertilizer is supplied to the farmer at reduced prices. The farmer bears all other farm costs and assumes any risks involved.

Larger amounts of fertilizer are introduced through fertilizer industry demonstrations. We work in close cooperation with the fertilizer industry to promote the acceptance of new technology and the industry conducts educational programs to encourage the use of better fertilizers and better practices by their farmer customers. We work with over 200 distributors. We supply more than fertilizer materials. We give technical assistance to help manufacturers improve their plants and their products. The end result is better fertilizer for the farmer and at better prices.

Question. The fertilizer and munitions development chemical facility request is $2.9 million compared to $4.2 million for last year. Why the decrease?

Answer. The 1974 figure for appropriation financed chemical facilities is made up of two parts, a new appropriation of $2,426,000 and a carryover of $1,836,000 not obligated in 1973 for a total of $4,262,000. This carryover balance arises from the experimental nature of our fertilizer program. The necessity for and the progress on production units or support facilities relate in a considerable way to progress in research and development. Thus we may in some years find it infeasible or impossible to obligate funds in accord with schedules earlier determined. In these cases we simply defer the work and carry the funds forward. This accounts for the higher figure in 1974, compared with 1975. The 1975 "new money" is a little more than the 1974 new appropriation. The difference between the two years is not significant, however, and the best appraisal in a developmental program of this sort is probably to consider the level across several years rather than the difference between any two years. Fertilizer research and development, the backbone of our program, is a long and sometimes uncertain process. Our schedules for plant additions are shaped by the research and development effort.

Power Supply and Use

Question. What is the status of nuclear power plants under construction?

Answer. We have three nuclear plants under construction at the present time. A three-unit plant with 3456 MW total capacity at Browns Ferry on the Wheeler Reservoir, a two-unit plant with 2441 MW total capacity at Sequoyah on the Chickamauga Reservoir, and a two-unit plant with 2540 MW total capacity at Watts Bar also on the Chickamauga Reservoir.

At Browns Ferry, unit 1 is in the test operational stage and has operated at 1097 MW just under its full load capacity rating of 1152 MW. Commercial operation is anticipated by June 1974. Unit 2 is in final stages of installation with preoperational tests about three-fourths complete with fuel load start scheduled for May 1974 and commercial operation October 1974. The unit 3 nuclear steam supply system erection is about one-third complete and turbogenerator erection about one-half complete with fuel load scheduled to start April 1975 and commercial operation September 1975. Overall plant construction is about 86 percent complete.

At the Sequoyah plant, overall construction is near two-thirds complete with turbogenerator erection about 75 and 35 percent complete for units 1 and 2, respectively. Preparations are underway to install reactor equipment within unit 1 containment while installation of auxiliary mechanical and electrical equipment and piping continues in the powerhouse complex and outlying plant features. Commercial operation of the units is scheduled for June 1976 and February 1977.

On-site construction of the Watts Bar plant was begun in December 1972. Construction plant facilities are substantially complete and excavation work is well advanced. Concreting for the powerhouse complex is the major current activity and is about one-third complete. Overall plant construction is about 8 percent complete. Commercial operation of the two units is scheduled for 1978.

Question. For the rate increases, how much is attributable to inflation? How much is attributable to environment and ecology? How much is attributable to fossil fuel?

Answer. When we consider the total rise in rates since the late 1960's over 40 percent of the total has been required to cover increasing fuel costs. Less than 10 percent has been required for additional environmental protection measures, although this factor is increasing. About 20 percent is attributable to higher money costs. The remainder has been due to general increases in other areas of cost.

Question. Do the consumers of TVA power know the effect to which environmental protection facilities affect the rates they pay for electricity?

Answer. We have taken every opportunity to inform our consumers of the rate effects such installations will ultimately cause. However, this is a very complex issue and we are sure we have not been completely successful in our efforts.

Question. TVA has prepared a background paper on clean air and sulfur dioxide. Will you please submit this information?

Answer. The following information reflects research on sulfur dioxide emissions at TVA power plants.

Clean Air and Sulfur Dioxide

TVA has long been concerned about the environmental consequences of emissions from its power plants. This concern has manifested itself in the allocation of considerable manpower and dollars to the development of and improvement in sulfur dioxide "scrubbing" technology and in the development of an alternate technique for protecting public health and welfare from adverse effects of sulfur dioxide. Both of these endeavors began before any legal compulsion by the Clean Air Act Amendments of 1970.

In fact, ever since TVA built its first coal-fired power plant in the 1940's, it has pioneered in the identification of stack emissions problems and their solutions. TVA's first work in developing "scrubbing" technology began over 20 years ago.

Scrubbing, however, is not the only way of regulating the emissions of sulfur dioxide at power plants and their effect on man and his fields and forests. Another method is the use of low-sulfur coal. This alternative is not open to TVA because significant quantities of this coal are not available in the Appalachian and Midwestern fields from which TVA plants are supplied. Western coals are sufficiently low in sulfur, but currently their disadvantages outweigh their advantages. Not only would the transportation of this coal over long distances be very expensive, but experimental use at TVA's Johnsonville Steam Plant showed that western coal would reduce the plant's generating capability by as much as 15 to 25 percent.

TVA's Proposal—SDEL

With the technology of chemical scrubbing still in the developmental stage, and low-sulfur coal unavailable or unsuitable, TVA devised a third alternative which can be put into effect much more quickly and at much less cost than scrubbers. TVA calls it a Sulfur Dioxide Emission Limitation program (SDEL).

Over the years, through thousands of hours in the field and in the laboratory, including hundreds of helicopter flights, balloon tests and other means, TVA

scientists and engineers have assembled scientific data on sulfur dioxide and its behavior under various weather conditions and their combined effects on the environment. They know, for example, that sulfur dioxide emissions affect plants and human beings only under certain identifiable weather conditions which in some areas occur only rarely and last only a few hours. Around TVA plants, they occur generally less than 5 percent of the time.

The SDEL method employs a combination of five scientific and engineering approaches simultaneously:

1. Very tall chimneys, which aid in the dispersion of sulfur dioxide gases in the atmosphere high above ground level.
2. Weather observations and measurements made daily at the plant, including the use of light aircraft and pilot balloons, which enable plant personnel to determine when atmospheric conditions are likely to produce unacceptable concentrations of sulfur dioxide near the ground.
3. Computers, which quickly process data on weather conditions and plant operations to determine when there may be unacceptable ground-level concentrations.
4. Reduction of sulfur dioxide emissions by reducing plant generation or other means while these atmospheric conditions exist, thus avoiding any violation of ambient air standards.
5. Sensitive monitors strategically located around each plant which report automatically the ambient concentrations and thus check on the effectiveness of the control operations.

TVA's SDEL method has been tested for almost four years at the Paradise Steam Plant, one of the largest in the world, and in this period sulfur dioxide concentrations have not once exceeded ambient standards. TVA has thus demonstrated that state and Federal standards for protecting public health and public welfare can be met by using SDEL programs. TVA is now in the process of developing such programs for all of its plants where the public health or welfare standards can, on occasion, be exceeded and will have them in operation by mid-1975.

Not only is TVA's plan the only way in which health and welfare standards can be achieved in time to meet the Clean Air Act deadlines but, as an air pollution control technique, it is also the most reliable and least costly and has the fewest adverse effects on energy conservation and other aspects of the environment.

In the long run, TVA's nuclear plant construction program will result in long-term reductions in total sulfur dioxide emissions, since progressively less coal will need to be burned as the coal-burning plants complete their useful lives and are retired.

Scrubbers: Their Environmental Backlash

As an agency concerned with resource management and economic development in the Tennessee Valley region, TVA must look at the total impact of chemical scrubbers if they had to be installed in all its steam power plants.

Would they affect the energy supply of the region and the Nation?

Would they create new environmental problems difficult to solve?

Would their cost impose an excessive burden on the users of electricity, affecting living standards and the expansion of employment?

Here are some of the conclusions TVA has reached:

Scrubbers would consume 6 percent of the power produced in the plants in which they are installed. On the TVA system this would require the replacement of about one million kilowatts of capacity and the burning of about 2.4 million more tons of coal a year, the equivalent of about ten million barrels of oil.

They would require the mining of 25 percent more minerals—an extra ten million tons of limestone and coal a year for the TVA power system—with all the environmental, transportation, and energy consumption problems which that entails.

They would create literally mountainous problems of polluting sludge, difficult to handle. Disposal requires four times as much land as fly ash alone. TVA itself could require as much as 20,000 acres in the next twenty years. Moreover, the sludge does not form a stable mass and is therefore not suitable for other uses after disposal. It is watery, and the leaching holds the possibility of water pollution.

They would require the fabrication and construction of more than a billion dollars worth of plant and equipment with all the problems of manufacture and scarce resource use, with no present assurance of successful, long-term operation.

In short, scrubbers on all of TVA's plants would cost power consumers more than ten times as much as the SDEL programs, and would also produce substantial

adverse environmental impacts themselves. TVA's SDEL programs provide the best balance between the environmental objectives of the Valley and the Nation, while still protecting public health and welfare from air pollution.

The Legal Question

The Clean Air Act does not require the use of sulfur dioxide scrubbers at all existing plants. Congress required only that the public health and welfare be protected by whatever means were available. It recognized the need for solutions adapted to the specific and differing problems of different areas, and left it up to each state to select the specific methods. Scrubbers, when perfected, will be one of those methods and possibly the only one for some air pollution sources. On the other hand, TVA's SDEL programs will work at all TVA plants and possibly in some other areas.

TVA has taken steps to request the states in which its power plants are located (Alabama, Tennessee, and Kentucky) to recognize these programs officially. The states have not acted on this request, thus legally the matter is still an open one in these states.

TVA scientists and engineers have made intensive studies of scrubber facilities throughout the world, both with and independent of EPA staff members. TVA has conducted cooperative work in projects funded by EPA for building and operating several pilot scrubber facilities on its power system.To speed development of the technology in the national interest, it is installing a $42 million full-scale scrubber on a 550-mW power unit at the Widows Creek Steam Plant in Alabama.

Based on this experience with and knowledge of existing scrubber technology, and considering the associated potential adverse environmental impacts which still have not been resolved, as well as the extremely large dollar expenditure required, TVA has concluded that scrubber installations cannot yet be justified for wholesale installation on existing TVA power plants.

Scrubber Technology: The Japanese

TVA believes that the scrubbers in use by the Japanese and by Louisville Gas and Electric Company, often cited as examples of working technology, do not constitute proof that a satisfactory technology is sufficiently developed to warrant the massive expenditure of consumers' money that would be required to install them on the TVA power system.

The Japanese operation appears to have achieved a degree of efficiency and reliability. But it appears that this success to date has been achieved at the cost of increased water pollution, a trade-off which we find unacceptable and unnecessary.

Scrubber Technology: The LG&E Unit

TVA personnel have followed the Louisville Gas and Electric scrubber project through contacts with the utility and with the equipment supplier from the time the plans were announced until the unit was shut down in mid-December. This unit has a capacity of only 70mW, about one-eighth the size of the Widows Creek unit on which TVA is installing a scrubber. The LG & E scrubbers have not been operated for sustained periods of sufficient duration to determine long-term reliability.

Moreover, the Louisville scrubbers have certain unique advantages that are not generally available for use by other utilities. For example:

It uses carbide sludge instead of lime as a scrubbing agent because a carbide plant with a sludge byproduct is located nearby.

Because LG&E sells natural gas, the unit utilizes this increasingly scarce commodity, which is unavailable to TVA, in its reheat process.

And the generating unit in which the system is being tested operates only intermittently to supply peak loads, permitting frequent maintenance; this would be impossible for a unit operating continuously for many days and weeks carrying the base load of a power system.

In other words the LG&E experiment, even if successful, cannot be regarded as universally applicable to other utilities.

The Importance of Reliability

Reliability, it should be emphasized, is a key question in this complicated issue, for if the scrubber fails, the generating unit must either go out of operation or the scrubber must be bypassed. In this period of brownouts and voltage reductions, any added peril to generating unit availability is a critical matter. A scrub-

ber which must be bypassed and repaired much of the time offers little real environmental protection in spite of its huge cost.

It is noteworthy that a large Midwestern power company (Union Electric) in the late 1960's installed a scrubber system which looked fine on paper but has now been abandoned as useless.

Another large Midwestern company (Kansas City Power and Light) later installed a device of similar design and the company is still trying to work the bugs out of it.

Still another utility (Commonwealth Edison) installed a system of different design in 1972. In the two years since startup, the scrubbers have operated less than 10 percent of the time because of a variety of process and mechanical problems. Similar experience has been encountered at other full-scale and pilot-plant test facilities.

These less-than successful scrubber projects reinforce TVA's belief that its customers should not be required to buy a billion-dollar "pig in a poke."

Conclusion

TVA is not alone among Federal agencies in its view of scrubber technology. The Council on Environmental Quality and the Federal Power Commission both have recently stated that sulfur dioxide scrubbers have not yet been sufficiently demonstrated to be applicable to the electric power industry.

In addition to its technological concerns, TVA has a responsibility under the TVA Act to protect consumers of electricity from unreasonable costs. A scrubber system on all TVA power generating units would cost more than a billion dollars to install, and add about $225 million to the annual costs of the power system. Yet TVA cannot find any significant environmental improvement that will not be better served by TVA's SDEL program at a fraction of the cost.

TVA has offered the Tennessee Valley and the Nation a constructive alternative in the form of a tested method of assuring that public health and welfare are protected.

With this system, clean air can be achieved far more quickly: SDEL can be in operation on the TVA system in 1975.

Clean air can be achieved more economically: It will require a total investment of only about $100 million and result in an annual operating cost of $17 million.

Finally, SDEL will protect the environment more effectively: It is flexible in operation, can be adjusted to meet many varying circumstances, and does not present the tremendous energy use, waste disposal, and other potential environmental problems or reliability problems encountered with scrubber operation.

Senator STENNIS. We will now take a short recess before we proceed with the Appalachian Regional Commission.

[A short recess was taken.]

APPALACHIAN REGIONAL COMMISSION

STATEMENT OF DONALD W. WHITEHEAD, FEDERAL COCHAIRMAN

ACCOMPANIED BY:
ORVILLE H. LERCH, ALTERNATE FEDERAL COCHAIRMAN
HARRY TETER, JR., EXECTUTIVE DIRECTOR, ARC
FRANCIS E. MORAVITZ, DEPUTY EXECUTIVE DIRECTOR
BRINLEY J. LEWIS, BUDGET OFFICER

INTRODUCTION OF ASSOCIATES

Senator STENNIS. The hearing will come to order.

First of all, I want to have for the record the names of all you gentlemen. Mr. Donald W. Whitehead, Federal Cochairman; Mr. Orville H. Lerch, Alternate Federal Cochairman; Harry Teter, Jr., Executive Director; Francis E. Moravitz, Deputy Executive Director; and Brinley J. Lewis, Budget Officer.

Which one is Mr. Lewis?

Mr. LEWIS. Yes, sir.

Senator STENNIS. There is the one that is the moneybags.

Well, we are glad to have you gentlemen.

And I know the history of this Commission, and we did not get ready for it fast enough down there in my State, and we got left out. And we got in later, and I offered an amendment here, and Senator Cooper of Kentucky was one that helped me on it. At the same time we put in this little strip up here in New York, you know, that southern strip up there in New York.

All right.

Now, you are Mr. Whitehead?

Mr. WHITEHEAD. Yes, sir.

Senator STENNIS. We will call on you gentlemen now to present the request for the fiscal 1975 budget and proposed program. Again, we are glad to have you with us, Mr. Whitehead.

PREPARED STATEMENT AND JUSTIFICATION

You have a prepared statement?

Mr. WHITEHEAD. Yes, sir, but in the interest of saving time, I would like to quote excerpts from that statement.

Senator STENNIS. All right.

Let us put the complete statement in the record here so no part will be left out, and then you can emphasize what you wish. I think that really is the best and most effective way to proceed. The fiscal year 1975 budget justification will also be included in the record at this point.

Mr. WHITEHEAD. Thank you, Mr. Chairman.

[The statement follows:]

29-353 O - 74 - pt. 5 - 15

I appreciate the opportunity to appear before this subcommittee on behalf of the 1975 appropriation request for the Appalachian Regional Development Programs and subregional budget approach. The budget request is for a total of $295,240,000.

The Salaries and Expenses appropriation request is for $1,740,000. This provides $290,000 for the entire cost of the Federal Cochairman's staff an increase of $13,000. In addition, it provides $1,450,000, an increase of $235,000, as the 50 percent contribution toward the administrative cost of the Commission.

The major portion of the budget request is $293.5 million requested to carry out the Appalachian programs. This is an increase of $23.5 million over the 1974 appropriation. The request includes $160 million for the highway program and an amount of $133.5 million requested for the other-than-highway programs. I would like to summarize the major items concerning our budget request.

HIGHWAY PROGRAM

The largest single program in this appropriation is the highway program for which $160 million is requested to fund both the Appalachian Corridor System and the Access Road program. This budget request will bring appropriations for the highway program to a cumulative total of $1,515 million, which is within the authorization of $1,540 million through 1975.

The entire highway program during 1975 will obligate $160 million, including $145 million for development highways, $12.9 million for access roads, and $2.1 million for special planning efforts and administrative costs.

Over the past 12 months the Commission has completed a number of significant actions in the highway programs. About a year ago new corridors were designated in Alabama, Mississippi and South Carolina, thus including all thirteen States

in the corridor system. More recently the Commission acted to establish revised state-by-state construction priorities and to permit Federal funding on four-lane construction at 70 percent, the same level now established by law for the non-interstate Federal-aid highway program. While the Appalachian Act has always provided for Federal funding up to 70 percent, ARC early in the program voluntarily restricted the Federal share on four-lane construction to 50 percent. At the request of the States, and to keep the Appalachian highway program funding equal with other Federal-aid highway funds, we are now funding at the 70 percent permitted by law. This Commission action was coupled with a revision and updating of our priority system so that higher priority highway segments from both a State and regional viewpoint would be advanced. In addition, the States have made a commitment to maintain within their portion of the Region a level of highway expenditures at least proportionately equal to their past 5 year average.

The Commission also acted to allocate among the States the remainder of the funds authorized through 1978. By this action the States can better plan and schedule the work to be performed on priority highway projects over the next few years.

The Appalachian Corridor System consists of 3,277 miles of highways, with 435 miles adequate and of which 2,692 miles would be authorized for construction. As of December 31, 1973, about 2,072 miles were in some stage of design, right-of-way acquisition or construction work, exclusive of preliminary location studies. Construction had been completed on 882 miles with an additional 407 miles under construction. By the close of 1975 we estimate that 2,600 miles of the 2,700 corridor miles authorized will be committed, of which 1,530 miles will have construction either completed or underway. The balance of the committed mileage will have right-of-way acquisition or design work initiated.

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In addition to work on the Appalachian Corridor System, short access roads can be assisted. These roads provide essential access to industrial sites or parks, educational facilities, important recreational areas or other sites having economic relevance, and are normally two-lane facilities of relatively short length. We estimate that about 750 miles of access road construction will be committed by the close of FY 1975 within the 1,600 miles authorized and the $99.2 million allocated to this program. As of December 31, 1973, 672 miles of access roads had been approved of which 413 miles were completed and 83 were under construction. By the close of FY 1975 we expect that 560 miles will be completed with an additional 170 miles under construction.

AREA DEVELOPMENT PROGRAM

The Area Development Program is the second largest Commission program and for which we are requesting $125 million in 1975. This is an increase of $19 million over the amounts appropriated in 1974 for the four programs proposed to be included under the heading Area Development Programs.

In this program in FY 1975 the Commission proposes to make a single allocation to each State. This allocation will include an amount specifically provided for each of the subregions in which the State falls. Three States, Tennessee, Virginia and West Virginia are each in two subregions. Ten States are only in a single subregion. Within these allocations each State is expected to plan for and to propose those projects deemed essential to regional and State growth and development. The main difference from our current procedure is that the State will not be bound to predetermined allocations by individual program, such as health, supplemental grants. One state may feel that it needs to place a larger portion of its funds into vocational education projects, another may feel that supplemental grants

should receive increased emphasis. The States in the subregion will jointly agree on strategies for development of the subregion.

Persuant to these plans the States would, as they do now, submit individual project applications for Federal financial assistance under the ARC program. These projects, as before, could be of any of the four types included under the program, that is health and child development, mine area restoration, vocational education, and supplemental grants, and would, of course, have to meet the requirements specified under the particular Section of the Appalachian Act covering those programs as well as Commission regulations and guide lines promulgated under the Act. The Federal partnership and interest is maintained by this and the continuing requirement that all project actions require Commission approval including the assent of the Federal Cochairman.

I am describing elsewhere the variations among the subregions as to their general strategy for the investment of funds. In carrying out these strategies we estimate the following needs for funds as they would have appeared in the categories previously used and as compared with 1974 appropriations.

	(thousands of dollars) 1974 Appropriation	1975 Estimate
Section 202, Health Demonstration	43,000	45,000
Section 205, Mine Area Restoration	4,000	5,500
Section 211, Vocational Education	25,000	28,000
Section 214, Supplemental Grants	34,000	46,500
Total, Area Development Programs	106,000	125,000

These amounts represent the current estimates of the States as to their program needs and probable utilization of allocations. During 1975 we would expect some changes from these estimates could occur as the States find some individual projects can not be funded because of local financing problems, or other delays in being able to submit applications. In such cases, other

high priority projects would be substituted by the State which might change some what, the amounts for each type of program. The proposed single allocation will permit us to readily respond to such changes in local needs and priorities as they relate to overall State development plans.

Funds for the Area Development Program will be utilized to fund individually approved projects under the four programs as follows:

HEALTH DEMONSTRATIONS, Section 202

This program for which $45 million is estimated, provides grants for planning, construction, equipment, and operation of demonstration health projects, primary health care systems, and child development programs in selected areas throughout the Region. Grants are made for up to 80 percent of construction and equipment costs and, during the first two years of services projects, may provide up to 100 percent of operating deficits of such projects. After those two years the Federal share may not exceed 75 percent of operating deficits for up to an additional three years. Projects funded include such health facilities as hospitals, diagnostic and treatment centers and outpatient services, home health services, and other projects designed to make medical services available to the residents of the areas. The health portion of this program is estimated at $23.7 million. This includes some $17.7 million for continuing approximately 170 currently operating service projects, and $3 million for health construction and $3 million for new health service projects.

The child development component includes infant and maternal care and nutritional services, day-care and infant and pre-school education, and parent education. Demonstration programs will be conducted to provide, in conjunction with other State and Federal programs, a coordinated program plan for child development. We are estimating $20 million for child develop-

ment of which some $17 million is estimated as needed to continue funding some 200 existing operating child development projects in FY 1975.

MINE AREA RESTORATION, Section 205

Under the mine area program, Federal financial assistance is authorized for up to 75 percent of the costs of restoring abandoned mine areas threatened by subsidence or fire, or damaged by surface mining or acid mine drainage and which are required for the protection of built-up areas or which can provide much needed level land sites. Assistance is limited to publicly owned lands. An amount of $5.5 million is estimated for this program in FY 1975. This is an increase of $1.5 million over the $4 million appropriated for 1974 and is estimated to fund primarily surface restoration and acid mine drainage projects in some five States.

VOCATIONAL EDUCATION, Section 211

We estimate that $28 million will be required in 1975 for the Vocational Education program to provide grants to States and local districts for assistance in the construction, operation and equipment of vocational education school facilities. Vocational education facilities are key elements in Appalachia for the training and upgrading of potential and existing labor force entrants in skills required in commercial and other vocations. The amount estimated for 1975 is $3 million over the $25 million appropriated in 1974. However, it represents a slight decrease in funding available for vocational education facilities since all vocational education funds are being shown under this head. Currently some $5 to $6 million of Section 214 Supplemental Grant funds are utilized to supplement the Vocational funds. During 1975 some portion of these vocational education funds may require the utilization of the Section 214 supplemental authority, although no distinction as to that funding is made here.

The estimated $28 million for FY 1975 includes $5 million for operating and demonstrating projects, the same as 1974, and $23 million for construction and equipment projects.

SUPPLEMENTAL GRANTS, Section 214

An amount of $46.5 million is estimated for the supplemental grant program primarily to assist Appalachian communities which have been unable to participate fully in regular construction grant-in-aid programs because of lack of local matching funds. Under this program the Federal share of the project may be increased to a maximum of 80 percent. The program in the past has been helpful in the attraction of State funds as well as a greater share of Federal grant funds into the Appalachian area. Although the Federal contribution may be as high as 80 percent, past experience has been that the total Federal contribution has been about 52 percent, and that Appalachian Section 214 funds have comprised 17.7 percent of total program costs. In 1971 the Commission was authorized to provide special basic grants when there is insufficient basic money under regular Federal grant-in-aid programs to permit funding of projects. Increasing use is expected to be made of this feature which will probably result in an increase in the overalll proportion of ARC funds to total cost.

The primary cause for the estimated increase of $12.5 million for this program over the 1974 appropriation results from the need for about $31.8 million for public facilities projects in the areas of water, sewer, sewage treatment and solid waste disposal. Through FY 1973 1,752 projects had been apporoved for about $295 million in ARC funds.

That concludes the description of the four programs included under the Area Development Program Activity.

SECTION 302 PROGRAM

The amount of $8.5 million is requested for this activity which finances the Federal contribution toward the administrative expenses of Local Development Districts and projects for research, demonstrations, and technical assistance programs aimed at satisfying regionwide, State, and district needs. During 1975 the Commission will provide assistance to all 69 local development districts at a cost of $4 million, and will provide for a research and technical assistance program of $2.5 million. The request includes $2 million for demonstrations in the program areas of education and special demonstrations particularly related to multi-functional and multi-jurisdictional demonstrations developed and carried out by local development districts.

No request for funds is made for the Housing Fund for 1975. Unobligated balances on hand should be sufficient to carry out this program in 1975.

APPALACHIAN REGIONAL DEVELOPMENT PROGRAMS
APPALACHIAN REGIONAL COMMISSION

SUMMARY OF APPROPRIATIONS BY ACTIVITY

(thousands of dollars)

	1974 Enacted	1975 Estimate	Increase/ Decrease
1. Appalachian Regional Development Programs:			
A. Area Development			
Health Demonstration, 202	43,000		
Mine Area Restoration, 205	4,000	125,000	+19,000
Vocational Education, 211	25,000		
Supplemental Grants, 214	34,000	———	———
Subtotal	106,000	125,000	+19,000
B. Research, Demonstration and LDD, 302	7,500	8,500	+ 1,000
C. Housing Fund, 207	1,500	0	- 1,500
Total, Other Than Highway	115,000	133,500	+18,500
D. Highway Program, 201	155,000	160,000	+ 5,000
TOTAL APPROPRIATION	270,000	293,500	+23,500
2. Salaries and Expenses:			
Federal Cochairman and Staff	277	290	+ 13
Federal Share of Commission Expenses	1,215	1,450	+ 235
TOTAL APPROPRIATION	1,492	1,740	+ 248
GRAND TOTAL	271,492	295,240	+23,748

GENERAL STATEMENT

The Appalachian Regional Development Program was established in 1965 to assist the Appalachian Region in meeting its special problems, to promote its economic development, and to establish a framework for joint Federal and State efforts in several directions, including the provision of basic facilities essential to the Region's growth. It was the expectation of the Congress that the Appalachian Region would generate a diversified industry and be able to support itself through the workings of a strengthened free enterprise economy. As reported later in this budget, the Region has been improved and strengthened partly through the efforts of this program.

The Appalachian Regional Development program has undergone some changes in emphasis over its history. A number of programs have been discontinued while others have grown in relative importance. These changes have reflected changes in other Federal programs as emphasis has shifted to reflect changing national patterns of governmental concern and as relative priorities in the Appalachian Region have changed. Similarly, there have been a number of changes in the manner by which funds for the Commission's programs have been authorized and appropriated. These have moved from individual program authorizations and appropriations toward multi-program authorizations and a single appropriation. This budget represents a further innovation in the Commission's continuing attempts to provide the funds and the Federal-State partnership mechanism to assist in the meeting of many of the Region's needs. It evidences this administration's commitment to provide Federal assistance in accordance with priorities of need established at the State and local level.

The budget proposes that funds for four Appalachian non-highway grant programs previously carried as individual items be provided as a single program for block allocation to the Appalachian States for implementing programs of area development. Emphasis will be placed on conducting area development activities within the three subregions and the overlaying Highland area of Appalachia by an allocation system permitting each Appalachian State greater flexibility in the types of projects undertaken.

The projects included under this Area Development program activity will continue to be of the same types as were previously conducted under the four separate activity headings, namely; health and child development projects, Section 202; mine area restoration projects, Section 205; vocational education facility projects, Section 211; and projects conducted under the supplements to Federal grant-in-aid programs, Section 214. The allocation system will permit each State to plan the utilization of its allocations by selecting the amount and type of projects, or project mix, as will best meet its State Plan for development in 1975. As at present, individual projects will continue to require Commission approval and will be administered and monitored by the appropriate Federal agencies. The highway program, Section 201; the housing program, Section 207; and the program for local development district support, research, and demonstration, Section 302 will continue to be administered as at present with no change in allocation or approval procedures.

This budget request is for a total of $295,240,000 to carry out the Commission's program for the Region in FY 1975. The major portion of the request is for the appropriation "Appalachian Regional Development Programs" which finances the programs and assistance to the Appalachian Region. The estimate for these programs for FY 1975 is $293.5 million of which $160 million is for the highway program. The amount of $133.5 million requested for programs other than highways provide $8.5 million for the support of research, demonstrations, and local development districts (an increase of $1 million over FY 1974) and $125 million for the area development programs. The budget for area development programs is an increase of $19 million over the amounts provided in 1974 for the four programs under this head. The 1975 budget request for the entire Appalachian Regional Development Programs appropriation will provide a total increase of $23.5 million over the comparable 1974 appropriation, including a $5 million increase in the highway program and a decrease of $1.5 million in the Housing Fund, where no additional appropriations are requested for 1975.

The request for "Salaries and Expenses" which provides for the 50 percent Federal contribution for Commission staff and the full cost of the Federal Cochairman's staff is for $1,740,000. This includes $1,450,000 for the Federal contribution to the Commission's administrative expenses in 1975. The Act requires that the member States

and the Federal Government both contribute 50 percent of the cost. This Federal contribution will be matched by an equal amount from the 13 member states and will provide for a Commission Administrative budget of $2,900,000 in 1975. The budget also includes an amount of $290,000 for the expenses of the Federal Cochairman's staff in 1975.

Appalachian Regional Development Programs

The budget request of $293.5 million for this appropriation consists of three items. The largest amount, $160 million, is for the Appalachian Development Highway System authorized under Section 201 of the Act. This represents an increase of $5 million over the appropriation for 1974 of $155 million. The budget request of $160 million will provide for approximately $145 million of high priority development highway requests and nearly $13 million of needed access road projects during FY 1975, and will continue the program for special planning studies for economic utilization in selected areas within the several States.

An amount of $125 million is requested for the second item, Area Development programs. During 1974 a total of $106 million was appropriated for four programs now proposed to be consolidated under this heading; health and child development, Section 202; mine area restoration, Section 205; vocational education facilities, Section 211; and supplements to Federal grant-in-aid programs, Section 214. The request will provide an increase of $19 million over the 1974 appropriation. The program proposes a block allocation of funds to States for carrying out projects of the four types described above in a proportion determined by the States to provide the best project mix so as to best carry out their development plans during 1975, in accordance with the investment strategies devised by the States and as approved by the Commission to meet the problems common to the geographic subregions in which they are located.

The third item is the programs of support to research, demonstrations and local development districts for which the amount of $8.5 million is requested. This is an increase of $1 million over the amount appropriated for 1975. The increase is primarily for the increased level of support for the 69 local development districts in the Region.

No additional appropriations are requested for the final item, the Appalachian Housing Fund. It is estimated that unobligated balances on hand after providing for 1974 operations under this fund will be sufficient to fund a desirable level of program in 1975 without further appropriations. This represents a decrease of $1.5 million from the 1974 appropriations.

The following table summarizes the comparable appropriation and obligation requirements for fiscal years 1974 and 1975.

(thousands of dollars)

Program by Section of the Act	FY 1974		FY 1975		Increase/Decrease	
	Obliga.	Approp.	Obliga.	Approp.	Obliga.	Approp.
201 - Highways	186,036	155,000	160,000	160,000	-26,036	+ 5,000
Area Development Programs:						
202 - Health Demonstration	50,872	43,000	---	---		
205 - Mine Area Restoration	14,875	4,000	---	---		
211 - Vocational Education	25,011	25,000	---	---		
214 - Supplemental Grants	38,026	34,000	---	---		
Sub Total	128,784	106,000	125,000	125,000	- 3,784	+19,000
302 - Research, Demonstration and LDD	10,510	7,500	8,500	8,500	- 2,010	+ 1,000
207 - Housing Fund	3,692	1,500	2,127	---	- 1,565	- 1,500
Totals	329,439	270,000	295,627	293,500	-33,812	+23,500
Less Use of Unobligated Bal.	-61,366	---	- 2,127	---	+59,239	---
Balances Carries Forward to 1975 (Section 207)	1,927	---	---	---	- 1,927	---
Appropriation	270,000	270,000	293,500	293,500	+23,500	+23,500

Summary of Budget Request for 1975

Section 201 - Highway Program (Page 11)

The appropriation request for FY 1975 includes $160 million for the Appalachian Development Highway Program. This is an increase of $5 million over the 1974 appropriation and when added to previous appropriations will provide a cumulative amount for the program of $1,515 million and is within the authorized amount of $1,540 million through 1975.

The requested appropriation language includes phraseology similar to past years establishing the amount of the cumulative appropriations as the limit on obligations. This language limits the use of budget authority to exclude the contract authority for FY 1976 which under the terms of the Appalachian Act would otherwise be available for obligation in the prior fiscal year, namely FY 1975.

The budget request will provide approximately $145 million to high priority development highway projects, $12,900 for access roads, and $2,100 for the special highway planning program and administrative costs divided in nearly equal amounts. By the close of FY 1975 it is estimated that a total of 1,530 of the 2,700 miles of authorized corridors and 730 miles of access roads will have been contracted for construction and virtually all of the engineering design underway on the development corridors.

The Appalachian highway program is designed in conjunction with the Interstate system and other Federal-aid highways in the Region to open up areas with development potential where such development has been inhibited by lack of adequate access. The intent of the program is to improve these roads at a faster rate than could otherwise be accomplished through the use of funds available to the States through the use of the non-Interstate portion of the Highway Trust Fund. The development highways when completed are integrated into the Federal-aid highway systems.

Area Development Program (Page 24)

Under this activity $125 million is requested for block allocation to the 13 Appalachian States for implementing a program of area development. The funds will be utilized by each State to provide during the fiscal year financial support for constructing and supporting those facilities and operations deemed most essential to the growth and economic development of the Region and the State.

Emphasis will be placed on coordinating area development activities within the Region by an allocation system permitting greater State flexibility in the types of projects undertaken with increasing attention to coordinated State strategies aimed at common problems within the four geographic subregion areas of Appalachia.

The projects which can be effectuated by States may include the appropriate project mix of four types of programs depending on the individual State Plans adopted within the context of the subregional program stratigies. The four types of projects will be those within ARC legislative authority for which funds were separately provided in FY 1974 as follows:

	(thousands of dollars) 1974 Enacted
Section 202 - Health and Child Development	43,000
Section 205 - Mine Area Restoration	4,000
Section 211 - Vocational Education Facilities	25,000
Section 214 - Supplemental Grant Programs	34,000
Total for 1974	106,000
Increase requested	19,000
Total for 1975	125,000

As before individual projects as authorized will be approved under these four programs upon application by the State member and approval of the Commission.

Section 202 - Health Demonstrations (Page 34)

Grants are provided for planning, construction, equipment and operation of demonstration health projects in selected multi-county areas throughout the Region. These comprehensive health development projects include hospitals, regional health diagnostic and treatment centers, and other health facilities and services. The demonstration program is envisioned to provide for a flexible non-categorical approach to the development of health demonstration projects through comprehensive community planning on a multi-county, medical trade area basis and implementation of that planning through service programs. Support of primary health care systems may also be provided for other areas.

The program will continue support for a child development component including infant and maternal care services, nutritional services, day care and infant preschool education, nutrition, and parent education. Demonstration programs will be conducted to provide in conjunction with other State and Federal programs a coordinated program plan for child development.

Through FY 1974 grant support is estimated to have been provided 585 health operations and services projects, 127 health facilities construction projects and 370 child development operations projects. Under the terms of the Act, construction grants may be made for up to 80 percent of project costs. Support for operating and service type projects may be up to 100 percent for two years and 75 percent for three additional years.

Section 205 - Mine Area Restoration (Page 44)

Federal financial assistance is authorized for up to 75 percent of the cost of restoring abandoned mine areas damaged by subsidence, fire, or surface mining and which have potential for economic growth. Through FY 1974 it is estimated that financial assistance will have been given to 34 mine fire projects, 15 mine subsidence projects and 21 projects for surface restoration, oil and gas well sealing and acid mine drainage projects.

Section 211 - Vocational Education Facilities (Page 49)

The program provides grants to States and local districts for assistance in the construction, equipment, and operation of vocational education school facilities at both secondary school and post-secondary levels. Vocational education facilities are key elements in Appalachia for the training and upgrading of potential and existing labor force entrants in skills required in commercial and other vocations. Vocational education is particularly important to the Region because a smaller proportion of students continue their education beyond high school than is the average in the United States.

Through FY 1974 the program is estimated to have approved 495 construction and equipment grants and 88 grants for operating and demonstration projects. When those projects are completed it is estimated that we will have provided the region with facilities for approximately 190,000 secondary and 45,000 post-secondary students.

The funds provided here are in addition to funds that have been regularly available to States and localities through the regular Vocational education program administration.

Section 214 - Supplemental Grants (Page 55)

The supplemental grant program was initiated to assist the Appalachian communities which have been unable to participate in regular construction grant-in-aid programs because of lack of local matching funds. Under this program the Federal share may be increased to a maximum of 80 percent. The program in the past has been helpful in the attraction of State funds as well as a fair share of Federal grant funds into the Appalachian area. Although the Federal contribution may be 80 percent, recent program history has been that total Federal contribution has been slightly over 50 percent, and that Appalachian Section 214 funds have comprised about 18 percent of total program costs.

Under the 1971 amendments this program may also provide special basic grants when there is insufficient money under regular Federal grant-in-aid programs to permit funding of necessary projects. Increased use has been made of this authority in 1973.

Since inception this program has assisted 1,752 projects for a total of $295 million. During 1974 grant assistance for 160 projects is estimated.

Section 302 - Local Development Districts, Research, and Demonstration (Page 61)

The amount of $8.5 million is requested for this activity which finances the Federal contribution toward the administrative expenses of local development districts and projects for research, demonstrations, and technical assistance programs aimed at satisfying regionwide, State, and district needs. During 1975 the Local Development District program will provide assistance to approximately 69 such districts at a cost of $4 million. The program will also provide for a research and technical assistance program, including State management assistance for $2.5 million. The request includes $2 million for demonstrations in the areas of education and special demonstrations particularly related to innovative multi-functional and multi-jurisdictional efforts of local development districts.

Section 207 - Appalachian Housing Fund (Page 69)

This program provides for several ways of assisting the Region in obtaining a larger share of housing for low- or moderate-income families. These include technical assistance grants for the organization of State housing corporations and local nonprofit groups to encourage such housing construction.

Under the 1971 Amendments to the Act, grants may be made for site development costs and offsite improvements such as sewer and water line extensions where necessary for economic feasibility of the housing project. Grants for such purposes may not exceed 10 percent of the project cost. It is estimated that the program in 1975 will provide for approximately 6 technical assistance grants, 7 site development grants to assist approximately 7 projects, as well as 22 planning loans for approximately 2,500 housing units. Through 1973 there were approved 107 planning loans for some 12,000 housing units, of which some 7,600 units are currently anticipated to go to construction.

Salaries and Expenses (Page 75)

The request for $1,740,000 for this appropriation includes an amount of $290,000 for the Federal Cochairman and $1,450,000 for the Federal contribution to the administrative expenses of the Commission.

The amount of $1,450,000 consists of the 50 percent Federal contribution to the administrative expenses of the Commission and is matched by an equivalent contribution from the States. These amounts finance 88 staff positions of the Commission, additional positions for the administration of the LDD, research and health demonstration projects continue to be funded from those programs. Staff remains at 110 for 1974 and 1975, a reduction of 5 from the 1973 level.

GOALS AND OBJECTIVES

The Appalachian Regional Commission has as its overall goal the acceleration of economic and human resource development in a vast geographic region made up of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee and Virginia. Efforts to achieve this goal have focused on the development of Appalachia's human and natural resources, the provision of improved transportation systems and other basic infrastructure and, where necessary, the organization of new institutional structures to plan and carry out economic and social development programs.

Unique in its stature as an independent agency and its Federal-State-local structure, the Commission operates on the premise that the people are in the best position to identify their problems and that, given the proper financial and technical assistance, they are capable of solving those problems through a carefully planned and phased public investment and institutional development program.

The Appalachian program is, in fact, an experiment in which the people and their governments at every level have launched a cooperative effort to build a better way of life for the more than 18 million persons who reside in Appalachia.

The Appalachian Experiment

In his 1972 Message on Revenue Sharing the President stated in part:

> Almost all of the success stories that can be found in rural economic development have occurred because local officials and private leaders have entered into a public-spirited partnership and have taken the initiative. We must do all we can to encourage such partnerships.

In the same address, the President also commented:

> I believe that a major missing ingredient has been effective control of development programs at lower levels of government. Because we have relied so exclusively on Federal funds...too many decisions have been made in Washington and too few have been made in rural America...I believe we should return power to officials who are selected at the State and local levels.

The concepts embodied in the President's statement are similar to those upon which the Appalachian program operates. The Appalachian Regional Commission and its program have proved a innovative experience by devising new, more workable means for utilizing public funds in a way that is responsive to the needs and wishes to the people. The current budget proposes an extension of these policies by providing the States, and through them the communities and local development districts, with an increased ability to plan their overall development program with a minimum of artificial restraints.

Appalachian Commission Structure

The Commission is set up on the following basis: a Federal Cochairman (appointed by the President with Senate confirmation), and the Governors of the 13 States. Serving as counterpart to the Federal Cochairman is the States' Cochairman (the Governors each serve a six-month term in this position). The Act also provides for an alternate Federal Cochairman appointed by the President.

Each of the Governors names an official State Representative, along with an alternate, to assist him with duties relating to the Appalachian program and to represent him at Commission meetings. The Governors collectively have created the position of States' Regional Representative to give him a day-to-day voice in program administration.

Both the Federal Cochairman and the States' Regional Representative maintain small staffs to assist them with their duties. The Federal staff is supported entirely by Federal funds; the States' staff by State funds.

A program or project proposal can be brought before the Commission only by the State member involved. All formal actions require the affirmative vote of the Federal Cochairman and a majority of the State members. To facilitate continuing policy administration, however, the Commission has given authority, including project approvals, to an Executive Committee composed of the Federal Cochairman, the States' Regional Representative as voting members and the Executive Director of the Commission supportive staff as a nonvoting member.

The primary responsibilities of the Commission acting through its supportive staff and working with the States are:

. To develop, on a continuing basis, comprehensive and coordinated plans and programs for the development of the Region;

. To implement these plans through financial assistance, provided under the Act, for the appropriate programs and projects;

. To provide technical assistance to the States and local development districts in implementing the Appalachian program; and

. To serve as a focal point for coordination to Federal and State efforts in Appalachia.

. To sponsor and initiate research on problems facing the Region.

The Investment Strategy

The Appalachian Regional Development Act mandates certain actions and procedures with respect to investment placement. The Commission was directed to concentrate its investments in "areas with a significant potential for future growth where the return on the public dollars invested will be the greatest".

Based on the reasoning that individual States are best qualified to determine those areas within their boundaries having the greatest potential for growth, responsibility for identifying such areas was given to the States. These growth areas have been assigned the highest priority for concentrations of public effort and investments under the ARC program. However, two important exceptions have been made with regard to this strategy: projects outside growth areas may be included if it is demonstrated that they will have a direct and substantial impact on a growth area; projects directed toward human resources development may be located in areas where they will serve concentrations of people even though the location is not a growth area. The justification for the latter is that such projects serve a regional development objective by providing the Region's population with the basic health and skills necessary to compete in the labor market wherever they choose to live. Secondly, the development of Appalachia's human resources in all portions of the Region is important to the development of growth areas, which are likely to draw on large portions of the Region for their labor force needs, either through commuting or the eventual shifting of population.

A prerequisite to making sound investments is planning, which to be effective, must be responsive to the needs and desires of the people. In order to achieve this responsiveness and to encourage planning that would result in a higher level of public services provided with increased efficiency through the achievement of economies of scale, a network of multi-county local development districts was created. These districts are governed by boards composed of elective officials, civic leaders and others chosen to represent the local population.

Local development districts (LDDs) are charged with responsibility for encouraging local governments to work together in assessing their needs and combined potentials, to prepare public investment strategies designed to meet the needs and develop the potentials identified, and to use their combined resources in accord with this strategy.

The reasoning and strategies developed by the LDDs are expressed in a planning document which is submitted to the Governor for incorporation into a State Appalachian Development Plan in accord with the overall development goals and policies of the State. The State plans then go to the Commission for review and approval. Once approved, the plan becomes the "road map" followed by the Commission and the State in policy decisions and in the actual implementation of programs and projects.

The Commission itself has opened a new channel between the Appalachian States and a multitude of Federal agencies. Appalachian funds, in many cases, are being used in conjunction with grants from other agencies and it is an important function of the Commission staff to provide the States and local development districts with the technical assistance necessary to help them meet qualifications for basic agency, as well as Appalachian, funds. Only through such multi-level planning and cooperation can the Appalachian or any program be responsive to the people it serves.

SUMMARY OF REQUIREMENTS

(thousands of dollars)

Program by Section of the Act	Fiscal Year 1974 Oblig.	Fiscal Year 1974 Approp.	Fiscal Year 1975 Oblig.	Fiscal Year 1975 Approp.	Increase/Decrease Oblig.	Increase/Decrease Approp.
201 - Highways	186,036	155,000	160,000	160,000	-26,036	+ 5,000
Area Development Programs:						
202 - Health Demonstration	50,872	43,000	---	---		
205 - Mine Area Restoration	14,875	4,000	---	---		
211 - Vocational Education	25,011	25,000	---	---		
214 - Supplemental Grants	38,026	34,000	---	---		
Subtotal	128,784	106,000	125,000	125,000	- 3,784	+19,000
302 - Research, Demonstration and LDD	10,510	7,500	8,500	8,500	- 2,010	+ 1,000
207 - Housing Fund	3,692	1,500	2,127	---	- 1,565	- 1,500
Other Programs	416	---	---	---	- 416	---
Totals	329,439	270,000	295,627	293,500	-33,812	+23,500
Less Use of Unobligated Balances	-61,366	---	- 2,127	---	+59,239	---
Balances Carries Forward to 1975 (Section 207)	1,927	---	---	---	- 1,927	---
Appropriation	270,000	270,000	293,500	293,500	+23,500	+23,500

SECTION 201: APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

(thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate	Increase/ Decrease
Appropriations	$205,000	$155,000	$160,000	$ + 5,000
Obligations	182,607	186,036	160,000	-26,036

1975 Request

The budget for FY 1975 includes a request for an appropriation of $160 million for the Appalachian Development Highway program. This appropriation request, when added to the $1,355 million previously appropriated, will provide a cumulative amount of $1,515 million. The request provides an appropriation increase of $5 million over the $155 million appropriated for FY 1974.

Status of Authorizations and Appropriations

The Appalachian Highway program has been funded since the 1971 Amendments to the Appalachian Regional Development Act by annual amounts of contract authority which are currently authorized through FY 1978. Through FY 1974 the Congress has provided annual appropriations equal to the cumulative amount of contract authority specified for that period. For FY 1975 the request of $160 million will provide for the highest priority projects within the various States.

The following table shows the relationship on a current and cumulative basis of authorizations and appropriation requests through FY 1975:

(millions of dollars)

	1973 Actual	1974 Enacted	1975 Estimate
Authorizations:			
Cumulative	$1,175.0	$1,355.0	$1,540.0
Current Year	180.0	180.0	185.0
Appropriations:			
Cumulative	1,200.0	1,355.0	1,515.0
Current Year	205.0	155.0	160.0

The annual amounts of contract authority authorized by the 1971 Amendments to the Act were also made available for obligation during the fiscal year immediately preceding the year of contract authority. Under this authority the Commission must, by December 31, allocate among the States the contract authority for the succeeding year. These allocations can be released for obligation by the States when authorized through appropriation acts and approved apportionments.

Status of Program Allocations

Prior to 1971 authorizations for the Highway Program totaled $1,165 million (through FY 1973), of which the Commission allocated $1,080 million for development corridors, and $80 million for access roads. In 1971, the authorization for the Appalachian Development Highway System was amended to provide additional authority of $925 million (through FY 1978) for a grand total of $2,090 million. The Commission initially allocated only a portion of the new authorization providing an additional $30.9 million for access roads, and $435 million for the development corridors. Subsequently, $11.7 million was transferred from access roads to corridors.

The Commission has recently acted to allocate among the States the entire authorized amount through FY 1978. This allocation of funds which distributes the remainder of the available development highway funds provides advance notice to States and their highway officials of the approximate amount of funds which will be available against which they can prepare plans. With this notice they are able to better plan the future construction needs and to initiate at an earlier time the design work and right-of-way acquisition necessary before construction can begin. The following table summarizes the allocations of authorizations by the major highway subprograms. These funds are further allocated among the States by fiscal year but can be adjusted among States so that unused allocations during a specific fiscal year for either access roads or development highways may be advanced to another state which is

ready to proceed with construction. This aids in assuring continued progesss in getting various portions of the system underway.

(millions of dollars)

	Thru 1973	Thru 1974	Thru 1975	Thru 1978
Total Authorized	1,175.0	1,355.0	1,540.0	2,090.0
Allocations by Program:				
Development Highways	1,080.0	1,247.0	1,431.0	1,974.8
Access Roads	88.7	99.2	99.2	99.2
Administration and Special Planning	6.3	8.5	9.8	16.0
Unallocated	---	.3	---	---

These amounts include adjustments made in 1973 to provide for inclusion in the Development Highway System of highway corridors in three states (Alabama, Mississippi, and South Carolina) which were not previously included. Partial financing of these corridors was established through a transfer of $11.7 million of access road allocations from the three states and a commitment from the Commission of up to $5 million annually beginning with the 1975 allocations. Development Highway allocations by states on this basis are shown in Table I following and for Access Roads in Table .

Program for FY 1975

The Commission is in the process of preparing with each state and its highway department a definition of highway project priority classifications. During FY 1975 highway project work will be selected by the individual states from the high priority projects that are consistent with the state's ability to schedule project work of either a design, right-of-way, or construction nature. During 1974, it is expected, as shown in the table below, that the states can obligate more funds on the development highway portion of the program than the allocation would indicate As has been the practice in the past, unused allocations in the access road program may be temporarily borrowed at the close of the fiscal year to permit the development highway program to advance as rapidly as possible. Borrowed allocations are returned during the next fiscal year. The following tables reflect cumulative obligational estimates as compared with allocations through 1974 and 1975, and immediately following that, annual obligational estimates for the same years.

(millions of dollars)

	Thru 1974		Thru 1975	
	Allocation	Obligation Estimates	Allocation	Obligation Estimates
Cumulative Status:				
Development Highways	1,247.0	1,266.0	1,431.0	1,411.0
Access Roads	99.2	81.3	99.2	94.2
Administration & Special Planning	8.8	7.7	9.8	9.8
Total	1,355.0	1,355.0	1,540.0	1,515.0

Annual obligation amounts: (thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate
Development Highways	173,614	164,958	145,000
Access Roads	7,760	18,168	12,900
Administration & Special Planning	1,233	2,910	2,100
	182,607	186,036	160,000
Balance from prior year	-8,643	-31,036	---
Balance to future year	31,036	---	---
Appropriation	205,000	155,000	160,000

The above funds will finance a program which, by the close of FY 1975 is anticipated to result in a total of 1,530 development highway miles and 730 access road miles either contracted for construction or already completed. Adding the additional mileage for which Engineering Design or Right-of-Way acquisition will have been obligated there will be by the close of 1975 a total of an estimated 2,600 development

TABLE I

APPALACHIAN HIGHWAY PROGRAM OBLIGATIONAL NEEDS
State-by-State Summary

(thousands of dollars)

	Alloc. of Total Authors.	Obligated & prefinanced thru 1973	Cumulative allocation thru 1974	Cumulative allocation thru FY 75	Estimated State Obligational Capability through 74
DEVELOPMENT HIGHWAYS:					
Alabama	16,672	6,083	6,500	9,043	7,006
Georgia	43,855	22,275	24,579	27,948	25,772
Kentucky	325,148	212,461	231,997	258,521	277,708
Maryland	110,444	66,364	65,457	72,041	66,747
Mississippi	11,156	0	4,000	5,789	1,000
New York	214,325	136,370	145,777	167,104	181,497
North Carolina	96,225	58,726	65,949	73,610	66,742
Ohio	89,855	54,481	68,944	74,225	69,090
Pennsylvania	372,560	132,158	178,823	227,815	186,811
South Carolina	3,872	0	1,200	1,200	100
Tennessee	179,700	77,356	79,755	105,031	109,664
Virginia	88,057	65,514	59,159	66,462	68,254
West Virginia	422,931	320,927	314,860	342,211	330,122
Sub-total	1,974,800	1,152,715	1,247,000	1,431,000	1,390,713
Access Roads:	99,200	63,132	99,200	99,200	81,300
FHWA-Admin.-Misc.	16,000	4,790	8,500	9,800	8,500
Unallocated	--	--	300	--	--
TOTAL	2,090,000	1,220,637	1,355,000	1,540,000	1,480,513
Appropriations	--	1,175,000	1,355,000	1,515,000	1,355,000
Amount pre-financed	--	51,673	--	--	80,000
Unobligated Balances	--	6,036	--	--	--

highway miles and 750 access road miles with obligation commitments. The following table summarizes the amount of highway mileage authorization which will be utilized as of June 30, 1975 as compared with the maximum mileage authorized under the Appalachian Act. It should be noted that the financial authorizations through 1978 would only be sufficient to fund approximately 800 miles of the up to 1600 access miles authorized, and full construction on approximately 1,730 of the 2700 development corridor miles authorized.

	Development Corridor	Access Road	Total
1. Maximum mileage authorized	2,700	1,600	4,300
2. Highway mileage utilized:			
(a) Highway construction underway or completed, June 30, 1975	1,530	730	2,260
(b) Highway mileage under design or right-of-way acquisition, June 30, 1975	1,070	20	1,090
Total, mileage committed	2,600	750	3,350
Mileage authorization uncommitted by 1975	100	850	950

Program Requirements

The Appalachian Development Highway System as approved by the Commission currently consists of some 3,277 miles, but 380 miles of highway on the System has been rated "adequate" and does not require improvement; 2,692 of the remaining miles have been authorized for construction assistance and are within the Congressional limitation of not to exceed 2,700 miles.

In the 1969 Amendment to the Appalachian Regional Development Act, it was noted that the cost estimates for completion of the System were increasing and that the authorizations would only provide the funds to construct approximately one-half of the nearly 2,600 miles requiring construction improvement. The 1971 Amendments provided no additional mileage but increased authorizations by about $890 million with the intent to complete the Development Highway System. The Commission recognized the effects of the cost increases and adopted in its early years a policy of 70 percent Federal financing for the engineering, right-of-way, and construction of two-lane highways while providing only 50 percent Federal funds for four-lane construction. This policy has helped stretch out the mileage that could be constructed with the funds authorized and appropriated.

More recently, the Federal Highway Act has been amended to provide for a 70 percent Federal contribution on non-Interstate highways, an action which caused the Commission to review its current 50 percent policy on four-lane construction. We expect the Commission to return to the initial statutory limit and to permit an up to 70 percent Federal share on all highway projects. This action and the effects of cost increases over the years has made it even more evident that the Appalachian Development Highway System cannot be completed in its entirety within the authorizations available through 1978. Accordingly the States and the Commission are developing priorities for highway construction activity within the next several years which will best meet regional and State priorities. Actual accomplishments of these priorities will depend on the ability of State highway departments to schedule engineering design and right-of-way acquisition and to obtain necessary clearances relating to environmental impact and to relocation activities. A further complicating factor is the present uncertainty concerning the energy shortage and its exact impact on State gasoline tax collections which for the most part finance the State share of the project cost.

Table II summarizes status of mileage by State as of December 31, 1973. Nearly 882 miles are now completed with an additional 407 miles now under construction. By June 30, 1975, it is estimated that 318 miles now under construction will be completed providing a total, by that time, of approximately 1,200 miles completed.

Currently another 319 miles are in right-of-way acquisition stages, with engineering design underway on an additional 464 miles of highway. Most of this mileage will not be ready for construction until after fiscal year 1974. A total of 2,072 miles, or about 74 percent of the 2,689 miles requiring construction has had engineering design initiated.

TABLE II

APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

MILEAGE SUMMARY

State	Total Corridor	Eligible for construction	CUMULATIVE STATUS AS OF DECEMBER 31, 1973				
			Location studies, design, RW construction completed/underway	Design, RW construction completed/or underway	RW construction completed or underway	Construction completed/ underway	Construction[1] completed
Alabama	156.6	73.6*	111.1	67.5	28.5	22.6	6.4
Georgia	88.0	85.7	85.7	29.2	29.2	26.6	14.2
Kentucky	585.9	422.0	422.0	405.4	326.2	242.1	145.7
Maryland	84.6	80.6	80.6	54.6	54.6	54.6	19.7
Mississippi	104.0	31.7*	104.0	63.9	0.0	0.0	0.0
New York	254.3	218.3	218.3	193.8	180.8	148.9	106.3
N. Carolina	206.2	196.8*	194.8	151.4	138.1	107.0	70.1
Ohio	294.0	201.4	201.4	177.1	160.4	99.3	85.4
Pennsylvania	504.7	452.1	452.1	285.5	152.6	132.4	86.8
S. Carolina	30.7	13.1*	0.0	0.0	0.0	0.0	0.0
Tennessee	340.9	326.1*	330.4	208.7	156.5	119.6	114.0
Virginia	200.9	176.0	176.0	150.5	131.7	121.1	98.4
West Virginia	426.4	414.2	413.5	284.7	249.6	214.8	134.2
TOTALS	3,277.2	2,691.6	2,789.9	2,072.3	1,608.2	1,289.0	881.9
Estimated status as of:							
June 30, 1974			2,800.0	2,300.0	1,800.0	1,400.0	1,050.0
June 30, 1975			2,845.0	2,600.0	2,000.0	1,530.0	1,200.0

1/ Of the total completed mileage, 876.3 miles have been opened to traffic.

*Only portions of Corridors V and W in these States are eligible for construction due to 2,700 mile construction limitation in the Act.

Status - December 31, 1973

	Miles in Category	Cumulative	Miles est. June 1974	Miles est. June 1975
Construction completed	881.9	881.9	1,050.0	1,200.0
Construction underway	407.1	1,289.0	1,400.0	1,530.0
ROW in process	319.2	1,608.2	1,800.0	2,000.0
Design begun	464.1	2,072.3	2,300.0	2,600.0
Location studies begun	717.6	2,789.9	2,800.0	2,845.0

Purpose of the Highway System

One of the primary factors which has contributed to Appalachia's relative economic stagnation is its isolation. This impact results from the difficulties of transport in a rugged region. Roads have been expensive to build and in the past, roads have been built to "follow the topography". In the past, major national transportation arteries were built to by-pass Appalachia rather than go through it despite its large population. So what evolved in Appalachia was a system of winding roads following stream valleys and troughs between the mountains, And, in general, these roads were, more often than not, narrow two-lane roads that could be squeezed into the limited available space. This system profoundly discouraged commerce and industrial development -- slow roads, a great mileage due to the winding pattern, unsafe roads built to poor design standards, short sight distances, and extremely high construction costs. With the exception of some communities located on major east-west routes, i.e., the National Pike and Lincoln Highway, most Appalachian communities were not able to compete for large employers because of poor access to national markets and the fact that commutation was so difficult that the size of available labor pools was severely limited by the transport system itself.

Construction of the Appalachian System, complementary to the Interstate routes, previously authorized by the Congress, is regarded by the Commission as the key to an accelerated rate of economic growth in the Region. The designated System serves to encourage the location of new industrial and commercial enterprises in the Region. Of equal significance is the fact that many of these highways facilitate commutation from rural, but heavily populated areas to jobs in the major communities and cities.

The System is composed of the following routes:

--Corridors A, B, C, and K together provide a north-south route located generally midway between Interstate 75 and Interstate 77, and connecting Atlanta, Georgia, and Chattanooga, Tennessee, with Asheville, North Carolina, and Cincinnati and Columbus, Ohio.

--Corridors D, E, and H provide east-west connections from Cintinnati through Central West Virginia to the Baltimore-Washington metropolis.

--Corridors J, F, G, and S provide routes extending north from Chattanooga, Tennessee, to Interstate 75 south of Lexington, Kentucky, and extending from Interstate 75 north from Knoxville to Charleston, West Virginia.

--Corridors Q, R, and I provide an east-west connection from Interstate 81, southwest to Roanoke, Virginia, to Interstate 64 east of Lexington, Kentucky.

--Corridor L provides a north-south connection through central West Virginia, connecting Beckley, West Virginia, and Interstate 79 near Sutton, West Virginia.

--Corridor M provides an east-west route across Pennsylvania, connecting Interstate 76 near Pittsburgh and Interstate 81 near Harrisburg, Pennsylvania. This corridor parallels and upgrades U.S. Route 22.

--Corridors N, O, P, and U provide a north-south route from Corridor E in Maryland to Interstate 80, and via Interstate 80 to New York City on the east; also connect Williamsport, Pennsylvania, with Elmira, New York.

--Corridor T provides an east-west route midway between Interstate 80 in central Pennsylvania and Interstate 90 across New York State, beginning at Erie, Pennsylvania, and crossing the Southern Tier counties of New York to Interstate 81 at Binghamton, New York. This corridor parallels and upgrades State Route 17 in New York.

--Corridor V provides an east-west route across northern Mississippi and Alabama connecting Interstate 55 west of Oxford, Mississippi with Interstate 24 near Chattanooga, Tennessee. (59 miles in Mississippi and 44 miles in Alabama are eligible for ARC aid.)

--Corridor W provides a north-south route primarily in Appalachian South Carolina connecting Interstate 85 near Greenville, South Carolina with Interstate 26 near Hendersonville, South Carolina. (13 miles in South Carolina eligible for ARC aid.)

The Interstate Highway System will be of great value to Appalachia. Its primary effect, however, will be to provide high speed through routes between large population centers outside the Region. When the Interstate Highway network was developed, the major routes through and in the Region--I-70, I-40, I-81, and I-75--tended to follow the well-established corridors and did not open up isolated, but heavily populated areas which had been historically bypassed. Moreover, except for the Interstate System, allocation of Federal-aid highway funds was not based on cost of construction, a factor which greatly discriminated against the Region where the cost of building a highway through the mountains was high and where useable and desirable land for right-of-way is at a premium.

While there is widespread evidence, in Appalachia and elsewhere, that building a highway alone will not by any means guarantee automatic economic and social growth to the towns and cities which lie in its path, good access to national markets is an essential pre-requisite to growth. The highway and other transportation improvements must be accomplished, however, by concerted efforts to upgrade health, education, community services, and the quality of an area's environment.

For these reasons, a network of Appalachian Development Highways was recommended by the President's Appalachian Regional Commission in 1964. The system was to serve as a framework along which other investments in education, health, housing, and community development would be placed to provide maximum access for the people in surrounding areas. In some cases, existing alignments would be used, in others, new highways would have to be constructed. But, in any event, the system was to be capable of carrying traffic at an average travel speed of 50 m.p.h.

The States and the Commission realized in the early years of the Appalachian Program, that authorization would not be sufficient to complete the entire system. And, as additional engineering, inflated costs, new safety standards, and relocation benefits were added in, the discrepancy between such needed improvements and funds available has widened. A policy was established to improve the poorest sections of highway first. Each State thus established road building priorities. In some cases long stretches of road will be built, while in others short segments of only several miles in length are first to be built. By establishing such a priority system, the best possible physical continuity is achieved during the over all construction program. While the accomplishments of the program if plotted on a map might appear to be disparate and disconnected sections, in actuality each corridor can be represented by segments of highway in varrying conditions, but, in most cases, providing a continuous system. For the nearly 900 miles completed and some 380 miles not requiring construction, this would appear on the map as modern highways. The remaining corridor mileage would vary as to its condition. Generally the <u>least</u> modern roads and those in the <u>worst</u> condition would have been improved first. The General Accounting Office has recommended that priorities be established <u>by corridor</u> rather than <u>by adequacy</u>. After careful consideration, the Commission has rejected this recommendation as inconsistent with conduct of the over all regional development program.

The Commission recently completed a review of the Appalachian Development Highway System with respect to certain key policy issues. These issues were:

1. A review of the existing priority system, how general priority rankings were assigned and an assessment of State and Regional needs.

2. Adoption, if appropriate, of a revised priority system based on new criteria.

3. Review and adoption of general rules for allocation of funds.

4. Review and adoption, if appropriate, of a revised policy for the Federal share of total project costs.

When the Commission was created Congress provided it with the authority to fund all highway activities at a 70/30 Federal-State ratio even though the basic Federal-aid highway program (excluding interstate) was being funded on a 50/50 basis. Since

the Commission was concerned at the outset with rising cost it elected to restrict itself to allow 70/30 funding for all preliminary engineering, acquisition of right-of-way, and construction of two lane roads. The construction of four-lane roads was to be on a 50/50 basis in order to build more miles within authorizations then available. However, recent Federal-Aid Highway Acts provided for a transition from 50/50 to 70/30 on the regular Federal-aid highway systems on July 1, 1973 and an anticipated "crunch" in state matching funds for a number of Appalachian states raised serious questions as to whether existing ARC policy might adversely effect construction of the Appalachian Development Highway System. The responses to this concern from the States strongly favor return to 70/30 in all phases of the highway program and the Commission is likely to take this action prior to FY 1975.

In 1972 the states, working with the Federal Highway Administration, prepared revised cost estimates for the Appalachian Development Highway System, generally following the procedures for preparing interstate cost estimates. These revised cost estimates were utilized, along with an evaluation of prior allocations, in helping to arrive at a set of general rules for allocating among the states the remaining unallocated funds authorized by the Congress through FY 1978.

The development of a new priority system for the Appalachian Development Highway System was a major program effort in 1973. In addition to the 1972 Cost Estimates, each state furnished the Commission with a general view of its priorities on a year by year basis. The Commission developed many different sets of socio economic and highway data, studied various interrelationships and in November, 1973 adopted the general rationale for assigning priorities to highway activities on segments of the Development Highway System. The Commission staff has been working with representatives of the states and their highway departments to reach agreement on a set of priorities that will meet both regional objectives and the individual highway objectives and needs of the States. Under this system priorities are being assigned to each highway activity on every segment of the system. Thus, a top priority may be given to engineering or right-of-way acquisition to move the system forward, even though it would be known that time or funds would not permit construction of that segment by 1978, the last year of authorization. Special emphasis has been given to the various state line crossings in the priority system as these are considered by many to be one meaningful measure of the regional nature of the program.

Socio-Economic Effects

In discussing the specific impact of the Appalachian Development Highway program, two additional facts must be remembered: first, since the Appalachian and Interstate Highway System were designed to complement each other, it is difficult to sort out the contribution of either partner alone; and second, neither highway system has been completed. However, some early effects of the combined highway programs are already visible. In addition, informed estimates cannot be made of the impact these new highways will have on the future of the Region when the network is completed.

The major economic effects of the highway system are those dealing with changes in employment and industrial growth. Between 1965 and mid-1970 total employment in the Region increased by over 545,000. Perhaps even more significant, employment in manufacturing, contract construction, wholesale trade, and most services increased at a greater rate in Appalachia than in the U.S. as a whole. One important reason for the growth of employment in manufacturing was the large number of new plants which have been located in Appalachia since 1965. A previous ARC study showed that more than three-fifths of all new industrial locations are within 20 minutes of the new highway, and almost one-half were within 10 minutes travel time. This same study identified 1,149 new plants since 1965, representing over 200,000 new jobs. In the coal region of southwestern Virginia, for example, a development complex is being developed on a site at Duffield adjoining the highway. Several new manufacturing plants have already located there. The construction boom stimulated by this and other Appalachian efforts in the local area has generated a housing shortage in an area previously subject to severe out-migration. Construction of new housing is now a major priority along the highway.

Many community leaders have told ARC staff that beginning in the late 1960's much more economic growth has occurred and many had major problems in finding more workers and in meeting the demand for housing. Almost all of the communities had responded positively to their new locational advantages by undertaking the following action:

1. They had created an industrial development agency with authority to acquire large tracts of land and were developing these tracts as industrial parks. These industrial sites, which were acquired in advance of specific and immediate needs, were in most cases located near highway interchanges. The

more successful communities were developing two or three such parks, each containing several hundred acres.

2. They were keeping ahead of their public service needs. Major expansions of water systems had either been recently completed or were in the process of being constructed, with full utilization of financial assistance from the Appalachian Regional Commission and other agencies.

3. Many of the cities were participating in multi-community planning and development programs.

Another major purpose of the Appalachian Development Highway System is to facilitate commuting and to provide the basis for developing new economies of scale for the delivery of social and governmental services. If rural people are to have the same quality of health and education opportunities as those living in urbanized areas, for example, these services must be provided over areas large enough in population and tax base to be able to support them. This can be accomplished only if people living in the areas to be served can reach the services within a reasonable period of time. An efficient transportation network is an essential underpinning for new plans for improving social and other services in Appalachia.

But these new opportunities could not be created unless local jurisdictions were willing to pool their resources and build area schools, area hospitals, area sanitation systems, and area water systems. Such an area approach must also deal realistically with the urban and rural changes wrought by the automobile.

The multi-county local development districts are an important ingredient in helping to plan locally these developments. In each of these districts a center, or centers, has been identified as the hub from which many specialized services can be provided in the future to the surrounding rural areas. In all but a few cases, these centers are strategically located on the Appalachian or Interstate Highway Systems. Like the spokes in a wheel, these highways radiate out through the districts, linking the rural hinterland areas to the center, and linking the centers with the rest of Appalachia and the U.S. On this framework of highways, a network of social services is being built step by step.

At present the Commission is reviewing its entire transportation program to see what changes should be made if the program were to be continued. This will definitely emphasize the highway system, but careful attention is also being given the Appalachian needs for rail, air, water, pipeline, and ruber-tired mass transportation. Both passenger and cargo needs are being studied along with rates and regulation of the various modes. Interest in rural mass transportation has picked up rapidly in all of the Appalachian states in the last two years and a number of projects and services are being funded out of 302 funds.

Access Road Program

While the Development Highway Program is a system planned in advance, the local access road program, like other Commission grant-in-aid programs, consists of separately approved projects. Access roads are projects that must have an economic relevance which can be demonstrated much as a vocational school, water or sewer line, hospital, or airport project. An access road is normally a short road or bridge, often less than one or two miles in length, which provides essential access to an industrial site or park, a regionally important recreation area, an educational area, or to a commercially important timber production area. They are normally two-lane facilities and Federal assistance may go up to 70 percent of total cost.

After passage of the Appalachian Act of 1965, the Commission reserved $35 million for this type road with an additional $35 million reserved after passage of the 1967 Amendments to the Appalachian Program. Following the enactment of the 1969 Amendments, the Commission allocated an additional $10 million thus providing a total of $80 million for access roads. The Senate Public Works Committee Report on the 1971 Amendments indicated additional need of about $50 million. In order, however, to retain funds required for the Development Highway System the Commission allocated an additional $30.9 million for access roads. This was subsequently reduced by $11.7 million by transfer to the Development Highway System of a portion of the additional allocations for Alabama, Mississippi, and South Carolina. This will provide a cumulative total of $99.2 million which was fully allocated by FY 1973. The authorization provides a limitation of construction of up to 1,600 miles of roadway. It is estimated that approximately 800 miles of access roads or about one-half of the limitation on mileage in the Act will be constructed within the $99.2 million allocated.

Present indications are that approximately $81 million will be obligated through 1974, which would provide a balance of nearly $18 million for future years. It is estimated that $12.9 million will be required for obligation in FY 1975, leaving a balance of unallocated obligations at the end of FY 1975 of $5 million. Table III indicates by State the status of the access road program. Through December 31, 1973, 249 projects requiring $81.4 million of Federal assistance had been approved, of which $68.9 million was obligated for construction. Some 413 miles of access road projects were completed, and an additional 83 miles were underway. Thus, of 672 miles of approved projects, 496 miles, or 74 percent were either underway or completed.

Summary of Allocations and Obligations:

	Thru 1973 Actual	Thru 1974 Enacted	Thru 1975 Estimated
Allocations	$99,200	$99,200	$99,200
Cumulative obligations		81,300	94,200
Annual obligation	7,760	18,168	12,900

Administrative and Other Costs

Administrative and other planning costs to be incurred through completion of the program are estimated to be $16 million of which $9.8 million is estimated to be required through 1975. Administration of the program is primarily through the Federal Highway Administration which handles the details of the construction program in much the same manner as the Federal-aid highway program. For this purpose, the program finances a staff of 36 persons primarily in field offices of the Federal Highway Administration. These funds are also utilized to fund technical advice to the Commission through an independent consulting firm. During FY 1975, administrative costs are estimated at about $948 thousand of which $868 thousand provides for detailed administration of the program in the Federal Highway Administration. Total administrative costs allocated through FY 1975 are estimated at $6.0 million.

An additional amount of $3.8 million will have been allocated through FY 1975 primarily for special State planning projects related to highway and corridor utilization. The Commission has since 1972 allocated among the States an annual amount of up to $1 million for use in extending highway planning to accommodate and stimulate concentrated development projects at varying locations along the development corridors and other major highways to realize the highway's greatest potential for development and protect the highway investment.

To date planning projects have been approved in 11 States with objectives thus far related to each State's differing needs. In Georgia, it will assist in comparing the potential effect of various alignments of Corridor A on the natural resources and economic development potential of the Appalachian portion of the State. Maryland plans to maximize the economic and recreational development opportunities of the proposed National Freeway (Corridor E), in addition to Corridors N and O, through an evaluation of alternative alignments. Alabama has initiated a similar study along some 171 miles of the recently designated Corridor V which extends from the Tennessee line near Chattanooga, Tennessee, to Red Bay, Alabama, at the Mississippi line. Mississippi is considering a continuation of this same type study along Corridor V from the Mississippi line near Red Bay, Alabama, through Tupelo, Mississippi, to I-55, a distance of approximately 104 miles. North Carolina is investigating the economic benefits which would result in upgrading US 19E from US 23 near Mars Hill to the Tennessee line, along with corridor development studies in four growth centers.

Pennsylvania, Virginia and Mississippi are carrying out projects through their regional planning agencies with each project primarily oriented to the identification and development of plans for highway-related sites. South Carolina is seeking to insure the orderly economic development of the Cherokee Scenic Highway with particular emphasis on the scenic and recreational opportunities.

Other projects are underway or have been approved for Kentucky, New York and West Virginia.

TABLE III

APPALACHIAN ACCESS ROAD PROGRAM

FINANCING AND ACCOMPLISHMENTS

(thousands of dollars)

State	Total Allocation	Cumulative Obligations thru 6/30/73	Approved Projects 12/31/73	Estimated Obligations thru FY 74	Estimated Obligations thru FY 75
Alabama	$ 19,030	$ 15,448	$ 18,737	$ 16,900	$ 19,030
Georgia	4,134	2,271	3,097	3,000	4,134
Kentucky	5,129	2,124	2,922	3,700	5,129
Maryland	2,326	1,059	1,960	2,200	2,326
Mississippi	9,558	7,042	8,866	8,800	9,558
New York	4,242	557	2,692	2,400	4,242
North Carolina	4,723	1,618	3,375	3,000	4,723
Ohio	5,022	2,281	3,856	3,700	5,022
Pennsylvania	14,130	7,916	11,785	11,200	14,130
South Carolina	12,731	9,360	9,431	10,500	12,731
Tennessee	7,284	5,573	6,480	6,400	7,284
Virginia	3,667	2,807	2,889	3,300	3,667
West Virginia	7,224	5,076	5,299	6,200	7,224
Sub-Total	99,200	63,132	81,389	81,300	99,200
Less slippage					-5,000
TOTAL					94,200

STATUS OF MILEAGE

	Through 12/31/73	6/30/74 Estimates	6/30/75 Estimates
Mileage completed	413	470	560
Construction underway or completed	496	640	730
Miles approved	672	750	780

Statutory Limitation on Miles -- 1,600 miles thru 1978

Sec. 201: Appalachian Development Highway System
FHWA unless otherwise indicated

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
	Personnel compensation:			
11.1	Permanent positions	511	550	568
11.5	Other personnel compensation	---	1	1
	Total personnel compensation	511	551	569
	Personnel benefits:			
12.1	Civilian	43	49	50
21.0	Travel and transportation of persons	44	60	60
22.0	Transportation of things	---	1	1
23.0	Rent, communications, and utilities	23	25	25
25.0	Other services	150	160	160
25.2	Services of other agencies (ARC)	72	80	80
26.0	Supplies and materials	---	1	1
31.0	Equipment	1	2	2
	Subtotal	844	929	948
41.0	Grants, subsidies, and contributions	181,763	185,107	159,052
99.0	Total obligations	182,607	186,036	160,000

PERSONNEL SUMMARY

Federal Highway Administration

Total number of permanent positions	36	36	36
Average paid employment	33	36	36
Average GS grade	9.3	9.3	9.3
Average GS salary	$14,908	$15,440	$15,624

AREA DEVELOPMENT PROGRAMS

(thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate	Increase/ Decrease
Appropriation	123,500[1/]	106,000	125,000	+19,000
Obligations	117,532	128,784	125,000	- 3,784

1/ Includes $11 million supplemental Tropical Storm Agnes for mine area restoration program.

Appropriation Request

The appropriation request for the Area Development program represents a proposed new program activity which combines programs previously shown under four activities. These four activities and the amounts appropriated and obligated for each during 1973 and 1974 follows. Program activity for 1973 and 1974 for each of these programs is discussed following the material on the Area Development program for 1975.

	FY 1973		FY 1974	
	Approp.	Obliga.	Approp.	Obliga.
Section 202 - Health Demonstration	48,000	41,511	43,000	50,872
Section 205 - Mine Area Restoration	13,000	10,949	4,000	14,875
Section 211 - Vocational Education	25,500	26,009	25,000	25,011
Section 214 - Supplemental Grants	37,000	39,063	34,000	38,026
Totals	123,500	117,532	106,000	128,784

Consolidation of these four programs under one program head and the accompanying allocation to the States as single block allocations will provide the States with the opportunity to plan their 1975 investment program without the prior categorical restrictions. This allocation system will be much like a block grant in that the States can then establish their priorities and plan the amount that can best be invested in 1975 as between vocational education facilities, health facilities, water, sewer or other community facilities, mine area projects, etc. It retains the Federal partnership and interest by continuing to require that individual projects in the plan meet the Federal standards for such projects as have been established by the other Federal agencies and the continuing requirement that all project actions receive Commission approval including the assent of the Federal Cochairman.

The budget requests an increase of $19 million over the $106 million appropriated for 1974 which will assist the Region in extending the bases for further improvement of its economic growth and prosperity. While the Region has improved since the initial enactment of the Appalachian legislation it still continues to lag behind the rest of the nation in its economic growth and prosperity as is shown in the data provided by the 1970 Census.

In 1970 Appalachia had 9 percent of the nation's population after having experienced a 2.7 percent population increase from 1960 to 1970. However, at the same time the nation's population increased 14.5 percent, the Region was experiencing a net out-migration of 1.1 million people. During this same period, overall conditions in the Region improved with per capita income rising to $2,520, or approximately 80.3 percent of the U.S. level. Yet only three of the Region's 397 counties had per capita income levels above the national average, and the incidents of low-income population in the Region was 32 percent above the national proportion of low-income families. Also, while improvements were noted in other social economic indicies, the Region lagged in education and health attainments. For example, the Region still has 32 percent college graduates and 18 percent more high school dropouts. The infant mortality rate was 5 percent higher than the U.S. rate.

Background

Historically, there have been a number of ways in which the Commission's non-highway funds have been authorized and appropriated. Initially, the 1965 Act provided a separate authorization limit for each program and funds for that program were appropriated directly to the agency responsible for its administration. In the case of Section 211 this was the Secretary of HEW: in the case of Sections 214 and 302 it was the Secretary of Commerce. Some of the problems of this approach

became evident in the 1967 appropriations when the budget for Appalachian programs was scattered among nearly a dozen different appropriations. Then in 1967 Congress amended the Act to provide that appropriations for all programs would be made to the President within specific limitations for each program as defined in various sections of the Act. Accordingly, appropriations for 1968 and 1969 were made to the President in lump sum, although the Appropriations Committees generally indicated in their reports the amounts intended for each section of the Act.

In 1971, Congress made another major change by removing previous section-by-section program limitations and enacting a single authorization limit for non-highway programs. Appropriations continued to be made in total with Committee intentions specifically stated for each individual program. The stated aim of the Public Works Committees in enacting lump-sum authorizations was to give the Commission maximum flexibility in determining priorities for the investment of these funds.

Paralleling the changes in authorizations and appropriations styles have been changes which the Commission has made relating to the allocation of funds. Beginning with a system which provided formula allocations for virtually all programs, the Commission has dropped those allocations in some areas (Sections 205 and 302); it has changed the formula in other cases; it has broadened inclusion of new states and areas; and it has in some cases made allocations without formula. In short, it has been a constant search for better ways of making the funds available to the states and to make our budget more responsive to the changing nature of Federal grant programs.

The advent of new federalism and revenue-sharing philosophy occasions a new look at the Commission's approach to its allocation process, to the decision-sharing of the State/Federal partnership concept, and to its regional growth strategy.

The Commission is seeking funds in a manner that will permit block allocations to the states and the execution of state and area development policies. The area development policies would apply to three generally homogeneous subregions comprising Appalachian and a fourth area, the Highlands, that overlays the subregions and that is defined to include major recreational attractions to the Region. The subregions are labeled here as Northern Appalachia, Central Appalachia, and Southern Appalachia. A statement of the proposed approach follows, along with a description of the subregions and an analysis of past investment trends and development strategies.

Statement of Approach

The Appalachian States have endorsed the concept of Area Development as an adjunct to state and local development district planning and programming. This endorsement was predicated on an experimental approach to funds allocations and project funding procedures which is elaborated below. The endorsed approach has four interrelated components:

1. block allocations rather than categorical allocations

2. state allocations

3. subregional and area allocations

4. subregional development strategies

These components have their antecedents in the past performance of the Commission, but represent a significant change which is directed towards closer alignment with changes in domestic programs. While the approach is experimental to the Commission, at the same time it offers a testing ground for more state and local involvement in program management and in setting priorities outside of relatively rigid categorical allocations.

Block Allocations--In the context of the budget request, the Commission proposes that funds appropriated for Area Development programs be made available to the states through block allocations. Under this procedure, the allocation of funds by investment activity (health, vocational education, mine area restoration and basic or supplemental facility grants) would be a direct expression of state and subregional development strategies, rather than an expression of categorical allocations. Individual projects would continue to be approved under the requirements of the Act and would have to meet the policies of the Commission as expressed in the ARC Code.

State Allocations--From the budget request of $125 million, $82.4 million would be block-allocated to the states. In determining the amount going to each state,

the Commission would use a formula approach that would reflect, to a large extent, relative levels of program and state allocations if no changes were made in the previous appropriation level and past allocation procedures. The obligation of these funds would be based on state and district development plans with no predetermined controls on funds distribution to subregions. This "base" allocation would represent 80 percent of last year's funds for each state. Each state would also receive an allocation for subregional development projects.

Subregional and Area Allocations--A total amount of $40.6 million would be set aside for area development programs and projects consistent with subregional development strategies. Of this amount, $2 million would be used to fund demonstration projects in the overlapping Highlands Demonstration Area. The remaining $38.6 million would be divided by state portions of each of the three subregions.

In order to apportion the $38.6 million in subregional funds, a mathematical model adapted from the allocation formula used in the Section 214 program was prepared. The allocation factors produced by this formula would have resulted in percentage shares of 40.33 percent for Northern Appalachia; 16.08 percent for Central Appalachia and 43.59 percent for Southern Appalachia. This model was modified in one respect to provide an additional factor of extra compensation for Central Appalachia. That factor was taken as an expression of the per capita income lag between Central Appalachia and the regional average. The per capita income for the Central Appalachian subregion is $1,880 as compared with $2,701 for the rest of the Region, or approximately a 44 percent difference. The adjusted factors provided 36.93 percent, or $14,255,000 to Northern Appalachia; 23.16 percent, or $8,940,000 to Central Appalachia; and 39.91 percent, or $15,405,000 to Southern Appalachia. The state-by-state percentages are shown on Table I and the estimated 1975 state allocations (subject to minor adjustments) on Table II.

TABLE I

State Allocation Percentage Shares By Subregion

	Northern	Central	Southern
1. Section 214 Formula	40.33%	16.08%	43.59%
2. Adjusted Formula	36.93	23.16	39.91
3. State Percentage Share of Subregion:			
Alabama			21.88
Georgia			15.53
Kentucky		46.70	
Maryland	10.64		
Mississippi			14.04
New York	16.29		
North Carolina			15.80
Ohio	17.93		
Pennsylvania	39.45		
South Carolina			12.94
Tennessee		19.16	12.49
Virginia		18.41	7.32
West Virginia	15.69	15.73	
TOTALS	100.0%	100.0%	100.0%

TABLE II

Estimated 1975 Allocations By State

(millions of dollars)

State	Base Allocation	Subregional Allocations			Total Allocation
		Northern	Central	Southern	
Alabama	$ 7,622.0	$	$	$ 3,370.6	$ 10,992.6
Georgia	5,710.3			2,392.4	8,102.7
Kentucky	6,361.3		4,175.0		10,536.3
Maryland	3,617.4	1,516.7			5,134.1
Mississippi	4,894.6			2,162.9	7,057.5
New York	5,743.3	2,322.2			8,065.5
North Carolina	6,641.4			2,434.0	9,075.4
Ohio	6,097.6	2,555.9			8,653.5
Pennsylvania	10,514.2	5,623.6			16,137.8
South Carolina	6,155.3			1,993.4	8,148.7
Tennessee	7,564.3		1,712.9	1,924.1	11,201.3
Virginia	4,095.3		1,645.9	1,127.6	6,868.8
West Virginia	7,383.0	2,236.6	1,406.2		11,025.8
Subtotal	$ 82,400.0	$ 14,255.0	$ 8,940.0	$ 15,405.0	$ 121,000.0
Highlands Demonstration					2,000.0
Administrative Costs					2,000.0
Total					$ 125,000.0

Subregional Development Strategy--Funds made available from subregional allocations would be expended for projects specifically geared to implement subregional development strategies. The strategies would focus on development opportunities that are manifest in a subregional basis. As indicated in the discussions that follow, sets of strategies are emerging along with identification of prime development opportunities, which if capitalized on could help overcome Appalachia's lagging areas. The subregional allocation would permit a pooling of funds to meet just such opportunities.

Definition of Subregions

Although all of Appalachia shares common problems and potentials, there are important differences among different parts of the Region. In recognition of the differences and in order to prevent over generalization about regional conditions, it has been convenient to present economic and other reports according to four sub-regions--Northern Appalachia, Central Appalachia, the Highlands, and Southern Appalachia. However, it became clear in efforts to obtain workable boundaries for the original four subregions that the Highlands subregion could not be differentiated on the basis of differing geographic, economic, and demographic criteria. In a sense, the Highlands subregion was drawn largely on functional criteria--primarily the interest in broad, but unique, environmental and rather specific recreation and tourism area characteristics. As a result, the Highlands area actually was an overlay

of area with these characteristics, but covering parts of ground with the same characteristics as parts of the other three subregions.

The "overlay idea", however, has provided an effective solution. As a result, what is now being proposed is to recognize the three subregions--Northern, Central, and Southern--and to treat the fourth area as the Highlands Demonstration Area. In this area, the Commission would simply propose set-aside funds for concentration on demonstration projects to capitalize on the opportunities to develop an environmental, recreation, and tourism program. All parts of the Region would lie within the three subregions for each of which the affected states would formulate broad development strategies and projects geared to the particular subregional objectives, problems, and opportunities.

The result is that each of the three Appalachian subregions is distinct as a geographic unit and with distinct income and population characteristics. Only four of the 70 local development districts are in more than one subregion; 66 are entirely included in one or another subregion.

NORTHERN APPALACHIA is the largest subregion geographically and in population; with 9.73 million population (1970), it includes 53 percent of the Region's total and has 43 percent of its land area (83,581 of 194,871 square miles). It is the most urbanized (55 percent of the people urban in 1970) and has much the highest average population density (116 per square mile). Socioeconomic deficiencies are least and living standards the best in the Region, although there are numerous hill and mountain counties in the southern segment of the subregion in southern Ohio, westernmost Maryland, and most of West Virginia.

Population growth in the 1960's was negligible in the Northern subregion (0.3 percent increase) and out-migration for the decade amounted to 640,000. The most urbanized portions of the subregion in south central New York, Appalachian Pennsylvania, and northern West Virginia are highly industrialized, but with many older industries which came in the railroad era. In sharpest contrast are many of the hill and mountain counties which have not experienced significant industrialization (except for mining in some areas) or urbanization.

CENTRAL APPALACHIA is almost entirely a mass of dissected hills and low mountains with narrow valleys; it extends diagonally across almost the entire width of the middle portion of the Region. Primary production from forests and coal mines, along with subsistence agriculture, have been the mainstays of the Central subregion economy; Central Appalachia has a per capita income level only about 60 percent of the nation (1970 census). With 9.6 percent of regional population, it extends over nearly one-sixth of the territory; thus average population density is relatively low (55 per square mile). Central Appalachia is most distinctly defined by its high index level of socioeconomic deficiencies. It includes 85 counties, all of the Appalachian parts of 13 LDD's, and portions of four other LDD's which are split with other subregions.

Only 21 percent of the Central subregion's population of 1.74 million was classed as urban in 1970; none of the urban areas were large, and most of the urban population lived in small towns. The subregion experienced sizeable population declines in both the 1950's and the 1960's, with large out-migration of population due to the sharp decline in coal mining employment and the limited economic potential of other sectors of the subregional economy. Early population estimates of the 1970's suggest that this trend may be gradually changing and the subregion might gain population in the 1970's.

SOUTHERN APPALACHIA extends from the mountains of highland Virginia to the margins of the Coastal Plain in Alabama and Mississippi, with 6.73 million population (1970 on 79,384 square miles of land; 37 percent of the Region's people and 41 percent of its territory. Urbanization is less than in the North--46 percent of the population of the Southern subregion (1970) but as elsewhere in the South, the proportion is growing. Population density averages 85 per square mile, somewhat below the regional mean.

Socioeconomic indicators of deficiencies average somewhat above the regional value, but there is an extremely wide variation between the most developed metropolitan counties and the rural or mountain counties.

Population growth is the outstanding characteristic of the Southern subregion: a gain of 9.7 percent, or 593,000 persons which accounts for more than the total Region growth of 486,000 in the 1960's. Much of the subregion is industrialized with emphasis on textiles, clothing, chemicals, and wood-products industries. Southern Appalachia, along with many parts of the South, has had a developing economy in the last two decades, with urbanization increasing and incomes advancing relative to national averages.

Subregional Development Strategies

Focusing on total economic development needs and the basic policy stated in the Appalachian Regional Development Act, that efforts be concentrated in areas with a significant potential for future growth and where the expected return in public dollars invested will be the greatest, the Commission has developed a two-fold policy. This development policy emphasizes the concentration of investment in areas with growth potential or in areas having substantial impact on such areas, while making health and education services and facilities available to people within the Region regardless of their location, so that they can be equipped to participate in society and the economy, and thereby contribute to the economic growth of the area.

While the Commission and the Appalachian States have pursued these overall strategies for the development of the Region, the varying conditions within subregions have resulted in modifications and adaptations responsive to economic and social needs. Both the development objectives and strategies and the investment of funds pursuant to them, illustrate this responsiveness to varying conditions.

A review of the Appalachian development objectives and strategies stated in the State Appalachian Development Plans and programs and an examination of actual investment made by the states in the three subregions, provide a basis for a further refinement and clear recognition of a subregional approach to budgeting and decision-making for development programs.

Four broad categories of expenditures have been analyzed covering the period from FY 1966 through FY 1973 with respect to the distribution of ARC funds by category of investment among the subregions and the historical distribution of ARC funds in the subregions over the same period. The four program categories are: Natural Resources, Health, Education, and Community Facilities.

Northern Appalachia

The parallel between the historical patterns of investments in the Northern and Southern subregions is striking, particularly with respect to community facilities and education expenditures. But the motivations for these investments are in strong contrast. Northern Appalachia's development strategy meets head-on the changing character of industrial growth from that of a much older industrial order to accommodating new industry in areas where available job skills and the supporting community facilities structure do not meet the needs of new industry or older firms attempting to diversify their product lines.

It is highly significant that over 95 percent of the total ARC funds invested in community facilities such as water, sewer, airports, transit and other supporting capital improvements have been allocated in the Southern and Northern subregions and that between the two the investments in such facilities is almost equal. The difference between the two in expenditures for public facilities is the higher emphasis in Southern Appalachia on new systems and expansion of existing systems into new areas as compared to a higher concentration on replacement or major renovations of existing systems in older communities caught up by the changing character of industrial development in Northern Appalachia.

In the natural resources category of investment, over 75 percent of the total investments in natural resources (largely under Section 205 mine restoration) have been made in the Northern subregion, particularly in Pennsylvania. At the inception of the ARC program, the initial basic concern in Pennsylvania was to get the major mine fires under control in the older built-up areas. The Commonwealth had been engaged with limited state and local resources in attempting to address this most basic environmental problem. Fortunately, in Pennsylvania the Legislature had early addressed the issues of public ownership of lands, the exercise of eminent domain, and other problems inhibiting implementing a sound mine fire control program. The Appalachian program accelerated these efforts with the result that most major mine fires have been extinguished. In fact, the current state policy gives first priority on the reclamation of surface-stripped areas for industrial park development.

Ohio's Appalachian Region is entirely within the Northern subregion and exhibits many of the economic characteristics of the older industrial areas and their surrounding countryside. Community development, therefore, is of high priority. The specific priorities for investment has been given to water and sewer facilities, education, health, and airports. At the outset of the ARC program, Ohio set as a basic objective the construction of at least five major area vocational-technical training centers strategically placed so that the residents of all 28 counties would be within commuting distance. Today, Ohio's Appalachian training program is considered to be among the most successful undertaken in the Region.

Also of special significance is the attention being given in Ohio to the skills required to support improved health conditions in southeastern Ohio. Health manpower training and paramedical skills are important features of vocational programs accessible to Ohio's Health Demonstration Area and other sections of the subregion.

Of current concern is the developing multi-million dollar power generation complex on the Ohio River near Pomeroy in Meigs County. It is anticipated that this development program alone will generate over 5,000 permanent new jobs in southeast Ohio. The communities that relate to the living and social needs of this new work force must assure adequate water supply, sewage treatment, transportation and health facilities. Some of the health and community capital investments that have been made in Gallia and Meigs counties, as well as other areas, relate to this kind of new industrial growth. Again, there is an older community structure in need of adjustment to serve new industrial growth. Again, there is an older community structure in need of adjustment to serve new industrial growth.

The strategies in New York, West Virginia and western Maryland in utilizing ARC funds in the areas of those states within the Northern subregion are basically similar. The investments that have been made in the Northern subregion in community facilities, education (particularly vocational training), and health have been basically designed to accelerate direct employment expansion wherever possible through new industrial growth or industrial redevelopment.

In summary, although Northern Appalachia occupies a relatively satisfactory economic position compared to the other subregions, it has experienced a generally less satisfactory pattern of growth. A number of older, established small and medium sized communities and cities have deficiencies in public services and facilities because of the shifting economic base and the difficulty in making a transition. Development strategies have and will continue to emphasize post high school and adult occupational training to assist in adapting to new job opportunities. In addition, emphasis has been placed on environmental problems arising from past industrial and mining activity and on the need for community facilities and governmental organizational and financial reforms. Actual investments have been spread relatively evenly among the four major program categories of natural resources, health, education and community facilities, with emphasis on educational investments and community facilities.

Central Appalachia

Central Appalachia, because of its unique characteristics, has presented special problems in designing effective development strategies. Because of the widely dispersed population, concentrated zones of poverty, and sharply limited economic base, adaptions to the growth area strategy here were necessary with emphasis on regional provision of services. Meeting the needs of this largely rural population is beyond the capabilities of the existing service structures within the relatively few sizeable centers of population. The existing communities have extremely limited financial capability to provide community facilities. Limited industrial development and "growth potential" have dictated an emphasis on health and education facility investments to serve the Appalachian population and prepare them for industrial jobs as they became available.

Accordingly, the pattern of investments in Central Appalachia presents sharp contrast to the other subregions in terms of distribution of ARC aid among the four categories of investments. Primary emphasis in the Appalachian Development Plans of the four Central Appalachia States has been placed on human resources programs. Over 90 percent of program investments in the subregion have been concentrated in health and education areas.

All four States have invested in primary health care delivery centers. Tennessee has concentrated on construction and the modernization of hospitals with expanded outpatient services which can become a part of a network of primary care delivery centers as well as a system of public health centers. In Kentucky, the support has been provided for coordinated systems of emergency care, supportive services for non-institutionalized persons, and community health services. Health expenditures have also been made to overcome health manpower shortages as well as their mal-distribution. Comprehensive health demonstration areas within the subregion have contributed to the development of all the health programs.

Almost a third of the investments in the subregion have been made in education programs. In Tennessee, the objective has been to provide strengthened educational programs. Investments in vocational facilities with training geared to skilled manpower shortages, received priority. In order to improve skills and expand job opportunities for West Virginia's labor force, priority has been assigned to the

development of a network of vocational education schools and improvement in the State's institutions of higher education. In both Kentucky and Virginia, the first stage educational priorities of providing vocational education opportunities within the reach of all residents, is nearing realization. Both States are currently reevaluating the past strategies and developing new second-stage approaches.

In Central Appalachia, the smallest investment in the Region has been made in community facilities. Along with continued improvement in the operation of educational and health facilities, this is the area which will receive particular emphasis as programs are reassessed. Significant investments in community facilities, which to date represent less than 4 percent of total ARC aid in the subregion, are necessary to realize the objective of supporting urban centers. In Kentucky, for example, a need has been indicated for concentration on access roads, rural transportation systems, low- and moderate-income housing, and water and sewer facilities. In Virginia, priority will be assigned to those public facility investments which will stimulate industrial development. Kentucky, Tennessee, Virginia and West Virginia anticipate increased emphasis on recreational development through the provisions of public facilities.

As has been seen, a major emphasis has been placed on the need to provide health services to a population beyond the reach of conventional health delivery systems and on upgrading educational facilities and programs. Coupled with this has been a recognition of the need for accelerated growth in urban centers to provide adequate services and employment opportunities.

Southern Appalachia

In responding to the potential for industrial development within Southern Appalachia, investment strategies have stressed vocational education facilities and programs and community facilities designed to support urbanization and industrialization of the area. Over half of ARC investments in this subregion have been for vocational education and community facilities.

Major programs of high school and post-high school vocational and technical training tailored to fit the needs of the new industries locating within the area have been buttressed by a relatively heavy investment in community facilities designed to respond to the pattern of industrial location in moderate-sized metropolitan areas and medium-sized cities.

In South Carolina, early emphasis was placed in a system of technical institutes directly responsive to the needs of diversified industrial development. In emphasizing the potential diversification of the economy, a dual post-secondary system--community colleges and vocational-technical institutes--now offer courses emphasizing the development of new skills related to job opportunities.

In the Tennessee portion of the subregion, priority has been given to education investments for the construction and modernization of vocational facilities where training is geared to current shortages in skilled manpower.

The main objective of Alabama's investment strategy has been industrial development emphasizing manufacturing industries. Vocational and technical training has been given the highest priority among the State's human resources programs.

In Georgia, the development strategy has given first priority to investments to accommodate the rapidly industrializing area of north Georgia. Support for vocational-education facilities providing job training for new skills related to the pattern of industrialization has been emphasized.

All the States in Southern Appalachia can be expected to support community facilities, including water and sewer and transportation facilities such as airports and access roads, to serve new industries, and to accommodate growth clustering in small and medium size communities. In South Carolina and North Carolina, water and sewer studies and plans have been developed for the Appalachian part of the State and implementation will continue on those parts of area-wide systems that will accommodate growth. Similarly, in Tennessee, water and sewer and transportation investments will be concentrated to increase potential for industrial development and improve access to service and trade centers. Investments in health facilities and programs will stress environmental and preventive health services with an emphasis on delivery systems and primary care.

Administration of Program

Under the proposed Area Development program the Commission will continue to approve individual projects under the terms of the applicable sections of the Act: health demonstrations, Section 201; mine area restoration, Section 205; vocational education facilities, Section 211 and supplements to other grant programs, Section 214. These individual projects, as in the past, are then administered and monitored by those Federal agencies which, under the Appalachian Act, have been given the responsibility for administration of the project details. The Commission reimburses these agencies for their cost in administering the program, which for 1975 is estimated at $2 million as follows:

	(thousands of dollars) 1974 Enacted	1975 Estimated
Health Projects:	$ 1,299	$ 1,252
HEW	(804)	(902)
ARC	(495)	(350)
Mine Area Restoration (Bureau of Mines)	700	520
Vocational Education (Office of Education)	53	53
Supplemental Grants (Agriculture & others)	50	100
Contingency	0	75
	$ 2,102	$ 2,000

SECTION 202: HEALTH DEMONSTRATION PROJECTS

	(thousands of dollars) 1973 Actual	1974 Enacted
Appropriations	48,000	43,000
Obligations	41,511	50,872

Program for 1975

During 1975 this program will be conducted as part of the Area Development program previously described. Funding will be provided for the ongoing operating type health and child development projects which have been initiated in Appalachia in previous years and new operating and construction projects will be initiated. Under the proposed Area Development program States will utilize allocated funds for projects as authorized under this Section for the overall demonstration of the value of adequate health to the economic development of the region through continued provision of health and child development services and facilities to the people of the Region.

Program Objectives

Under Section 202 the Commission may make grants for planning, construction, equipment and operation of demonstration health and child development projects in selected areas throughout the Region. The program is designed to provide for a flexible non-categorical approach to improvements in health and child development through a process involving comprehensive community planning on a multi-county medical trade area basis and implementation of that planning through service programs and where applicable the construction of the necessary medical facilities. Particular attention has been given to the fostering of regional comprehensive health planning and the establishment of a variety of primary health care delivery systems. Since the 1969 Amendments the Commission has encouraged its child development programs with special emphasis on the young child and particularly those of pre-school age. Child development projects are also "child-serving" projects and include projects providing assistance for medical services, day care, infant and pre-school education, nutrition, parent education and child group programs.

Program for 1974

The health and child development programs have operated since 1972 on the basis of a single combined annual allocation of funds to each State. Under this system the State has the ability to program its funds among health and child development projects as will best accomplish its objectives during a particular time period. During 1974 we estimate that these State programs will result in a program as between operating, continuations and construction projects as follows:

	(thousands of dollars)	
	1973 Actual	1974 Estimate
Comprehensive Health Development		
Operating projects continuation	19,919	14,500
New operating starts	7,336	12,000
Construction grants	3,460	1,300
	30,715	27,800
Black lung program	1,539	680
Child Development		
Operating project continuations	10,528	22,800
New operating starts	5,430	1,100
	15,379	23,900
Administration and evaluation	894	1,500
Sub-Total	48,527	53,880
Less project savings and recapture of prior year obligations	-7,016	-3,008
Total Obligations	41,511	50,872

Comprehensive Demonstration Health Program

The Commission's role in health is to "demonstrate the value of adequate health facilities and services to the economic development of the region." It has done this, in cooperation with the States and agencies of the Federal government, through a program of grants and technical assistance, and by acting as an "honest broker", or middleman, in helping translate the theory of new health approaches into the practical results of local accomplishment. Although the health status of people in Appalachia has improved since the inception of this program, their status is still lower than the nation's as a whole, in some places dramatically lower.

The means Congress provided in the law to carry out the health program have been, by deliberate design, flexible. The Commission can fund construction or equipment grants up to 80 percent, and planning and operating grants up to 100 percent or cost for the first three years, and 75 percent for the following two years. Not all of these sometimes experimental projects have been successful, but all have contributed to the invaluable learning process that can only come from actual test, not in laboratory simulation, but as real operations run by local people, who work to assure their projects shall have the best possible chance of success.

In pursuit of its broad goals, the Commission continues to fund a wide variety of health projects: dental brush-in, nutrition, mosquito control, emergency room expansion, ambulance purchase, pediatric nurse training, are some of the "simple" ones. Others get more complicated: telephone linkage between rural health providers and a university teaching center; coordinated network of home health agencies; shared computer hospital information systems; shared use of core professional staff for a network of day care centers for the mentally retarded.

The Commission's health policies recognized early that with this flexibility must come concentration. One of the first Commission decisions was to confine this flexibility to Comprehensive Health Demonstration Areas (CHDA) - multi-county units in the Appalachian parts of selected States. By FY 1974, the program had evolved so that 12 of the 13 Appalachian States had these CHDA's - one State chose another way to invest its health dollars.

The Commission further decided in 1970, to fund only two types of projects outside the CHDA area: health planning agencies and primary care despite the pressures of other health needs in Appalachia. The decision was widely endorsed by such varied groups as the American Medical Association and the National Conference of Governors.

In practical terms, the process of originating, approving, assisting and managing this variety of projects has produced a unique kind of negotiating that generally results in what might be termed "involved compromise" -- a working arrangement in which all parties are involved in doing what's possible to make the project succeed. The process has evolved over the years into a management strategy for responsibility and decision-sharing that might well be examined closely by Federal agencies moving into new federalism.

Projects usually originate on the local level through health priorities set there and must then earn the active endorsement and support of the State government for funding within the States allocation. Finally, they must withstand technical scrutiny by the Regional Office of DHEW and the Commission's health staff. The whole process puts heavy demands on the professional competence, the breadth of outlook, the planning and budgeting capabilities of all parties at every level.

The interdependence mentioned above is a key component of the Commission's approach. It has meant that a major emphasis of the current program is to demonstrate health delivery systems that will work in largely rural Appalachia. In practice, local health development groups working with the Governor's office, ARC and DHEW staff, have:

Extended the services of existing physicians through use of allied health professionals in home health care, sattelite clinics, health education, communications networks, and other outreach.

Been responsible for judicious placement of new facilities and renovation of existing ones.

Complemented these with manpower training and recruitment programs adding the right number of the right kind of needed personnel.

The objective has been not simply to increase the numbers of services, but to put together comprehensive health systems that are accessible to the entire population. The same health approach, over the years, has developed certain characteristics unique to each sub-region. All, for instance, have substantial investments in primary care, both in and out of the CHDA's. Investment in CHP have been heaviest in the Central and Southern Appalachian counties since most northern counties had already gained CHP support from DHEW.

There are CHDA's in all of the sub-regions. Those in Northern Appalachia have concentrated ARC investments in primary care, home health and emergency medical services. Even in recent years, Southern Appalachia has made its largest investment in traditional health care facilities: hospital, community-based mental health centers, sheltered workshops and manpower programs. Central Appalachia, the area with the most obvious needs has also had the largest share of the health investments. The most noticeable regional projects have been here, some crossing state lines in the provision of services. In Central Appalachia home health care and solid waste disposal management have become region-wide through ARC investments. Mental health care on a community level has become similarly widespread, and many of the counties have invested substantial amounts in environmental control programs such as mosquito and rodent control and tuberculosis control.

The Commission's health activities continue to make a strong contribution to the economic development and viability of Appalachia. Its project investments are not only designed to improve health, but to provide employment in service projects that will have a continuing influx of health reimbursement dollars. Increasingly, the Commission is emphasizing the need for capable management of these projects and a practical approach to what will be financed by third party sources: Medicare, Medicaid, private insurance, etc.

The early years of hospital construction projects assisted in providing the base. This was augmented by service projects designed to bolster the limited services provided by hospitals, and also open up access to the health system. The Appalachian Regional Hospitals system although not initially constructed through ARC funds is a good case in point. The hospital itself or community organizations over the years, have used ARC funds to initiate service projects necessary to round out health delivery: home health care, emergency medical services, respiratory screening clinics family planning, health education. This approach is helping to move Appalachian areas toward equality with the whole American health system, at the same time provide significant economic benefits for the areas.

The Examples

Any innovative approach to health must take into account an important fact: there is already a "health system" operating in the area, and it has been around as long as the area has been populated. The system may be of varied value but it is there. New projects, new systems do not often move into vacuums. They must adapt to, improve, supplement, compete with, or bring major change, to the existing system.

Below are some examples of ARC-funded projects. Most have involved substantial work within the Appalachian region by the States, by the Commission and by DHEW. Several have drawn on outside technical assistance to solve highly intricate or complex problems. None has been simple.

Lawrence County Rural Health Teams, Alabama. The Lawrence County Project, Moulton, Alabama, is an effort to adapt delivery of health services to rural communities by the development of a model system using all of rural Lawrence County as a health care laboratory. Designed to respond to the unique characteristics of this particular rural county the model is applicable in areas where health resources and services are quite different. It is premised on the attending physician seeing the patients the first time they enter the system to assure that patient care is physician-directed. Continuity of care is provided at the primary, secondary and tertiary care level by the Lawrence County physicians delegating responsibility upward to specialists or downward to physicians' assistants and others.

The emphasis is on preventive care, stressing family practice and ambulatory services. Local practicing physicians are on the faculty of the University of Alabama Medical Center and person from the University is attached to the primary care centers. Physicians' assistants recruited from medical corpsmen are screened and trained both at the University and in a practical setting. These and other types of health workers join the family care unit team, whose captain is the local family physician. At full service these teams will reach 27,281 people.

Orange Grove Center for the Retarded, Hamilton County, Tennessee. Organized in 1970 with ARC funds, this center now provides an alternative to institutionalization for the severly retarded in a thirteen-county area of Southeast Tennessee and Northeast Georgia. There are 2,500 on a waiting list for admission to State institutions for the retarded and handicapped in this area. The center offers a comprehensive community program, established through cooperation with other health and education agencies in the counties. Since it is an outpatient care center, including day care for 30 to 60 children, it increases community involvement, while substantially reducing the cost of care.

Recently the center added a program for the blind retarded along with preventive dentistry services, and expanded its parent counseling services. Other accomplishments include increased public awareness and support of such services to the extent that ARC is now supporting only ten percent of the total budget. This type of project has been recommended by federal agencies, such as the DHEW, as well as the President's panel on Mental Retardation, and the Tennessee Comprehensive Mental Retardation Plan.

Hot Springs Health Program, Madison County, North Carolina. A primary care health delivery system in rural Madison County, North Carolina, serves approximately 5,500 persons in the western part of the county. It provides outpatient medical and dental care through a series of small community clinics, the majority of whose clients have never received any dental care. Nearly one-quarter of the population has had no physical examinations in the last nine years. Most families have incomes of $3,000 per annum or less and are geographically isolated from health care services.

A team approach is utilized, with services being rendered by family nurse-practitioners, other paramedical personnel such as nurses' aides, and dental hygienists and assistants. During the first six months of operation the emphasis was on improvement, expansion, and extension of services. During the second six months two outpost clincs were established, offering extended services including pediatrics, obstetrics and gynecology, and dental care. Linkages are now being developed with health resources in Asheville.

Garrett County Maryland, County Health Officer. Before 1972, the services of the Allegany County Health Officer had been used on a one-day-per-week basis. This project provides a full time resident MD, who, in addition to normal duties for a health officer, is organizing supplements to existing health services by encouraging formation of an association to attract young physicians and offer an inducement for

them to remain in the area. Garrett County's physician to population ratio (one per 3,500) is the lowest in the Appalachian part of Maryland. Consequently, health services delivery and initiation of new health-related activities form welcomed part of health officer's job.

In-Service Continuing Education, Rome, Georgia. The Floyd Hospital program of continuing education is serving a network of seven rural community hospitals in five counties, was designed in 1971 to improve the quality of rural patient care by providing a mechanism for continually upgrading the training of the health care providers. The increasing complexity of operations weighs particularly heavily on rural isolated hospitals, for they have less frequent exposure to the practice of complicated techniques, yet the need to have staff well prepared is none the less urgent.

The majority of the current education programs, which rotate among the rural hospitals, are in personal nursing, but staff are now planning to expand them to include programs for other allied health personnel. During the past year, 73 different programs were presented. These ranged from one to 160 hours each and reached approximately 4,375 professionals.

Kentucky Regional Solid Waste Management, Bell County. The final phase of the Regional Solid Waste Management Plan for the counties of the Southeastern Kentucky CHDA, Bell County Solid Waste project has now completed closing, covering and planting 14 acres of open dumps. In addition, project staff have opened a sanitary landfill that is processing 190 tons of solid waste per week. The project director, an environmental sanitarian has begun skillfully negotiating support for financing the rural and the urban collections from the tax revenues of this central Appalachia coal-mining county, where the county income is among the lowest in Appalachia and demands upon revenues still far exceed the resources. This project director has rotated from county to county in the 16 county CHDA, implementing the solid waste management plan that grew out of the original objectives set by the CHDA Council in 1968. Except for organizing rural bulk collection, the entire plan should be implemented this year. Approximately 40 percent of the rural waste is now collected versus 65 percent of the urban waste.

Southeast Ohio Emergency Medical Services. Southeast Ohio Emergency Medical Services, a demonstration project covering seven counties and 3500 square miles, has begun to provide rural Ohio with a complete emergency medical service system. When SEOEM is operational, no injured resident of the area will be more than twenty minutes away from professional medical care. In recent years funeral directors, because of government regulations, rising costs, and service boundary restrictions, sought to withdraw their emergency services, leaving four counties with no service at all. Under the demonstration project, SEOEMS has opened fourteen of seventeen emergency stations in the seven-county area. A central headquarters, now under construction, will house the all-important communications dispatch center, linking the victim to medical care. After a call to the dispatcher via single toll-free number in any of the counties, an emergency vehicle is sent to the site. These vehicles are equipped with up-to-date emergency equipment ranging from resuscitators to rescue-extrication gear capable of lifting an 8000 pound load from a victim.

Emergency Medical Technicians have been trained under the SEOEMS project, in emergency victim care on site and in transit, in cooperation with the Ohio Division of Vocational Education, and will be trained in care for the victim upon entrance to the hospital emergency room, by the Ohio Hospital Association and the Department of Health and Education. Medical professionals have long recognized that it is often the quality of care provided by the emergency attendant which determines whether a victim lives or dies.

Emergency room staffing and improvement are also vital parts of the SEOEMS system. It provides funds to hire emergency room physicians, improve emergency room facilities, and to develop and improve ambulatory-patient centers. A final aspect of the SEOEMS system is a community education effort to let the county residents know what the SEOEMS can do and to become aware of accident prevention. To accomplish this, SEOEMS staff members visit schools and organizations to speak on the system and its services. The SEOEMS demonstration which has always been a model for the rest of Ohio, was selected as a National model for rural Medical Services by DHEW last year.

Child Development Program

Section 202 of the Appalachian Act was amended in 1969 to provide grants for child development on the same funding basis as those provided for planning, construction and operation of health projects. In the reports accompanying the 1969 Amendments, the Congress directed that the Appalachian child development program serve as a "national laboratory" for coordinated child care.

In the effort to carry out the "intent" of the Congress the Commission has concentrated on two major goals. The first goal has been to foster planning and operating experience essential to manage and administer a program of comprehensive child development services. This goal was established because of the universal need in all states to develop the capacity of State and local communities to make effective use of existing Federal programs having resources available for services to young children. The Commission was also anticipating the launching of major national program in child development, which made the need for capacity building more urgent.

A second major goal was to encourage the development of a series of demonstration projects in each of the Appalachian States. The flexibility of a demonstration program would provide States with the opportunity to develop program models that would be comprehensive in nature, yet responsive to needs determined by States and local communities. At the same time, this approach would enable States to establish program criteria suitable to their goals and objectives, observe and test models as to their relative effectiveness and to develop alternate strategies within the program.

During FY 1973 the Commission approved a significant change in the allocation procedure for programs funded under Section 202. Previously, allocations had been made separately to Health and Child Development. The change in procedure provided a single allocation, thereby enabling the State to build a more flexible program designed to serve the health and developmental needs of all the people within that allocation, there is flexibility for the Health program to provide Child Development services, while the Child Development program is able to provide real coverage for the families of the young child rather than targeting primarily on the child. Experience has demonstrated that this new procedure has not changed significantly the spending pattern of the States in either program. It has permitted a more flexible use of the funds provided each State.

Program Operations

All Appalachian States have established a State Interagency Committee to plan and implement their programs. The Committee is the focal point for coordinating the efforts of the several State agencies, including health, education, mental health, and welfare which deal with young children and their families. These services generally had been fragmented and categorical, reducing effectiveness and leaving great gaps in the delivery of services.

As a result of the FY 1971 projects approved by the Commission, services were provided to 20,000 children and their immediate families. 125,445 children will be reached by one or more services funded in FY 1972. Of these, 12% are receiving comprehensive day care in center or home-based programs. Approximately 5% of the day care children are handicapped, and their day care includes special services to meet exceptional needs.

Planning for fiscal year 1973 was made exceedingly complicated by the uncertainty over regulations governing Title IV-A of the Social Security Act. The net effect was to limit the scope of operation in those States most immediately affected. For example, FY 1972 projections indicated that ARC projects would generate an additional $51.7 million, most of it Title IV-A funds, under the original regulations. The actual amount generated in FY 1973 was $9.5 million for continuations and $.5 million in new projects.

According to the original FY 1972 predictions, approximately 353 sites were to be established or expanded and over 5,000 local positions required to provide services in projects funded through the Child Development program. Given the changes in Title IV-A, the number of sites have been reduced.

The FY 1971 total served accounted for 1% of the children 0-5 in the region. At that time it was anticipated that in FY 1972 programs would expand to serve 5%, and in FY 1973 expand to serve 7%. The possible 145,445 children funded by the FY 1971 and FY 1972 programs above constitute 7%. Final census figures will be available around mid-March, since many projects approved in FY 1972 have only begun late in FY 1973.

Program Categories

Basically, all Child Development projects approved for support from Section 202 fall into three basic categories: 1) planning, technical assistance and training; 2) research and demonstration; 3) comprehensive child development services.

1) Planning, Technical Assistance and Training.

The planning, technical assistance and training projects are designed to build the capacity of State and local units of government to undertake planning activities, which will integrate, as feasible, local, State and Federal resources and focus them on the development needs of children and their families. These planning activities are carried out under the direction of State Interagency Committees. The process is designed to create improved planning and management of all State resources and services focused on this population.

Technical assistance and training activities are designed to implement State plans and to strengthen the capacity of local communities to manage and administer the single entry point delivery system.

For example, South Carolina has determined that is would design a project to prepare persons to serve as members of day care team. Another South Carolina project provides for State level administrative services for the ARC supported child development programs, liaison services between ARC and the various State agencies, and program development. Georgia, Mississippi, New York, North Carolina and Tennessee have also added similar components to their programs. These projects develop and strengthen program planning, management and administration.

2) Research and Demonstration.

The entire ARC Child Development program is described as a demonstration program or a "national laboratory" for coordinated child care. Nevertheless, it is important to note that the Commission structure affords each State maximum opportunity to carry out research and demonstrations that are within the States range of priorities, so long as they are consistent with the Appalachian Act and Commission Code. Research and demonstration projects are designed to gain new insights for improving organizational efficiency, improving skills of staff at both the State and local program levels and developing improved methods and materials to be used in all service programs for young children.

A significant project was undertaken by New York to develop a model for planning and implementing child development programs which carefully define details of service input by age for normal and handicapped children. Based on this plan, they surveyed needs and resources in a three county demonstration area, and with existing resources, used ARC funds to fill gaps so as to provide services where they did not exist.

Other significant accomplishments of this nature have been the development of two motion picture films that have received widespread approval and are in constant demand by communities throughout the nation, as well as in Appalachia. We would like to expand this activity by taking a closer look at ways to use electronic media to reach children and families who are geographically isolated - especially in Central Appalachia. We believe it is important to consider ways in which we can reach geographically isolated families with a range of experiences that build on social and cultural patterns that are compatible and supportive to their development. Continued research and development plans are being reviewed as to their suitability to achieve this need.

3) Comprehensive Child Development Services.

The major group of projects supported with ARC funds are designed to create a single entry point delivery system for providing needed developmental services. A single entry point implies that once a child or family is identified, that a complete range of preventive services are at his disposal from a single source as indicated by need for such service. The intent is to eliminate overlaps, competition and omissions among various potential providers of any one service; e.g., health screening and follow-up. In many tranditional service delivery systems follow-up is separated from diagnosis and screening. Consequently follow-up is rarely undertaken and when it is, the original diagnosis and screening may or may not be used in the treatment program.

While there are variations in the manner and style by which the ARC States organize and deliver comprehensive child development services, there is little variation in what is considered comprehensive services. Each State is free to determine what range of services they will fund from Appalachian Section 202 funds. However, each State is required by the ARC Code to provide a complete range of comprehensive services to the eligible population in the demonstration area whether or not they are funded from ARC funds.

Therefore most States have used ARC funds to expand the range of services already provided by the State or other local or Federal programs and to improve the administrative process for providing these services. The State of Ohio has developed program models that represent the basic patterns and components of service delivery.

The State-planned program for Appalachian Ohio is to establish a delivery system of comprehensive child development services available to all children 0-6 and their families in the 28 counties of Appalachian Ohio.

The total program, developed by the State Interagency Committee and the Ohio Department of Development, will bring together into a single system various existing resources and provide for the additional needed services. The program will be administered by three local development districts: the Tuscarawas Regional Advisory Commission, Buckeye Hills-Hocking Valley Regional Development District, and the Ohio Valley Regional Development Commission.

There are 28 individual projects making up Ohio's FY 1973 child development effort. The projects will provide health care, education, nutrition, and social services including pre- and postnatal care, family planning, health education, immunizations, medical and dental evaluation, referral and follow-up, nutrition education, emergency food for children suffering from mal-nutrition, day care, and referrals for children and families with special needs to appropriate agencies.

Between 11,000 and 13,000 children will be reached, about 10% in full year comprehensive day care. The remaining children will benefit from a variety of outreach efforts including screening and follow-up in health and education. The program could require as many as 434 staff positions and establish 12 child development centers.

Administration, Evaluation, and Technical Assistance

An amount of $1,500 thousand is estimated in both 1974 and 1975 for the provision of technical assistance and evaluation and for administration of the program at ARC and the Department of Health, Education and Welfare. The technical assistance program provides for the contracting of experts in various health and child development subject matter fields to assist and advise State and local groups in providing services to the public. Programs for evaluating the child development and health programs are also planned for 1974 and 1975. The technical assistance and evaluation programs are estimated at 306 thousand for 1974 and $348 thousand for 1975.

Administrative costs of the program include staff at HEW regional offices to provide technical review of project applications and to monitor ongoing operating-type projects. An estimated $902 thousand will be required in FY 1975 to fund HEW regional staff assigned to both the comprehensive health development and child development programs. This will fund full-year costs for a total HEW staff of 31 positions, nearly all of which are stationed in 4 HEW Regional Offices.

The ARC staffs provide overall leadership for the program, work closely with State and area officials in the development and review of health and child development plans, and review project applications for program content and their relationship to area health and overall development plans. As estimated $350 thousand, a reduction of $145 thousand is requested for funding 11 positions in FY 1975. This reduction is being accomplished by shifting 5 positions to be funded jointly by State and Federal contributions.

Sec. 202: Appalachian Demonstration Health Projects
Administrative Costs
HEW unless otherwise indicated

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
	Personnel compensation:			
11.1	Permanent positions	247	568	667
11.3	Positions other than permanent	36	7	7
	Total personnel compensation	283	575	674
	Personnel benefits:			
12.1	Civilian	38	50	59
21.0	Travel and transportation of persons	80	95	107
22.0	Transportation of things	3	15	9
23.0	Rent, communications, and utilities	1	4	5
24.0	Printing and reproduction	6	9	9
25.0	Other services	89	34	21
25.2	Services of other agencies (ARC Administration)	381	495	350
26.0	Supplies and materials	2	11	12
31.0	Equipment	11	6	6
	Total obligations	894	1,294	1,252

PERSONNEL SUMMARY

Department of Health, Education and Welfare

Total number of permanent positions	28	31	31
Average paid employment	18	30	30
Average GS grade	10.9	11.2	11.2
Average GS salary	$16,874	$18,606	$19,430

SECTION 205: MINE AREA RESTORATION

	(thousands of dollars)	
	1973 Actual	1974 Enacted
Appropriations:		
Regular Bill	2,000	4,000
Tropical Storm "Agnes" Supplemental	11,000	--
Obligations, Net	10,949	14,875

Program for 1975

During 1975 mine area restoration projects would be one of the types of projects funded under the activity "Area Development Programs". It is anticipated that the projects to be undertaken by the several coal-mining States primarily would be of the relatively small surface restoration and pollution abatement projects. Larger subsidence projects could, however, be financed depending on the relative priority of the project within the individual State's package of projects requiring financing within the funds allocated to it.

As is presently the case project applications within these allocations will still require review, evaluation and specific approval for each individual project by the Commission before work can be undertaken.

	(thousands of dollars)	
Current Status of Program and Financing	1973 Actual	1974 Enacted
1. Funds Available:		
A. Appropriation	13,000	4,000
B. Transfer from Section 212	--	555
C. Unobligated balance brought forward	8,270	10,320
D. Recovery from prior year projects	1,633	4,900
Total Available	22,903	19,775
2. Commitments of Funds:		
A. Prior year projects approved but not obligated, net	5,506	9,663
B. New project approvals	16,044	9,412 1/
C. BOM Administrative & Engineering costs	696	700
Total Commitments	22,246	19,775
Uncommitted balance, end of year	657	0
3. Unobligated Balance, End of Year:		
A. Approved, but not obligated	9,663	0 2/
B. Uncommitted balance	657	0
Total, Unobligated Balance	10,320	0

1/ $7,434 committed as of December 31, 1973.

2/ Assumes that Bureau of Mines will be able to enter into contribution contracts for all projects by the end of FY 1974.

Program for 1974

As is indicated in the above table, an amount of $19,775 thousand is available in Fiscal 1974 for obligation in the mine area restoration program. This includes $4.9 million in funds recovered from prior year obligations largely as a result of construction bids considerably below the amount approved for several large subsidence projects.

Approximately $9.7 million of the funds available for obligation will be required for obligation of projects by the U.S. Bureau of Mines which the Commission has approved but where the Bureau of Mines has not entered into "Contribution Contracts" with the State and thus has not obligated the funds. Those obligated approvals include four large subsidence projects mostly in the area hit by Tropical Storm Agnes totalling $9.1 million.

After covering these projects and $700 thousand for administrative and engineering costs at the Bureau of Mines there remains about $9.4 million for new project approvals in FY 1974. As of December 31, 1973 nearly $7.4 million of these funds were committed, including approximately $5.2 million for phase II of the Scranton Hill section project as provided by House and Senate Committee reports on the 1974 appropriation. There remains approximately $2.0 million for financing other mine area restoration projects for the balance of 1974.

Program in 1973

During 1973 the Commission committed all but $657 thousand of the funds available. Although at the close of the fiscal year there was $10.3 million unobligated nearly $9.7 million of projects had been approved, but not yet obligated by the Bureau of Mines through its contribution contract process. Since the fiscal year closed we have been advised that bids on three large subsidence projects were considerably less than had been approved by the Commission and that this would result in substantial obligation recoveries expecting to total $4.9 million in 1974. Some $1.1 million of these recoveries was in the "Agnes" area and permitted funding an additional project in that area. Most of the remainder is being utilized with unobligated balances being transferred from the inactive Section 212 program to complete funding on the Scranton Hill project.

To date $10.5 million of the $11 million provided in the Tropical Storm Agnes supplemental appropriation has been approved for six projects. Five projects for $8.6 million are subsidence projects in the Wilkes-Barre, Pennsylvania area. The remaining project is a mine drainage pollution abatement project in Allegany County, Maryland, where a pollution problem was accelerated and worsened by Tropical Storm Agnes. Upon completion, the project should enhance the water quality in the Potomac River (North Branch) and the Bloomington Reservoir.

Program Background

Section 205 of the Appalachian Act authorizes programs for (1) the sealing and filling of voids in abandoned coal mines to prevent surface subsidence; (2) the extinguishment of underground and outcrop mine fires; (3) the sealing of abandoned oil and gas wells; (4) the abatement of mine drainage; (5) the reclamation of surface mine areas and mining waste banks on public lands; and (6) the necessary planning and engineering required for the identification, selection, and implementation of these reclamation projects.

While the bulk of the Commission's funds were utilized for mine fire and subsidence projects, this section was amended in 1971 to specifically include the abatement of mine drainage in the program. These substantive amendments have now resulted in the Commission having a sufficiently broad program for undertaking a much more comprehensive approach to remedying mining damages in any area. This new authority reflected one of the principal conclusions reached in the Commission's Acid Mine Drainage Study (completed in 1969) that the abatement of one type of mining pollution should be part of a more comprehensive pollution control and environmental improvement program for the lands and waters of the area affected.

Through the supplemental funds previously appropriated to our Section 302 program, the Commission is contracting for special research on subsidence risk, adjustments and prevention that recognizes the overall problem is one of developing an improved approach to managing land use. Ultimately, Section 205 and 207 projects and other Commission investments should be funded to reflect a policy that will accommodate to the hazards of mining impacts.

Under the Monongahela River Basin project, funded separately via a grant from EPA, techniques have been developed for concurrently solving mine drainage pollution and other environmental problems located in close proximity. Three demonstration sites in the Cherry Creek Watershed of Maryland, the Sewickley Creek section of Pennsylvania and the Dents Run Watershed of West Virginia have been earmarked for demonstration work to illustrate the overall economic improvement which can be derived from the abatement of environmental detriments in these watersheds, primarily acid mine drainage. Work in the Cherry Creek area is currently being funded with Section 205 monies.

At present two States, Pennsylvania and Maryland, have bond financed funds and Ohio has a mineral severance tax for financing mine area restoration work, while West Virginia is seeking an appropriation for this purpose. Unless other State legislatures make funds available projects in those States will need to be financed locally for the non-Federal share.

Under existing legislation the Appalachian Regional Commission is the only agency of government which can give grants to the States for action programs in acid mine drainage pollution work. Several other Federally supported programs are aimed at developing research for development programs and provide additional data on mine drainage abatement technology. The Commission's program is aimed at using existing know-how to apply to this vexing problem.

Administrative and Engineering Costs

The Commission is estimating an amount of $520 thousand in 1975 for administrative and engineering costs at the Bureau of Mines. This is reduction of $180 thousand from the $700 thousand estimated for 1974. For a number of years these administrative costs were at a relatively high amount, as compared with other ARC programs, because the Bureau of Mines directly supervised all mine fire extinguishment projects. Since the last of these projects has been completed costs should go down in 1975.

The budget for 1975 will fund an average number of 31 employees at the Bureau of Mines.

SUMMARY OF APPROVED MINE AREA RESTORATION PROJECTS

December 1973

State & Type of Project	Completed	Underway	Awaiting contribution contract 1/	Total	Estimated Total cost of all projects (000) 2/	Cost of completed projects (000)
Pennsylvania:						
Anthracite Mine Fire	8	1	0	9	$16,692	$13,925
Bituminous Mine Fire	22	3	0	25	1,494	1,260
Subsidence	7	4	4	15	32,695	6,447
Surface Restoration	3	1	0	4	629	370
Oil & Gas Well Sealing	2	0	2	4	171	43
Sub-Total	42	9	6	57	$51,681	$22,045
Other States:						
Surface Restoration and Well Sealing:						
Ohio	3	0	0	3	1,258	1,258
Virginia	1	0	0	1	219	219
Maryland	0	0	2	2	2,635	--
New York	1	0	0	1	150	150
West Virginia	1	0	0	1	284	284
Sub-Total	6	0	2	8	$ 4,546	$ 1,911
GRAND TOTAL	48	9	8	65	$56,227	$23,955

1/ A contribution contract is an agreement between the Secretary of Interior and State and local officials assuring that Federal and State funds are available and that legal requirements for conduct of the project will be met. It precedes contracts for actual conduct of work.

2/ Estimate includes both Federal and State funds. Federal (ARC) costs are 75 percent of project costs or an estimated $42,170 thousand.

NOTE: The projects summarized here are those being conducted in conjunction with the Bureau of Mines, Interior Department. Four additional surface reclamation projects (3-Ohio, 1-Tennessee) were undertaken during the first two years of the Commission's program by the Bureau of Sport Fisheries and Wildlife. This program is no longer operative and the projects are completed.

Sec. 205: Appalachian Mine Area Restoration
Administrative Costs
U.S. Bureau of Mines

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
	Personnel compensation:			
11.1	Permanent positions	617	646	457
11.3	Positions other than permanent	6	6	6
11.5	Other personnel compensation	2	2	2
	Total personnel compensation	625	654	465
12.1	Personnel benefits: Civilian	55	56	40
13.0	Benefits for former personnel	1	---	---
21.0	Travel and transportation of persons	16	15	15
22.0	Transportation of things	6	2	2
23.0	Rent, communications, and utilities	19	5	5
24.0	Printing and reproduction	4	5	5
25.0	Other services	53	50	50
26.0	Supplies and materials	11	4	4
31.0	Equipment	2	4	4
	Subtotal administration	792	795	590
	Less States' share	-96	-95	-70
	Total obligations	696	700	520

PERSONNEL SUMMARY

Bureau of Mines

Total number of permanent positions	40	39	28
Full-time equivalent of other positions	3	3	3
Average paid employment	42	41	31
Average GS grade	9.1	9.1	9.1
Average GS salary	$14,812	$15,355	$15,576
Average salary of ungraded positions	$ 9,880	$ 9,979	$10,079

SECTION 211: VOCATIONAL EDUCATION FACILITIES

	(thousands of dollars)	
	1973 Actual	1974 Enacted
Appropriation	25,500	25,000
Obligations	26,009	25,011

1975 Program

During 1975 this program will be conducted as part of the Area Development program previously described. Projects are expected to be approved for much the same types of projects as in the past with slightly increasing emphasis on funds for operating type projects. Grants for construction and equipment of vocational education facilities are expected to comprise about 75 percent of this program.

Current Program Estimates

The 1974 program will be at about the same level as in 1973 with a slight increase in operating type projects more than offset by an anticipated decrease in construction and equipment requirements. The following table shows comparable funding requirements by type of project for FY 1973 and FY 1974.

	(thousands of dollars)	
Type of Use	1973 Actual	1974 Estimate
Construction and Equipment	21,862	20,011
Operations	2,482	3,000
Special Demonstrations and Administrative Costs	1,665	2,000
Total Obligations	26,009	25,011
Less prior year balances	- 520	- 11
Balances carried forward	+ 11	+ 0
Appropriation	25,500	25,000

Construction and operating grants are exactly the same kind of grants that are made available to the States under the Vocational Education Act of 1963, as amended. Vocational education is a key element in the training and upgrading of potential and existing labor force entrants. During FY 1973, ARC funds were utilized in construction, equipment, operating and demonstration projects for vocational education totalling 66.9 million in total project costs. Of this, as shown below, $32.0 million, or 48 percent, was in non-Federal funds with some $32.6 million or 49 percent from Appalachian funds of which the bulk was from Section 211 funds. It is estimated that when completed, the 59 facilities approved in FY 1973 will provide enrollment capacity for approximately 23,000 students.

As is shown in the table below, State and local funds constitute nearly 48 percent of funds utilized in 1973 as compared to 32 percent in 1972. The increase in State and local contributions offset a decrease in the use of vocational Act funds from the Office of Education and smaller decreases in ARC funding:

(millions of dollars)

Source of Funds	FY 1972 Amount	FY 1972 Percent	FY 1973 Amount	FY 1973 Percent
Office of Education Vocational Act Funds	$ 8.2	11.1	$ 3.4	3.4
Appalachian Regional Program:	40.7	55.3	32.6	48.8
Section 211 Grants	31.8	43.2	26.0	38.9
Section 214 Supplements	8.9	12.1	6.6	9.9
State and Local Funds	24.7	33.6	32.0	47.8
TOTAL	$73.6	100.0	$66.9	100.0

Vocational education is a particularly strong need in Appalachia. Based on data from several Appalachian States, it is estimated that the dropout rate is significantly higher than the Nation's and the proportion of students continuing their education beyond high school is considerably lower than the U.S. average. For instance, in Appalachian Kentucky, only 62 percent of the 9th grade students graduate from high school compared to 75 percent from the U.S. and only 40 percent of the graduates go on to college vs. 53 percent for the U.S. With fewer students completing high school and fewer going beyond the secondary level, the Region produces youngsters less well equipped to face competition in the job market than their contemporaries elsewhere.

At the same time, there is high interest in vocational education in the region. A greater portion of secondary school students in Appalachia participate in vocational education courses than in the Nation as a whole. The Commission is attempting to develop a new profile of manpower skills in Appalachia through heavy investments in vocational and technical education. It is influencing the trend toward curricula which are tailored to existing and future job opportunities.

Construction and Equipment Program

Over one-fourth ($194.8 million) of the approximately $735 million non-highway funds obligated through June 30, 1973 has gone into the construction of vocational education facilities. Most of the Appalachian States have listed vocational education or manpower as the first or second priority in their State investment plans for other than highway projects.

As of June 30, 1973 Commission funds were approved for the construction of 450 vocational education projects. It is estimated that when all of these facilities are fully operational, they will enroll 175,000 secondary students and 45,000 post-secondary students. During the first four years, the majority of Commission-assisted projects were for the construction of one or more new buildings to constitute new area schools. However, during the last four years, the trend has shifted to construction of new buildings, or expansion, remodeling, and re-equipping of an existing building or buildings at existing area schools.

The following estimates based partly on a 1971 survey have been prepared on the status of the ARC vocational education construction program in the Fall of 1973. There were 200,000 persons enrolled in the 300 facilities that were in operation in the Fall of 1973. When those facilities and the additional 150 facilities approved through June 30, 1973 reach maximum enrollment, in the 1977-78 period there will be about 295,000 persons receiving vocational education in those facilities.

Type of Program	Current Est. Enrollment	Estimated Maximum Enrollment
Secondary	120,000	175,000
Post-Secondary	30,000	45,000
Adult	50,000	75,000
Total	200,000	295,000

It is estimated that the FY 1974 appropriations will provide construction assistance for approximately 50 facilities with an estimated annual enrollment of 15,000 students. Many of these assisted facilities represent the addition of completely new vocational training opportunities sometimes by replacing older primarily home economics and agriculture oriented training with modern job oriented training opportunities or by providing facilities where none previously existed. At times the ARC grant may not result in as many new vocational education "slots"

but serves primarily to replace outdated and cramped older structures or to improve or modernize facilities and the necessary vocational training equipment which is expensive and has relatively rapid obsolescence.

A number of the ARC assisted facilities are utilized for other services such as MDTA institutional training and adult basic education programs, both in the daytime and in the evenings. Also, the facilities are being used for community meetings and educational in-service meetings.

Operating Projects

The need to accommodate this rapid increase in vocational education enrollment plus the impact of the 40 percent set-aside of basic funds and the recent sharp escalation in teacher salaries has placed a severe strain on operating funds for vocational education programs in the Appalachian Region. In recognition of these facts, the Congress amended the Appalachian Regional Development Act in 1971 so that Section 211 funds could be used to support operating programs.

The Commission has adopted priorities for operating grants that include: more efficient use of facilities through double-shift and adult use; career education and career orientation programs; guidance and placement services; programs in fields of critical manpower shortages; and transportation services for isolated rural students.

Through FY 1973, approximately $4.9 million of Section 211 funds have been approved for 52 annual operating grants. Approximately half of the $4.9 million was obligated in the first priority area (additional vocational and technical education programs at the Appalachian assisted facilities). Operating grants were approved in all of the other priority areas listed above. Of this amount about $2.5 million was utilized in 1973 for 18 operating projects including continuations of 12 projects initially funded in FY 1972.

Operating grants included assistance to an interesting experiment in an Erie, Pennsylvania vocational school. To maximize the use of this school they brought in an additional complete faculty (except coaches) and hold two complete sessions in the same building. The first session is Monday, Tuesday, Wednesday; the second session on Thursday, Friday and Saturday. Each student goes to school 8 hours a day (compared with the previous six) with a shorter summer vacation (one month instead of three).

Previously the facility offered 14 programs for 1,150 students. ARC is assisting in this expansion which will add 15 programs and 900 students to the same facility. ARC provided a grant of about $243,000 for an expansion program of nearly $2.3 million.

Demonstration Projects

In the 1971 Amendments to the ARDA, the Congress also authorized the Commission to approve grants for "planning, construction, equipping, and operating vocational and technical education projects which will serve to demonstrate area-wide educational planning, services, and programs. The general purpose of these demonstrations would be to find ways to make education and training more relevant in assisting Appalachians to choose occupations and employment through being aware of the range of occupational choices available to them and helping them gain access to the field of their choice. Particular emphasis will be placed on programs which will service the rural population by conducting programs involving two or more school jurisdictions. There is also a need to conduct demonstrations in rural settings of the new approach to vocational education now being implemented by the U.S. Office of Education. This new approach divides all vocations into 15 "clusters" of related occupations.

The Commission adopted priorities for demonstration projects that include: more effective ways to utilize fully vocational and technical education facilities; career education and adult in-service professional development; home-based multimedia individual study programs or self-paced programs; innovative approaches to guidance and to placement; and innovative facility and equipment projects such as mobile classrooms or mobile guidance facilities.

As an incentive to the Appalachian States to conduct demonstration projects, a special set-aside of $1 million was approved for matching funds utilized by the States in demonstration projects in both FY 1972 and FY 1973. About $3.5 million of Section 211 funds were obligated through FY 1973 for 40 annual innovative areawide vocational education demonstration projects. Most of the demonstration grants were for projects in the priority area of career education. In FY 1973, $1.7 million was

approved for 20 demonstration projects including continuation of 11 projects funded in FY 1972.

ARC has provided assistance to develop career education programs in at least 38 local education agencies in Appalachian Alabama. Career education is designed to make what happens in the classroom more meaningful to the individual student by relating it to the world and the way in which he will earn his living. It helps elementary students develop awareness of self and the world of work, provides work experiences for junior high students and teaches senior high students the knowledge and special skills they need to become employed or to pursue further education after high school.

The Alabama program, which is being administered by the Vocational Division of the State Department of Education, is developing comprehensive demonstrations of this type of educational program. The results of these demonstrations are being used in developing career education programs for the entire state. For FY 1972, ARC provided $261,125 of the total cost of $350,000 for the first year of this innovative project. The project was funded for another year in FY 1973. ARC provided $238,568 and Part D funds of $53,570 brought the total cost of the grant to $292,318.

Evaluation

The Commission has approved an evaluation study to measure the impact of ARC funded vocational education facilities in 25 selected areas of the Region and to assist in the education and manpower category of the program design study. A cross section of Appalachian vocational institutions will be examined in the process.

This study will measure the degree to which ARC assisted vocational education programs have impacted on the areas served by such programs. Of particular significance will be a measure of the number of jobs graduates of the sampled institutions have filled in local industry. The study will include examination of the following:

1. Training relationships between vocational schools and local industries.

2. The rate of placement of graduates with local industries.

3. The effect of the subject schools on attracting new industries to the community.

4. The scope of training programs offered by the subject schools in response to health and child development manpower needs in the community.

5. To assist in the education and manpower category of the program design study.

It is anticipated that the study can provide an adequate and fair approximation of the impact ARC's vocational education program has had in the Region. It is anticipated the study will provide answers to basic questions concerning the administration of vocational education programs supported by ARC.

Generally most vocational schools report excellent results in the job placement of students. A special five year graduate follow-up study of Asheville-Buncombe Technical Institute, in Asheville, North Carolina completed in the Fall of 1972 reported 92 percent of the Institutes graduates of the past five years as employed in their field of preparation, with only 1 percent reporting dissatisfaction. Eighty percent stated that the degree or diploma earned at Asheville Tech was necessary or helpful in obtaining and keeping their present position.

The graduates reported that they did not have to go into another on-the-job training program. Seventy-six percent said that the training they received at Asheville Tech was adequate for their employment position. Seven percent of the graduates transferred to another institute, one percent have graduated from a four-year college; however, 11 percent have returned to Asheville Tech for additional training.

The Appalachian Commission is influencing the trend toward curricula which are better tailored to existing and future job opportunities. It is assisting in the construction of new facilities offering such courses as drafting, welding, cosmetology, data processing, advertising, child care, aircraft maintenance, highway engineering assistants, merchandising, marketing, chemical technology, horticulture, and mining. In all, there are nearly 100 different courses in schools funded under the Act,

according to figures supplied by the States. Only 6.4 percent of the students enrolled in Appalachian program schools are in agriculture courses; 9.1 percent in home economics; 17.3 percent in office education courses; 6.8 percent in technical education; 53.2 percent in trades and industry; 3.8 percent in health occupations; and 3.4 percent in distributive education courses. Each State in submitting an application for Appalachian assistance on a vocational education project is required to demonstrate that course offerings will relate to job opportunities in the locality and surrounding areas. In addition, where the application is for an equipment, construction, or operation grant to provide for a course from which more than one class has been graduated, the project application shall relate such course offerings to date on the placement experiences of graduates who took such courses.

Operation of Program

The Secretary of Health, Education and Welfare is authorized by the Act to make grants for constructing, equipping, and operating of vocational education facilities in the Region. Grants are made for projects which are initiated in each State by the Governor's representative on the Appalachian Regional Commission. The projects are reviewed by Commission staff for their effectiveness in carrying forward State and locally developed plans for the "investment" of allocated funds. They are screened by the Office of Education for their adherence to the requirements of the Vocational Education Act of 1963 and its Amendments. Disbursements of project funds and project monitoring is also performed by the Office of Education. The budget request includes $53 thousand for a three-man staff in the Office of Education.

Sec. 211: Appalachian Vocational Education Facilities
Administrative Costs
Office of Education

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
	Personnel compensation:			
11.1	Permanent positions	42	42	42
	Total personnel compensation	42	42	42
	Personnel benefits:			
12.1	Civilian	4	3	3
21.0	Travel and transportation of persons	1	2	2
23.0	Rent, communications, and utilities	2	3	3
25.0	Other services	2	3	3
	Total obligations	51	53	53

PERSONNEL SUMMARY

	Office of Education		
Total number of permanent positions	3	3	3
Average paid employment	3	3	3
Average GS grade	7.7	7.7	7.7
Average GS salary	$12,572	$13,827	$14,089

SECTION 214: SUPPLEMENTAL GRANTS

	(thousands of dollars)	
	1973 Actual	1974 Enacted
Appropriation	$37,000	$34,000
Obligations	39,513	38,026

1975 Program

During 1975 this program will be conducted as part of the Area Development program previously described. Projects are expected to be approved for much the same types as have been financed previously with the trend continuing toward greater utilization of these funds for water and sewer system grants to promote the community and economic development of the States and sub-regions. Increasing use of the Commission's authority to utilize these funds as first-dollar grants is also anticipated.

Supplemental Airport Safety Grants

The supplemental Appropriation Act of 1971 included an additional $8.5 million appropriation for supplemental grants. These additional funds were intended to be used only for supplementing airport construction safety projects which have a basic grant provided under the provisions of the Airport and Airways Development Act of 1970. Through FY 1973 a total of $5.8 million had been committed under this special program leaving a balance of approximately $2.7 million. The low rate of obligations for the special airport safety grants in 1973 can be attributed to legislation which increased the proportion of basic Federal grants by the Federal Aviation Administration for airport construction from 50 to 75 percent. Whereas in previous years applications for ARC grant assistance under the supplemental program for airport safety could be for as much as 30 percent of the total cost, under the new airport legislation applications for ARC assistance are now for only 5 percent of total cost. On this basis the balances available in this special account will probably be sufficient to cover all project applications in both 1974 and 1975.

The following table reflects the fiscal activity for the entire program and for the regular supplemental grant program after deducting the activity of the special airport program.

	1973 Actual		1974 Enacted	
	Appropriation	Obligation	Appropriation	Obligation
Total Appropriation	$37,000	$39,513	$34,000	$38,026
Less Special Airport Program	0	450	0	2,730
Regular Program	$37,000	$39,063	$34,000	$35,296

Operation of Program

The Section 214 supplemental grant program was initially designed to assist States, counties, or local communities in the Appalachian Region which were unable to participate in regular grant-in-aid programs for construction of facilities because of a lack of local matching funds. Grants may increase the authorized Federal percentage under existing grant-in-aid programs (which range from 30 percent to 75 percent), to a maximum of 80 percent. The degree of supplementation is determined by the applicant's ability to match the Federal share on a dollar basis. Experience has shown that only one-third of the projects actually use the maximum supplemental grant funds available. In part, this reflects the efforts of the States and the Commission to insure that Section 214 funds are not being substituted for other available Federal and non-Federal funds as directed by the Act. However, the

accelerating pace of planning and development in the Region under the impetus of the Appalachian program, coupled with the concentration of investments in areas to produce the greatest developmental impact is placing State and local governmental units in a position where they are finding it more difficult to provide the money necessary to match Federal grants. This is true in spite of the improved money market conditions for public borrowing. Local governments in particular are being confronted by an ever-increasing demand to provide new and expanded services requiring increased expenditures for capital development. Increased taxes are the major source of funds to meet these costs. Under these circumstances, local governments are finding it difficult to secure authorization for bond issues.

With the Amendments of 1971 (P.L. 92-65), the Commission also was authorized to provide special basic grants when there is insufficient basic money under regular Federal grant-in-aid programs to permit funding of projects. These special grants may be used to supply all or any portion of the basic Federal contribution to projects under Federal grant-in-aid programs. Projects funded in this manner must meet all of the requirements of the basic grant program, as certified by the administrator of such program. These special basic grants may not be used as a substitute for Federal and State financial assistance which may be available under other Acts for the same type of programs or projects in the portion of the State within the Appalachian Region.

During FY 1973 increased use was made of this authority wherein a total of twenty-eight projects for $7.5 million of ARC funds was utilized. This amounted to about nineteen percent of the funds committed in 1973. In FY 1972, there were only seven projects for $1.7 million or about four percent of the funds committed. During 1974 and 1975, the amounts utilized for this portion of the program are likely to continue to increase as nationwide programs of construction grants are allocated reduced amounts of funds. Grants will continue to be made by the Commission for those types of facilities which are essential to growth and improvement of various portions of the area, and for which other financing is not available.

In granting the Commission these authorities, Congress did not specifically identify which grant-in-aid programs were to be supplemented. Rather it identified a broad list of programs eligible for supplementation. The new Section 214 authority in effect has given the Commission greater opportunity to experiment with a non-categorical or in some respects a modified block grant approach. The States are allocated Section 214 funds by a formula which takes into consideration equality, land area, population, and per capita income weighed inversely.

With few exceptions, the Commission has left to the States the decision concerning which programs would be eligible for supplementation, with the restrictions that individual projects must be related to the social and economic development of the Region.

Proportions of Federal and Local Funds

Since the inception of the supplemental grant program the Federal contribution toward eligible project costs has been 52.3 percent with State or local sources providing the remaining 47.7 percent. While the Federal share of projects in 1972 was nearly 63 percent, the 1973 program indicated only 51 percent of eligible costs was provided by Federal sources. While both Federal dollars and percentages declined in 1973 from 1972 State and local contributions showed an increase so that the total eligible cost of approved projects in 1973 was only slightly less than in 1972. Apparently 1972 was an aberration as far as the higher proportion of Federal funds was concerned, while the 1973 experience represented a more average year in that the Federal proportion of costs was only slightly over 50%.

The ratio of Appalachian supplemental dollars continues to be approximately $1 dollar for each $2 of other funds, while non-ARC Federal funds comprises about 45 percent of all Federal financial support.

Summary of Project Financing by Source of Funds

(millions of dollars)

	1972 Program		1973 Program		Cumulative Program thru 1973	
	Amount	Percent	Amount	Percent	Amount	Percent
Federal contribution:						
Other Federal agencies	82	34.3	64	28.1	478	28.6
Other Appalachian programs	20	8.4	12	5.3	100	6.0
Appalachian Section 214	48	20.1	40	17.5	296	17.7
Total Federal	150	62.8	116	50.9	874	52.3
State and/or local share	89	37.2	112	49.1	798	47.7
Total Eligible	239	100.0	228	100.0	1,672	100.0

Note: Not all project costs are eligible for Federal financial support. Ineligible project costs must be financed by the project sponsor, usually the local government unit. Thus, including all costs State and local participation probably comes fairly close to 50 percent.

Types of Projects Assisted

The types of projects or functional areas assisted in the regular supplemental grant program have changed somewhat over the years as the priority needs of the Region have changed. Education and health facilities projects consumed 74 percent of ARC funds through 1972 while in 1973, these programs accounted for only 45 percent of the funds. Corresponding increases, representing increased Federal support for water and sewer programs reflects changing Federal financial support levels and changes in State plans as highest priority needs in education and health projects are met. The following table reflects the use of ARC funds by type of program.

Supplemental Grant Projects Approved
by Type of Program

(thousands of dollars)

	1972 Program			1973 Program			Cumulative through 1973		
Category	No.	Amount	%	No.	Amount	%	No.	Amount	%
Vocational Education	68	8,807	19	46	6,451	17	401	59,587	21
Higher Education	21	3,187	7	7	978	3	213	50,461	17
Libraries	11	644	1	7	1,937	5	109	9,494	3
NDEA	8	694	2	-	-	-	57	6,310	2
ETV	5	785	3	8	1,861	5	22	4,941	1
Sub-Total, Education	113	14,117	32	68	11,227	30	802	130,793	44
Health Facilities	54	10,951	23	25	5,934	15	362	72,951	26
Sewage Treatment	27	7,470	16	12	2,933	7	240	42,757	14
Water and Sewer	49	8,568	19	51	12,103	31	125	22,018	8
Airports	18	2,197	5	25	2,473	6	98	10,465	4
Other	36	2,375	5	27	4,182	11	104	10,320	4
Total	297	45,678	100	208	38,852	100	1,731	289,304	100
Special Airport Safety Suppl.	16	5,123	-	5	618	-	21	5,770	-

1974 and 1975 should show a continuation of these trends with reduced proportions going into airport and sewage treatment projects and with increasing proportions being utilized for water and sewer projects as national programs are changing. During the past about 70 percent of ARC supplemental funds went into health and education projects for human resource development.

As the earlier priority investments in education and health facilities are completed and the quality of the labor force is thus improved, the Region is becomming more attractive as a location for industry. The States are therefore focussing more attention on projects and programs directly related to industrial and commercial enterprises and on finding more efficient means of delivering services. This shift in emphasis is expected to produce greater investments in activities such as industrial park development, transportation, communications, tourism and recreational development in selected areas, etc. Partly because of the shift in emphasis in the area of human resources to operation support (as opposed to construction investments) for vocational education programs and delivery of health services, it is anticipated that a larger portion of the funds previously used for supplemental grant purposes will be used instead as special basic grants in areas such as water and sewer systems where the needs of the Region in comparison to the Nation are still unmet.

Changes in the investment patterns are evident throughout the Region. Virginia's overall program goal thru FY 1973 has been to assist the people of the Region in acquiring the training, skills and health needed to participate in and contribute to the nation's economy. Accordingly, highest priority has been awarded to the development of the regions educational and health care systems. Specifically, it has invested heavily in the construction of area vocational education facilities at the secondary level and its excellent community college system at the post-secondary level. In the area of health, they have promoted the development of a system of county health centers and regional hospitals. Having neared that goal, it is anticipated that Virginia will now concentrate on promoting industrial development in the region. Generally, this will mean improving its transportation network and providng the other necessary facilities and services that will enhance the region for new and expanded industrial development. Tourism and recreational development will also be an important focus.

South Carolina also has invested heavily in its educational system via the development of a system of eleven area vocational education centers at the secondary level, three technical education centers at the post-secondary level and through continued support of the four year higher education institutions in the six-county Appalachian region of the State. The system of vocational and technical education centers is nearing completion and the emphasis is shifting to operating type programs. Special attention will be given to developing and offering curricula that will further the objective of diversifying industry in the six county area. Water systems and water pollution control facilities also have been a focal point for ARC investments in South Carolina. These investments were intended to open up the region to new and expanded industrial development.

Kentucky, for instance, is planning to increase support for both ground and air transportation facilities by access road projects and some supplements for airport construction. The Commonwealth is also committing Section 214 funds to large-scale recreational development projects in which private participation is encouraged.

New York has recently utilized Section 214 supplemental and special basic grants in combination with three other Federal funding sources plus State and local monies in order to develop an Appalachian Telecommunications Network in the State's 14 Appalachian counties. The three phases of development (i.e., the construction of basic transmission systems, the installation of reception facilities, and the installation of microwave interconnections) are regional in scope and complement and support the multiple objectives of the educational programs established in the school districts or functioning through the Boards of Cooperative Educational Services (BOCES). Phase I and II development has been completed in some BOCES and is in the application stage in others, while Phase III development is lagging somewhat behind. It should be noted that, while the program is being developed primarily for educational purposes, it has implications beyond the pale of training and education. At present, discussions are under way with various agencies and public interest groups to explore non-educational uses of the system (e.g., for linkage with medical emergency and law enforcement communications systems).

Pennsylvania, in maintaining the basic economic development thrust of its Appalachian Program, reaffirms that highest priority for the use of ARC supplemental aid and other categories of assistance shall continue to be given to those projects which are evaluated to be most important to achieving the objectives of the creation of new jobs and the essential community facilities so important to any soundly conceived development program. Pennsylvania has maintained those objectives consistently over the life of the program, but has made changes in its strategies for achieving them. The Commonwealth accords highest priority for supplemental aid to water and/or sewage systems relating directly to industrial development opportunities. The significant change in strategy, initiated two years ago, is the replacement of emphasis on specific local problems inhibiting such development, by concentration on systems that provide for the solution to that kind of problem for a number of communities lacking such systems. This approach in the long run results in a much more economical use of resources in terms of financing, use of lands, and construction costs. And, most important in terms of maintaining development momentum, the approach more adequately assures sufficient capacity for the associated residential and/or commercial kinds of development which can reasonably be anticipated to occur as a result of significant industrial development.

Although Pennsylvania has limited the use of Section 214 supplemental aid in vocational educational investments over the life of the program due to the availability of some State aid for such expenditures, the ordering of priorities in vocational education again illustrates the Commonwealth's concern that the most critical problems inhibiting development receive first priority attention. The first priority in the ranking of vocational education investments is for the construction and equipping of of new facilities in areas totally lacking any schools. The curriculum must be related to eliminating known skills deficiencies existing in the job market for the area. That priority is followed by expansion of existing schools as needed, equipment programs for existing schools and community colleges having vocational courses, equipment programs for comprehensive high schools, construction of vocational education facilities at the community college level, and rehabilitation programs for the handicapped in the order given.

Georgia's Plan exhibits a clear development strategy for the use of ARC funds. Based on analysis of population projections and evaluation of other factors affecting physical development, which indicate major urban concentrations along Georgia's interstate highways, Georgia is concentrating its investments along the I-75 and I-85 corridors in an effort to accommodate growth in an orderly fashion. The strong diversification of industrial development occurring in Appalachian Georgia must be matched by appropriate investments in area-serving facilities to maintain an orderly momentum to such growth. The increasing needs for post-secondary and specialized vocational training programs in Georgia's Appalachian Region is a reflection of the evolving diversified economic development base. The increasing costs of vocational education at the local level has required increased allocation of Section 214 supplemental aid to vocational education programs.

Like Georgia, the Appalachian Region of Alabama is experiencing strong industrial development requiring emphasis on region-serving facilities to meet the needs of industry and to assure a development base for the residential and/or commercial growth that accompanies such growth. Area-serving systems, such as water and sewage, are being more heavily emphasized. And, much heavier emphasis is being placed on vocational programs for more specialized and higher technical skills training activities as a result of industrial development--the central theme of Alabama's new State Plan.

Alabama's vocational education program therefore, has now reached a second phase of development. The Phase II program is characterized by a concentration on upgrading the quality of existing facilities and instruction as well as the diversification of training programs which offer a higher degree of technical skills to meet specific current and projected needs of the expanding industrial climate in Appalachian Alabama. In addition, programs to expose young students to the new career opportunities now available in a State where approximately 75 percent of high school students do not go on to college.

As in the past, the States' investment decisions for FY 1975 will be made in the following sequence:

1. Each State determines the degree of emphasis it wishes to place on program areas set forth in its Appalachian Development Plan (which is subject to Commission approval). Increasingly, such determination is made with the help of input from the Local Development Districts.

2. Each State then determines where it will concentrate its investments in order to achieve the economic impact the Act requires.

4. For a supplemental grant, each State determines the ability to pay on the part of the applicant and provides only the dollar amount of Appalachian assistance required to make up the difference between the available basic grant and the funds available to the applicant (which, however, must be at least 20 percent of the total eligible project cost).

5. Where basic Federal grant funds are lacking, application is made for an ARC "first dollar" grant under the criteria and standards as though other Federal funds were available.

Administrative Costs

Administrative costs are shown for the first time since 1967 when Section 214 funds were appropriated to and administered by the Secretary of Commerce. These administrative costs are requested only for those grant projects which are carried out by other Federal agencies where ARC funds represent the only Federal money. It is anticipated that the largest portion will be requested by the Department of Agriculture for administering water and sewer grants. Administrative costs include salaries, benefits, and travel as shown below in thousands of dollars:

	1973 Actual	1974 Estimated	1975 Estimated
Personnel Compensation	-	$ 43	$ 86
Personnel Benefits	-	4	8
Travel	-	3	6
Total Obligations	-	$ 50	$100
Average Paid Employment	-	2	4

SECTION 302: RESEARCH, DEMONSTRATIONS, AND LOCAL DEVELOPMENT DISTRICTS

(thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate	Increase/ Decrease
Appropriation	11,000	7,500	8,500	+ 1,000
Obligations:	8,989	10,510	8,500	- 2,010
Regular	6,576	9,423	8,500	- 923
Tropical Storm Agnes	2,413	1,087	--	- 1,087

1975 Program

An appropriation of $8.5 million is requested for this activity to finance the Federal contribution toward the administrative expenses of Local Development Districts, to support of program of research and technical assistance, and to fund a limited number of education and local development district demonstration projects. The funds requested represent an increase of $1.0 million from funds appropriated in 1974. The comparable requirements for these programs are as follows:

(thousands of dollars)

	1974 Enacted	1975 Estimated	Increase/ Decrease
Local Development Districts	$ 3,200	$ 4,000	$+ 800
Research and Technical Assistance	2,856	2,500	- 356
Demonstration Programs	3,367	2,000	-1,367
Sub-Total	9,423	8,500	- 923
Special Supplemental Program for Tropical Storm Agnes	1,087	0	-1,087
Total	$10,510	$ 8,500	$-2,010
Financed from prior year's balances	-3,010	0	+3,010
Appropriation	$ 7,500	$ 8,500	$+1,000

Local Development Districts.....$4,000

The Commission requests $4.0 million for the continued funding of its 69 multi-county development districts. The amount represents an increase of $800 thousand over the FY 1974 amount and with some $500 thousand obtained from savings of prior year grants and projects funded from 1974 appropriations will provide annual operating budgets of $4.5 million for the 1975 operating year of the local development districts. The increase in operating budgets is the first for many LDD's since 1973. The requested budget will provide for cost increases and in some cases expansion of district planning and development programs.

Such a program can help to achieve continuing improvement in economic and social development of the region, provide a common base of information, and support a set of programs that can be used by Federal and State agencies for the development of the region, and which will increase the effectiveness of Federal and State programs for Appalachia.

Increasing responsibilities are being placed upon the Local Development Districts both by the Appalachian Regional program and by a number of existing Federal programs. The Commission increasingly depends upon greater district involvement in Commission programs of education demonstrations, child development, health, areawide housing, solid waste disposal, and other environmental programs, among others. Also, Appalachian development planning by the States has increasingly drawn

upon district resources. In most of the States, the districts are formally recognized as the areawide "umbrella" organization for the region. This responsibility includes the A-95 review activity. A number of local development districts were extensively utilized in recovery planning efforts following the 1972 Agnes related floods. The net result is a continuing growth in the district's role and responsibility in the overall development process of the Appalachian Region.

In FY 1974, ten districts are being funded for a full year for the first time. First year funding is at a lower level and below that required as district program and staff reach their normal on-going strength in subsequent years. Inflationary increases, States' requirements, and so forth, will continue to require additional funds for the districts to maintain an adequate level of services. All of these factors, coupled with the fact that annual program funds available to most of the districts from the Appalachian Program, have been kept at the same level for the past several years, will place heavier than normal demands on district administrative support from the Commission. Furthermore, an alternative source of increased funding for districts that would have been available under HUD's proposed Planning and Management Assistance program, failed to materialize for FY 1974.

For the 1975 operating year, the Commission proposes as a general rule, a basic ARC contribution to the cost of a district per year of $70,000. At the time the district allocation is prepared, this basic formula is applied in combination with other factors such as, for example, funds from other Federal sources, possible increases in State and local contributions, and anticipated savings from prior year grants. For the 1975 operating year this would require gross operating grant approvals of $4.5 million. With the use of savings from prior grants and a few projects financed from 1974 funds, this will result in an appropriation requirement of $4 million. The following table indicates comparable 1974 and 1975 estimates by State.

STATE BY STATE SUMMARY OF ESTIMATED DISTRICT FUNDING

	1974 Operating Year		1975 Operating Year	
	No. of LDDs	Amount (000)	No. of LDDs	Amount (000)
1. Program Amounts:				
Alabama	7	419	7	470
Georgia	6	306	6	325
Kentucky	8	587	8	625
Maryland	1	86	1	90
Mississippi	4	200	4	225
New York	3	134	3	190
North Carolina	7	331	7	450
Ohio	3	117	3	145
Pennsylvania	7	443	7	495
South Carolina	1	141	1	150
Tennessee	5	298	5	335
Virginia	6	367	6	410
West Virginia	11	415	11	540
Contingency	--	--	--	50
Sub-Total	69	3,844	69	4,500
Less Estimated savings		- 233		- 240
Net Requirements		3,611		4,260
Financed in FY 1973		- 671		--
Financed in FY 1974		2,940		- 260
Financed in FY 1975		--		4,000
Reserved for 1975 Funding		+ 260		--
Appropriation Requirements		3,200		4,000

Research and Technical Assistance.....$2,500

Comparative Obligation Levels:

(thousands of dollars)

	1974 Enacted	1975 Estimate	Increase/ Decrease
Commission Research:			
Commission Research	1,029	750	- 279
LDD Administration	240	250	+ 10
Sub-Total	1,269	1,000	- 269
State Research and Management:			
Technical Assistance and Research	1,187	1,400	+ 213
Management Assistance	400	100	- 300
Sub-Total	1,587	1,500	- 87
Total Research and Technical Assistance	2,856	2,500	- 356

The amount of $1 million is requested in 1975 for commission research and technical assistance on a multi-state or subregional level. During 1975, under the category Commission Research, a program evaluation effort will be emphasized carrying forward similar efforts initiated in 1974 in connection with a review of the present Appalachian program design. This program evaluation will attempt to assess the impact of the individual ARC programs and overall ARC efforts in selected geographic areas represented by Local Development Districts. Commission research funds will also provide $250 thousand for the staff that administers the LDD and research programs. The decreased level of support results partially from a decrease of $140 thousand as the financing of Commission technical support personnel becomes a joint Federal-State funding responsibility.

In 1975, as in past years, the Commission will continue its programs supporting state research and management projects. The objectives of the Commission's state research and management program are to assist the States, LDD's, and local governments to understand factors affecting their development, analyze ways and means to utilize or to counteract these factors for improvement of their physical, human, and economic environment, strengthen capabilities to participate fully and actively in the Appalachian program and to selectively initiate or continue demonstrations of regional transferability and significance.

An amount of $1.5 million is requested for 1975 for funding state research and management. In terms of categorical use, this request represents a slight decrease from the program level estimated for 1974. It is expected that during 1975, some additional demands will be placed on state research and technical assistance funds as the States participate in program design and assessment studies. There is also increased emphasis in the States on relating their Appalachian development planning to state-wide development planning activities in some cases and expanding the Appalachian experience to be used state-wide in others. Furthermore, special environmental projects as they may be requested by the States will be funded from the state research and management assistance category.

The Commission in 1973 and 1974 initiated a special state management assistance program to provide financial assistance to Appalachian states for hiring of limited additional staff so states could more effectively utilize the Appalachian program. More specifically, the state management program was developed to strengthen capabilities in development planning, policy analysis and program management and coordination. An estimated $100,000 of the $1.5 million requested for state research and management is proposed for use in the state management program, a reduction from the Fiscal Year 1973 and Fiscal Year 1974 funding level of states for management purposes.

Although no special funding is proposed for environment/resource research and technical assistance in Fiscal Year 1975, it is anticipated that grant emphasis will be placed by Appalachian states on continued studies in this field under the State research category. The current energy situation will likely place major demands,

opportunities, and problems upon Appalachian coal producing States. Coupled with increased demands are the environmental consequences of increased mining activity. The Commission expects to avoid studies where other more technically qualified agencies could provide the needed data. However, the Commission can provide support for studies concerning the less technical aspects of the probable upturn in coal mining activity and the Commission will encourage studies which might help prevent a recurrence of the type of problem that has plagued Appalachia in the past. Coal is not the only mineral of significance in much of Appalachia. With the current national concern regarding over-dependence on foreign mineral production, it is also anticipated that Appalachian States will request funding of research to better realize the potentials of greater development of non-coal mineral resources.

Some examples of specific recent research projects funded include:

1. Alabama Multi-Model Transportation Study. The overall project will: (1) determine adequacy of current state transportation systems; (2) collect and analyze transportation data required for the National Transportation Study; (3) develop a state transportation plan for 1990 and a state transportation program for 1980, both of which shall be "financially reasonable" (in view of anticipated Federal revenues); and (4) thoroughly analyze and report on major transportation policy issues. The program will involve the Local Development Districts throughout Alabama.

2. Water and Sewer Feasibility Study and Technical Program for Public Facilities Development in Appalachian Ohio. This project will produce engineering feasibility designs relative to the planning and construction of water and sewer facilities, including cost estimates and analysis of types and locations of such facilities, essential to aid in directing future growth in and around Lucasville, Ohio. Also, the project will fund a public facilities specialist to work within Ohio's three LDDs. The specialist will assist in analyzing and evaluating the public facility needs, resources, and constraints of local communities, and aid in the establishment of development plans and priorities.

3. A Tri-State (Georgia, North Carolina and South Carolina) Recreation Development Plan utilizing a grant from the Bureau of Outdoor Recreation, U.S. Department of the Interior, plus an ARC Section 302 grant. This effort involves a comprehensive analysis of alternative plans for recreation development while maintaining this Southern Highlands area's valuable natural resources.

4. A Cumberland Gap Development Plan which assessed the many alternatives for locating a portion of Appalachian Corridor "F" through the Gap between Virginia, Kentucky, and Tennessee, together with a plan for restoration of the Gap.

5. The First Tennessee-Virginia Development District Cable TV Project. This is a project designed to ascertain whether local organization of broadcasting can be useful for citizens in the District. It will seek to discover how the District, in cooperation with cable companies, can help to make citizens aware of civic and cultural affairs and how this can be used as a tool for better understanding of regional activities, problems, and needs.

6. Bluegrass (Kentucky) Area Development District Rural Transportation Feasibility Study. The project is to: (1) identify and discuss the social and economic conditions which have a relationship to transportation systems and services; (2) identify adequate service centers and the types of services provided; (3) analyze existing transportation services and systems including an evaluation of their effectiveness; and (4) recommend at least two alternative transportation service programs including a discussion of the capabilities of each program effort. The Local Development District will move to implement the recommendations.

7. A Statewide Regional Plan for North Carolina. The purpose of this project is to provide technical assistance to North Carolina in the design, development, and initiation of statewide development and regionalization plans and programs. It will increase the effectiveness of Appalachian Program administration at both the state and district levels and assist the state in equipping it to administer flexible forms of Federal assistance to coordinate them with available state and local resources.

Demonstration Programs.....$2,000

Section 302 of the Appalachian Act provides the flexibility necessary to test a number of innovative programs. Special demonstration programs are proposed for FY 1975 in two areas. One will assist Local Development Districts in the planning and initiation of imaginative and innovative efforts to establish multi-jurisdictional and multi-functional programs demonstrating the more efficient and effective utilization of resources or organizational capabilities. The other supports education demonstrations including the regional education service agency approach to providing areawide specialized educational programs, facilities, and resources. During FY 1975, the Commission proposes to continue these two programs at a level of $1.0 million for each program.

A. Local Development District Program. In order to better respond to the desire for new and innovative approaches for meeting local and areawide needs the Commission initiated, in Fiscal Year 1974, a special demonstrations program for Local Development District efforts which are multi-jurisdictional or multi-functional in nature. The aim is to demonstrate ways of achieving more efficient and effective use of resources available to the districts and local governments they represent.

The special demonstration program will provide the districts with additional technical assistance and funds from the Commission necessary to fill gaps between their normal administrative and financial capabilities and the ongoing support that becomes available for special and innovative programs or projects once they are established. As a result, innovative projects can be initiated which otherwise would not have been undertaken.

Examples of special demonstration proposals already approved for funding by the Commission include the following:

1. FIVCO Area Development District (Kentucky). To plan and carry out a program for using schools and satellite vocational educational facilities in the district to house a variety of social services programs. This program would attain better utilization of large facilities that represent major capital investments for local and state governments.

2. East Tennessee Development District. To develop institutional and administrative arrangements for implementing with the Southeast Tennessee Development District and the Chattanooga Council of Governments an inter-district program of environmental management, emphasizing solid waste recycling.

3. Georgia Mountains Planning and Development Commission. To implement and test a regional data processing service for units of government in the Georgia Mountains district.

4. Lake Cumberland Area Development District (Kentucky). To provide staff support for a Regional Industrial Development Committee operating in a rural, isolated, and rugged part of Appalachia.

5. Muscle Shoals Council of Local Governments (Alabama). To improve fiscal and administrative operations of local governments in the district by hiring a trained individual who would provide technical assistance to local governments on matters such as budget formulation, public improvement planning and programming, and other fiscal and administrative practices and procedures.

6. Southern Alleghenies Planning and Development Commission (Pennsylvania). To develop a floating community college which utilizes existing post-secondary and vocational-technical facilities, the expertise of the education community, and other resources in the district. The community college program would focus on awarding associate degrees and emphasize post-secondary technical education.

7. South Carolina Appalachian Council of Governments. To design and implement a computer-based system for the integration and coordination of human resources services in the district so that a better delivery system will be available to agencies' clients.

These and other demonstration proposals that have been submitted for Fiscal Year 1974 funding have the following characteristics: (1) they represent a special and innovative effort by the Local Development District, (2) they are directed at accomplishing a significant achievement having a special impact on the district, (3) they would demonstrate ways of better using and organizing resources at the local level to capitalize on visible opportunities, and (4) they would strengthen the permanent capacity of the participating Local Development District to undertake similar activities in the future. For Fiscal Year 1975, an amount of $1.0 million is requested by the Commission to enable support of special commission by and for Local Development Districts at the current level.

B. Education Demonstration Program. The Commission has analyzed the education needs of Appalachia in various ways. These approaches focused on teacher services, local needs assessments at the LDD and State level, and a review of the national economic factors relating to education. One of the many needs that surfaced through these reviews was the fact that over 400 operating Appalachian school systems had less than 1000 students in each. In most instances, school districts with less than 5,000 students find it impossible to provide the services and programs that are required to prepare students for meaningful careers.

The Commission determined several years ago that one way to overcome this inequality of education would be for school districts of these smaller sizes to combine their resources. This led to the development in the Region of the Regional Education Service Agencies (RESA's) which offer participating school districts in Appalachia a cost-effective method of providing services and programs which individually those same districts would find too cumbersome and expensive to provide.

In addition to offering programs such as these, another important function of the RESA is to provide the mechanism whereby its participating districts can tap resources already existing in their areas, in particular the services of institutions of higher education and the funds available under Federal and state education programs. Presently, five states have passed permissive legislation (New York, Pennsylvania, Kentucky, Tennessee, and West Virginia) giving RESA legal status and qualifying them to receive state and local funding. Other RESA's usually operate through some other government entity.

Some Examples of RESA Programs

Several RESA programs give good example of attaining these objectives. The Regional Education Service Agency at TARCOG (Top of Alabama Regional Council of Governments) serves the needs of eleven school systems in five counties and 36 city governments in Appalachian Alabama.

Over the past two years TARCOG has been able to plan and implement education programs in special education, adult education, vocational guidance counseling, early childhood education, and the use of educational television. These programs total over a million dollars funded jointly through Federal, state, and local sources.

The most recent example of TARCOG RESA's contribution is a state-wide program of adult education through the state ETV system. The courses presented over the ETV system will allow various adult participants to, upon successful completion of the test, receive a high school equivalency diploma. The state believes that programs such as this, pioneered by the RESA, can make a substantial contribution to retraining a large number of its adult population for better jobs.

Another example of a RESA providing spectacular results is in the Dilenowisco area of southwestern Virginia. It includes Dickenson, Lee, Norton and Wise Counties. The Dilenowisco area is what many people think of when they hear the word Appalachia--spectacular beauty tainted with the classic problems of isolation, low-income and a one-industry economy (coal mining), declining population and out-migration, particularly the young. Dilenowisco, like TARCOG, has set up a series of programs to provide better education services to the people in the four counties of southwestern Virginia. These projects focus on providing services to children with impaired hearing, pre-vocational program designed to retain the potential early dropout, help change the pattern of early failure frequently resulting in early dropout, and finally programs to support good guidance counseling for pre-vocational as well as academic students.

Just four years old, programs such as these have touched the lives of many southwest Virginians. Presently, Dilenowisco provides $3,000,000 worth of special programs to the school districts and the people of southwest Virginia. The Appalachian Commission's share of that program began with a $1,000 grant in 1970 and will conclude this fiscal year with $60,000.

During Fiscal Year 1975, approximately $800,000 will be required for continuing the support of 14 ongoing education demonstration programs. It should be pointed out that at least four of the education demonstration programs will be reaching their final year of funding under the ARC four-year phase-out funding scheme. An additional $200,000 will be required to fund other education demonstrations identified by the states in their education plans. Therefore, a total budget for ARC RESAs and education demonstrations will be $1 million.

Sec. 302: Research and Local Development District Program

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
25.0	Other services			
	Administration	220	240	250
	Technical Assistance	300	140	---
	Contractual Services	5,782	6,930	4,250
25.2	Services of other agencies (Corps of Engineers)	1	---	---
41.0	Grants, subsidies, and contributions	2,686	3,200	4,000
99.0	Total obligations	8,989	10,510	8,500

SECTION 207: APPALACHIAN HOUSING FUND

(thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate	Increase/ Decrease
Appropriation	$3,500*	$1,500	$ --	$-1,500
Obligations	629	3,692	2,127	-1,565

*Includes $1.5 million supplemental appropriation for recovery programs related to Tropical Storm Agnes.

Appropriation Request

No additional funds are requested for 1975. However, the addition of $200 thousand of loan repayments and $1,927 thousand of prior year balances will provide a program in FY 1975 aggregating $2,127 thousand. The 1975 program will provide $1,000 thousand for approximately 22 planning loans, $685 thousand for approximately seven site development grants, $500 thousand for technical assistance in six States, $100 thousand for write-offs of loans, and $30 thousand for administrative costs incurred by Department of Housing and Urban Development.

Description of Program

Substandard housing is one of the major problems of Appalachia. More than one out of every four families lives in homes that need replacement or repairs. In some counties of Southern West Virginia and Eastern Kentucky, nine out of ten houses are sub-standard. Despite these conditions, Appalachia has not received a proportional share of increased housing for low- and moderate-income families that has been available nationwide.

The purpose of Section 207 is to stimulate the construction and rehabilitation of Federally-insured housing for low- and moderate-income families. It accomplishes this through three types of special assistance designed to stimulate the production of low- and moderate-income family housing in Appalachia: (1) planning loans, (2) technical assistance grants, and (3) site development grants.

1. Planning loans are made to housing sponsors for 80 percent of the cost of planning and obtaining financing for housing projects. Eligible housing sponsors include non-profit organizations, cooperatives, public bodies, and limited-dividend corporations.

Loans are made to cover specific items that a sponsor must fund in order to make applications and obtain a mortgage insurance commitment under either Sections 221, 235, or 236 of the National Housing Act. These items include consultant fees, land options, market analyses, processing fees, preliminary architectural fees, preliminary site engineering fees, and construction loan financing fees. The costs of these items normally can be included in a mortgage. Accordingly, when a construction loan or, in some cases, a permanent insured mortgage, is made for a project, the planning loan made under the Appalachian program is repaid. When planning loans are made to non-profit corporations, etc., provision is made for a waiver or write-off of the planning loan if the applicant is unsuccessful in obtaining the project financing or if it is determined that repayment of the planning loan cannot be made from mortgage proceeds.

Through December 31, 1973, the Commission had approved 107 loan applications for projects which, if all go to completion, would contain up to 12,053 housing units. At present approximately 7,609 housing units are anticipated for construction. Approved loans totaled $4.4 million, an amount covering the planning cost of $178 million in eventual construction. Gross loans amounting to $1 million, which will provide for approximately 22 planning loans, are estimated for 1975. This would finance planning loans for approximately 2,500 housing units.

2. Technical Assistance. Under this portion of the housing program the Commission is authorized to make technical assistance grants for the encouragement of low- and moderate-income housing to State and local organizations. The thrust of these services in 1975 will be twofold; to support State housing efforts; and to assist qualified housing sponsors to adjust to national program changes. In both instances, grants would be provided to State agencies.

At present, nine of the Appalachian States have housing agencies created by State legislation. These States are: Kentucky, Maryland, New York, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. In addition, Ohio has prepared legislation which is being considered by the State Legislature for approval, and, the other three States have housing responsibilities assigned to existing agencies through executive action. In all instances, the States are working with local communities or private organizations to help solve housing problems. Part of this effort involves providing encouragement to private builders and developers through market information and in some cases, through State financing. Through December 30, 1973, the Commission had approved technical assistance grants to 12 States for a total of $1.3 million. The remaining State, Kentucky, is currently in the process of preparing an application for technical assistance.

With respect to the Commission's objective of helping local organizations adjust to changed Federal policy regarding housing subsidies, efforts will be made to adjust plans, where feasible, to qualify projects for Federally-insured, non-subsidized mortgage programs. During FY 1975, the Commission plans to make available $500 thousand for approximately six grants to the States. The grants would average around $90 thousand each.

3. Site Development Grants were authorized by the 1971 Amendments to the Appalachian Act. The new authorization was responsive to experience gained by the Commission with the Section 207 planning loan program which revealed that many communities were not able to produce housing assistance programs. There are two principal reasons for this: (1) relatively low family incomes and the high cost of land development caused by the rough Appalachian topography and (2) the lack of direct accessibility of available building sites to sewer and water facilities. Thus, on one hand, rents and sale prices must be within reach of the financial means of low- and moderate-income families while on the other hand they must be high enough to cover full development cost. Frequently, the latter requirement would prevent the sponsor from meeting the low rent or sales cost necessary and the project could not be built. The result is that many lower-income families cannot obtain adequate housing. Ironically, the cost difference may be relatively small (between $500 - $1,000 per unit) between a feasibile project and one that cannot carry full costs.

Accordingly, Section 207 was amended to permit the Secretary of Housing and Urban Development to approve grants to public bodies or to non-profit housing sponsors for the purpose of meeting development costs, including necessary off-site costs, directly associated with the cost of a housing project, provided such costs could not be included in a mortgage. Eligible costs would include, but not be limited to, sewer and water line extensions, drainage facilities, and grading. Through December 31, 1973, the Commission had approved seven site development grants for a total of $588 thousand. Of these, HUD had obligated one grant contract for $88 thousand in the Tropical Storm Agnes area.

Seven additional site development grant projects applications are in preparation from areas in New York damaged by Tropical Storm Agnes. Together these projects would account for 732 housing units and represent approximately $14 million in new construction. The site development grant request for all seven projects is expected to total over $1,400 thousand.

Additional site development grant requests are being developed in other States in the Appalachian Region. At least three projects are expected from Pennsylvania, two projects from New York (in addition to the seven mentioned above), two from Ohio, and one each from Kentucky, Tennessee, and West Virginia respectively.

An amount of $685 thousand which will provide for approximately seven project grants is estimated for 1975. This would finance site development grants for approximately 500 units. The following tables summarize the financial and program operations of the Housing Fund.

APPALACHIAN HOUSING FUND

1. Summary of Financial Operations

(thousands of dollars)

	Cumulative thru 1973	FY 1973 Actual	FY 1974 Enacted	FY 1975 Estimate
Obligations:				
Gross Loans	$ 4,130	$ 672	$ 700	$ 1,000
Less Partial Cancellations	-555	-243	-150	-188
Net Loans	3,575	429	550	812
Loans Waived (grants)	35	12	100	100
Grants to State Agencies	901	61	600	500
Grants for Site Development:				
Agnes	88	88	1,412	--
Other	--	--	1,000	685
Administration	104	38	30	30
TOTAL OBLIGATIONS	$ 4,704	$ 629	$ 3,692	$ 2,127
Financing:				
Loans Repaid	$ 611	$ 130	$ 200	$ 200
Interest	12	1	0	0
Appropriations	8,000	3,500	1,500	--
Balance brought forward	--	917	3,919	1,927
TOTAL FINANCING	$ 8,623	$ 4,548	$ 5,619	$ 2,127
Unobligated Balance End of Year	$ 3,919	$ 3,919	$ 1,927	$ 0

2. Summary of Program Operations[1/]

December 31, 1973

State	Operation of Loan Program: Projects Approved	Gross Amount of Loans	Number of Dwelling Units	Value Construction	Technical Assistance Grants
Alabama	7	$ 224,833	785	$ 11,800,000	$ 85,000
Georgia	10	403,866	898	12,773,346	147,726
Kentucky	3	99,945	175	2,064,290	0
Maryland	3	157,340	250	3,736,175	124,464
Mississippi	1	318,800	1,250	16,000,000	75,000
New York	3	210,672	275	4,612,300	100,726
North Carolina	10	633,056	1,750	23,928,200	100,000
Ohio	9	184,036	846	11,585,000	96,000
Pennsylvania	42	1,679,609	3,863	64,966,025	197,260
South Carolina	0	0	0	0	149,083
Tennessee	6	190,430	388	5,500,030	91,860
Virginia	0	0	0	0	100,000
West Virginia	13	366,740	1,573	21,949,400	100,000
Total	107	$4,469,327	12,053[2/]	$178,914,766	$1,367,119

1/ One $88,460 site development grant contract was approved for New York.

2/ An estimated 7,609 units are anticipated to go to construction.

Program Accomplishments

The most recent program accomplishments have been in the area of technical assistance. Although the technical assistance program was enacted into law after the planning loan program was well underway, the technical assistance program is in full stride and some of the results are becoming apparent. A few examples of these accomplishments which have been assisted by our technical assistance program follow:

In Tennessee, legislation was enacted in May 1973 to provide for the establishment of the Tennessee Housing Development Agency (a State housing finance agency). The Governor appointed the THDA Board of Directors who, at their first meeting in August 1973, adopted its Bylaws and appointed an Executive Director. Since that time, the Agency has begun to hire staff, to provide a range of technical assistance functions, and steps have been initiated that will lead to the issuance of tax exempt revenue bonds for financing moderate-income housing projects within the State.

The West Virginia Housing Development Fund has issued $49.8 million, the Virginia Housing Development Authority $53 million, and the Maryland Housing Fund has sold $7 million of bonds of this type. In addition to financing moderate-income housing, these agencies are also conducting comprehensive housing technical assistance programs.

The Pennsylvania Department of Community Affairs conducts an excellent housing technical assistance program that includes State loans and grants in addition to advice and professional services. Also, Pennsylvania is conducting a one-year comprehensive review and evaluation of its housing policies and programs to include recommendations for legislative and administrative changes that would improve the State's housing delivery systems.

Both Georgia and Alabama are providing technical assistance services to non-profit sponsors of low- and moderate-income housing. In addition, both States have developed legislation for housing finance agencies which they expect to be enacted during their next State legislative sessions.

New York and Virginia are emphasizing the development and enforcement of housing and building codes in addition to other technical assistance functions.

The Governor of South Carolina is requesting legislation for a State guarantee program for low- and moderate-income housing development with an initial appropriation of $10 million. The proposed guarantee program would enable the South Carolina State Housing Authority to stimulate construction of approximately 2,000 low- and moderate-income homes.

The Commission has recently updated data from a previous comprehensive on-site evaluation of its Section 207 seed money loans and the resulting housing projects where sites were visited and sponsors were interviewed in the eleven States where approved Section 207 loans were made.

In summation, the current status of the program at the close of 1973 is as follows:

Thirty-six projects, representing 3,442 housing units, received mortgage insurance and are constructed and occupied.

Nine projects, representing 1,196 housing units, have receive mortgage insurance and are under construction.

Twenty-five projects, representing approximately 2,970 housing units, are in various stages of processing by HUD insuring offices.

Thus, 70 projects (represented by 67 approved Section 207 loans), are currently active in the program. These projects represent approximately 7,600 total housing units. The remaining projects (40 loans) are currently inactive or discontinued. It is possible, however, that some of these

inactive projects with a potential of 3,350 housing units may be reactivated depending on decisions concerning the scope and nature of the national housing program.

The on-site evaluation conducted in late 1972 revealed that for the most part the completed projects are providing good shelter for their occupants. Some examples of these projects are as follows:

Two completed projects in Altoona, Pennsylvania (159 units) together comprise one of the best projects observed, combining good construction, management, and maintenance. The sponsor (Improved Dwellings for Altoona) has seen that social, recreational, and employment programs are provided for the tenants and the project has the active support of several local churches. Geneva House (108 units), located in Scranton, Pennsylvania is also an outstanding project. The project, which provides housing for the elderly, has excellent support from its sponsor (a church organization) and from influential individuals in the community. As a result, it was well constructed, equipped, and managed.

A non-profit Mississippi organization, Community Development, Inc. (CDI), is the sponsor of 1,250 units to be located in 10 counties in the northeastern part of Mississippi. Of these units, 600 are constructed and occupied and 333 units are currently under construction. Initially each unit is leased to the Tennessee Valley Regional Housing Authority (TVRHA). After the tenant has acquired sufficient funds for the down payment, and is otherwise qualified, he can purchase his house under the Section 235 program. Another house must be built and leased under the public housing program for each sale in order for TVRHA to retain its commitment of public housing units to HUD. This CDI-TVRHA program is the most innovative in the Region in terms of using the Federal housing programs creatively. Also, it is the largest program in the Region in terms of number of units.

One 29-unit rehabilitation project is completed and occupied in Binghamton, New York. This project serves as a good example of scatter-site housing because each unit consists of a rehabilitated, detached house surrounded by other similar houses that were acquired on the conventional market and are owned by their occupants. These 29 units consist of separate properties scattered throughout the City of Binghamton.

One 103 unit project, located in Uhrichsville (Tuscarawas County), Ohio, is one of the best in the region in terms of on-site amenities (e.g. community center) and equipment (e.g. air conditioning). Another Ohio project, in Byesville (Guernsey County) containing 72 units, is also superior in terms of equipment. These two non-profit sponsored projects are providing a significant addition to the housing of these two rural towns.

A 50 unit project, known as Antietam Homes, is located in Funkstown, Maryland. This owner occupied, townhouse complex is sponsored by the nonprofit Homeowners Foundation of Washington County, Inc., which provides counseling and other services, as well as financial support to the project when needed. The residents of the project have formed the Antietam Homeowners Association to represent their interests collectively. One example of how the Association is working to improve living conditions for its members occurred recently when the Homeowners Foundation donated 1.7 acres of land to them. The Association members raised money and contributed their own services to convert the 1.7 acres into an attractive neighborhood park, which is very popular especially among the projects 90 children.

Sec. 207: Appalachian Housing Fund, Executive Department of Housing & Urban Development

OBJECT CLASSIFICATION (in thousands of dollars)

		1973 actual	1974 estimate	1975 estimate
	Personnel compensation:			
11.3	Positions other than permanent	35	27	27
	Total personnel compensation	35	27	27
	Personnel benefits:			
12.1	Civilian	3	2	2
21.0	Travel and transportation of persons	---	1	1
33.0	Investments and loans	365	450	750
41.0	Grants, subsidies, and contributions	269	1,720	1,420
	Total costs, funded	672	2,200	2,200
94.0	Change in selected resources	-43	1,492	-73
99.0	Total obligations	629	3,692	2,127

PERSONNEL SUMMARY

Department of Housing and Urban Development

Full-time equivalent of other positions	1	1	1
Average paid employment	1	1	1

SALARIES AND EXPENSES

(thousands of dollars)

	1973 Actual	1974 Enacted	1975 Estimate	Increase/ Decrease
Appropriation	$1,217	$1,492	$1,740	$ +248
Obligation	$1,215	$1,492	$1,740	$ +248

The Salaries and Expenses appropriation provides for the full cost of the Federal Cochairman and his immediate staff and contribution by the Federal Government of 50 percent of the administrative expenses of the Appalachian Regional Commission. The budget request for 1975 is for $1,740,000, an increase of $248,000 over the 1974 estimate as follows:

	1974	1975 Estimate	Increase/Decrease
1. Federal Cochairman and staff	$ 277	$ 290	$ + 13
2. Commission Administrative Expenses (Federal 50% contribution)	1,215	1,450	+235
	$1,492	$1,740	$ +248

1. Federal Cochairman and Staff

The request of $290,000 for the Federal Cochairman and staff provides for the total Federal staff of ten persons with their related travel, personnel benefits, and other costs. The Federal Cochairman's staff is paid entirely by the Federal Government and assists the Federal Cochairman in carrying out his responsibilities including handling relationships with other Federal agencies and with the Congress, and the financial management of the Appalachian Regional Development Program as delegated by the President. The amount requested is an increase of $13,000 over that appropriated for FY 1974, required primarily for within grade advancements and 1973 pay increases. These increases have been absorbed in FY 1974.

2. Appalachian Regional Commission Administrative Expenses

While the expenses of the Federal Cochairman's immediate staff are paid solely by the Federal Government, the thirteen States of the Appalachian Region have responsibility beginning in FY 1968 for providing one-half the administrative expenses budget of the Appalachian Regional Commission.

The State shares are provided through contributions from each of the thirteen Appalachian States. In 1971, a review of the Commission's budget indicated that a number of the Commission positions providing technical assistance to the States or engaged in additional functions added by the Congress were funded entirely from Federal funds provided by the Section 302 and Section 202 programs. The States committed themselves to an increase in funding shares which would provide joint Federal-State support for a larger proportion of the total Commission staff. In 1973, the States provided an additional $216 thousand. In 1975, all Commission costs except for processing Section 202 projects and administering the Section 302 program will be borne equally by the States. The table below reflects the changes in 1975 indicating that an increased contribution from Salaries and Expenses of $235 thousand is more than offset by a decrease of $140 thousand from the Section 302 Commission Technical Assistance program, and a $155 thousand reduction in the Section 202 costs.

(thousands of dollars)

	1974 Enacted	1975 Request	Increase/ Decrease
1. Federal contribution from:			
(a) Salaries & Expenses	$1,215	$1,450	$ +235
(b) Section 302 - Technical Assistance	140	0	-140
(c) Section 202 - Health (partial)	155	0	-155
Total Federal	$1,510	$1,450	$ - 60
2. State contribution:	1,215	1,450	+235
Total	$2,725	$2,900	$ +175

The Federal funds requested, when matched by State contributions, will provide a budget for 1975 totalling $2,900 thousand, an increase of $175 thousand over the 1974 budget as adjusted above. The increase consists of $77 thousand in personnel compensation and benefits for within grade and other salary increases, $46 thousand for cost increases in other objects and $52 thousand non-recurring use of prior year balances in the trust fund.

During 1974 the Commission's permanent positions have been reduced by 5 positions to 110 in order to absorb recent pay increases. The 1975 budget proposes financing the same level of 110 permanent positions as in 1974.

(thousands of dollars)

	1974 Estimate	1974 Adjusted	1975 Estimate	Increase
Personnel compensation	$1,570	$1,821	$1,890	$ + 69
Personnel benefits	120	139	147	+ 8
Travel	105	130	135	+ 5
Rent & Communications	312	312	330	+ 18
Printing	107	107	120	+ 13
Other Services	125	125	135	+ 10
Consultant Services	100	100	100	--
Supplies	25	25	25	--
Equipment	18	18	18	--
Totals	$2,482	$2,777	$2,900	$ +123
Less prior year balance	-52	-52	--	+ 52
Appropriation	$2,430	$2,725	$2,900	$ +175

Commission Staff

The Commission staff is a non-Federal staff of 110 positions (down five from 1973) with grades and level of compensation generally paralleling the Federal Civil Service system. The staff is headed by an Executive Director appointed by the Federal Cochairman and the thirteen State members.

The Commission staff has responsibility for assisting the Commission and the States in carrying out Appalachian Regional Development programs. In performing these functions, the Commission is organized along six major functional areas with number of positions in 1975 as follows:

		Source of Funding		
Organizational Unit	Total	Jointly Funded	Section 302	Section 202
1. Executive Direction	22	22	--	--
Executive Director	12			
General Counsel	5			
Information & Publication	5			
2. Finance & Administration	21	18	3	--
Finance & Administration	16			
Management Data	5			
3. Program Implementation	22	19	1	2
4. Program Development	14	11	3	--
5. Human Resources	15	5	1	9
6. State and LDD Liaison	16	13	3	--
Totals for 1975	110	88	11	11
Comparable 1974 Funding	110	78	16	16
Change from 1974	0	+10	-5	-5

Functions of Commission Staff

The Commission staff is supervised by an Executive Director. The General Counsel is the chief legal advisor of the Commission and counsels the Federal

Cochairman and the States as well. In addition to providing the legal review of projects and proposals submitted to the Commission, the office also serves as a principal advisor to the Federal Cochairman and the Commission on legislative matters. The information and publication functions involving relations with the mass media; publication of the Journal, research reports, and articles for technical publication; the dissemination of technical information; and personnel policy and operations are also directly responsible to the Executive Director.

Finance and Administration

The Finance and Administration Office provides procurement operations, and all supply, clerical, and support services. In addition, this staff provides financial and accounting activities for administrative operations, maintenance of States' allocations records, and financial review of local development district reports. This Office also provides for the development of management and operating data relating to the Commission's programs.

Program Implementation

The Program Implementation Division handles all of the Commission's continuing responsibilities for implementing the operating programs at the Federal, State, and local levels. This includes the analysis and processing of all projects submitted by the States for funding and the review of all State Plans. Generalists are responsible for the review of all project proposals submitted for a particular State for all Sections of the Act. Where necessary, advice and information is obtained from specialists in the various program development areas. Program specialists in the health, education, transportation, and other areas work with the analysts as a team to insure the necessary program review of projects. This system provides a review to assure that health, education, access roads, water and sewer and other projects are coordinated towards the full development of the local areas.

Program Development

This Division includes the activities of the specialists in transportation, housing, community development, environmental resources, and inter-governmental administration. This includes responsibility for planning and developing all transportation, housing, and community facilities programs and working with agencies at all levels of government in the Region to improve the organization and financing of State and local government and such inter-governmental matters as implementation of A-95 clearance procedures, coordination with the Federal Regional Councils in Appalachia, etc. Responsibilities in the environment and resources area include the field of environmental aspects of pollution problems in Appalachia with particular emphasis upon occupational hazards associated with coal mining, the special health problems posed by water pollution in Central Appalachia, and health conditions caused by severe air pollution in some areas in northern Appalachia. It serves the Commission in water resource planning as well.

The Office also handles all of the basic responsibilities of the Commission with respect to the regional planning, research, and analysis required under the statute, evaluation of individual programs and of the overall program.

Human Resources

Under this office is included the responsibilities of the Commission in the fields of health, education, and child development. The health group is responsible for designing and administering programs for assisting the Region in meeting its needs for health facilities and services. It has responsibility for developing recommendations concerning the funding of health services projects and assisting the Commission in finding ways to improve the delivery of services in the Region. The Child Development group performs a similar function with respect to the Commission's Child Development programs. The Education group is responsible for assisting the States and the localities in planning approaches for the provision of school services on a multi-jurisdictional basis, for the development of early childhood education programs, career education, the augmentation of teacher supply and quality in the Region, and the development of occupational information guidelines and training programs in the Region.

State and LDD Liaison

The Commission has recently established an office of State and LDD liaison to ensure State and LDD officials "one-stop" service concerning the Appalachian program in their State. The liaison officers may also be called upon for assistance else-

where in the Commission in program areas where they have special competence. The office also coordinates the program of financial assistance to Local Development Districts.

Relationship of Administrative to Program Costs

The Appalachian Regional Development Program is unique in that under our program appropriation are conducted a number of diverse programs involving several Federal agencies and Bureaus. In conducting these programs the agencies perform varying administrative functions for which they are reimbursed from the program appropriation.

The costs range from minimal amounts in the Section 214 program where for the most part the various agencies perform no new function and process and disburse the 214 grant as an adjunct to their basic grant, to the significant costs in programs such as the mine area restoration program where Commission financed projects constitute the bulk of work done. The following table shows the program and Federal administrative costs (including Commission technical assistance staff) for the entire program. Total Federal administrative and other staff costs of $4,893 thousand is 1.67 percent of the program costs. The 13 State members will also contribute $1,450 thousand toward the Commission's expenses in 1975. Even with these costs the percentage of administrative cost to program funds remains at only slightly over 2 percent.

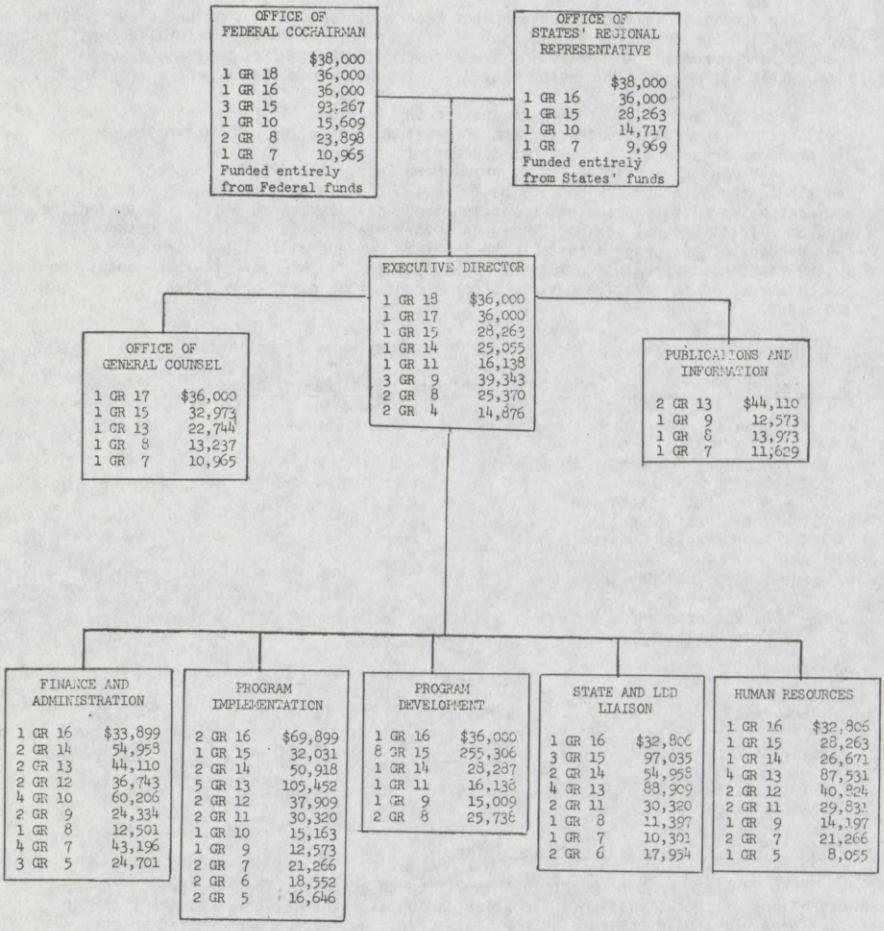
(thousands of dollars)

Activity	Program Costs	Fed. Admin. Costs	Total Oblig.
201 - Highways	$159,052	$ 948	$160,000
Area Development Programs:			
202 - Health	-	1,252	-
205 - Mine Area Restoration	-	520	-
211 - Vocational Education	-	53	-
214 - Supplemental Grants	-	100	-
Sub-Total, Area Development	$123,075	$1,925	$125,000
302 - LDD, Research and Demonstration	8,250	250	8,500
207 - Housing Fund	2,097	30	2,127
Sub-Total	$292,474	$3,153	$295,627
Salaries & Expenses	-	1,740	1,740
TOTAL FEDERAL COSTS	$292,474	$4,893	$297,367

Office of States' Regional Representative

The 13 State members maintain this Office to represent them in the day-to-day operations of the Commission. The salaries and all other expenses of the staff of five people are paid entirely by the States, thus no funds are requested in the Federal budget.

APPALACHIAN REGIONAL COMMISSION
Fiscal Year 1975



BUDGET REQUEST

Mr. WHITEHEAD. Our budget request for fiscal 1975 totals $295,240,000. Of that, salaries and expenses represents $1,740,000. The $293.5 million requested to carry out the Appalachian programs represents an increase of $23.5 million. It includes $160 million for the highway program and $133.5 million for all other-than-highway programs.

I would like to report to the committee on several advances in programs that the Commission has achieved since we appeared before this committee a year ago.

First of all, we have designated new corridors, Mr. Chairman, so that now we have all 13 States participating in the highway corridor system. We designated corridors in Mississippi, Alabama, and South Carolina, and for the first time we will have the entire region covered by a regionwide development corridor system.

In addition, the Commission has recently revised its State priorities of highway construction. We have always had a priority system. In the early stages of the program our priority was to work on the worst sections of the roads first. We felt recently that we were at a stage where we could have a more sophisticated priority system, which we have just negotiated on a State-by-State basis and with the State highway departments participating.

Basically, this system places a high priority on State border crossings, because many people measure the regional character of the Commission in terms of its interstate projects. But we have also given a high priority to linking up previously disconnected portions of the road to achieve continuity and to intrastate needs.

A third achievement that the Commission has gained in its highway program since a year ago is that we have been able to work out the problems associated with increasing the Federal funding for four-lane construction from a 50–50 basis—that is a 50 percent Federal, 50 percent State—to a 70–30 basis, which our statute has allowed since creation of the Commission in 1965.

Senator STENNIS. Now you have that up to what? What did you say?

Mr. WHITEHEAD. Up to 70–30. The law has always permitted us to go that far, but it has not been until recently that we have felt it advisable to do so. When the regular Federal aid for noninterstate highway construction went to 70 percent, we did not want the Appalachian System to lag, and so we made this change. We have asked the States and they have given a commitment to maintain a proportionate level of highway construction within the Appalachian portion of each State, an agreement that we did not have before.

Lastly, we have effected an allocation of the balance of the highway funds authorized to the Commission through 1978, which ought to permit our States to better plan and schedule their highway work in advance.

AREA DEVELOPMENT PROGRAM

And the other program change and achievement which I would like to bring to the attention of the committee, Mr. Chairman, is what we have entitled an Area Development Program.

Senator STENNIS. What page is that on?

Mr. WHITEHEAD. This is on page 4.

Senator STENNIS. All right.

Mr. WHITEHEAD. This represents a consolidation of four separate programs. We are requesting $125 million for this consolidated program in fiscal 1975, which is an increase of $19 million over the amounts appropriated in 1974, for the four separate programs proposed to be included under the single heading of area development program.

By this device, Mr. Chairman, we hope to make a single allocation available to each of our States. This allocation will earmark an amount specifically for each of the three regions into which Appalachia naturally falls—north, central, south. Within these allocations each State is expected to plan for and propose those projects deemed essential to regional and State development.

The main difference from our current procedure is that the State will not be bound to a predetermined allocation by individual program. One State, for instance, may feel that it wants to emphasize vocational education projects and put a greater percentage of the funds available to it in such a program, whereas another State may feel that next year the best interests of its Appalachian citizens require an emphasis on supplemental grants.

Senator STENNIS. Pardon me just a minute. I got behind on all of this.

I know the Governor of each State is in this, but who makes this decision here?

You say, well, one State may feel that its primary need is vocational education.

Who makes that?

Mr. WHITEHEAD. This is, under our system, a decision that may be made by the Governor of that State. The Commission consists, as a matter of fact, of a partnership sanctioned by Congress.

Senator STENNIS. Yes, yes, we call you the Federal cochairman and then they have a Governor as a co-cochairman.

Mr. WHITEHEAD. Yes. Currently John West of South Carolina is serving as State cochairman.

Senator STENNIS. Yes, I remember that part of it now.

And this education matter, that would be a State decision?

Mr. WHITEHEAD. Yes, sir.

Senator STENNIS. And you gentlemen would adopt whatever plan lay within your province.

Mr. WHITEHEAD. We have to review not only the development plan, but we have to review the individual projects submitted against that plan to make sure that they meet Federal criteria determined in our legislation and in other pertinent legislation by the Congress.

But the advance that this development represents is that instead of a decision being made collectively at the Commission table as to what percentage of our funds will go into reclaiming mined-out lands or vocational education or supplemental grants or health or child development, that decision may more nearly reflect the State's sense of its own priority of need.

Senator STENNIS. I did not have a chance to look over your statement, frankly, and I see here on page 5 you have some illustrations.

Mr. WHITEHEAD. Yes, sir.

Senator STENNIS. Now this vocational education in fiscal year 1974, was $25 million and in 1975 is $28 million.

AREA DEVELOPMENT BUDGET NEEDS

Mr. WHITEHEAD. Yes, sir. For instance, we estimate that in 1975 $45 million will be utilized for health demonstrations comparing with the $43 million which was appropriated for the same purpose in fiscal 1974. We estimate on the same basis $5.5 million for mine area restoration, $28 million for vocational education, and $46.5 million for supplemental grants. Those four programs total $125 million, as compared to the $106 million appropriated for the same purposes in fiscal 1974.

Senator STENNIS. Well, you do not limit a State though to just one of these categories?

Mr. WHITEHEAD. No, sir. No, as a matter of fact, that mix, or the proportion of one program to another which this new system would permit would be up to a Governor to determine in accordance with a necessary review of the over-all plan. The Federal partnership in the Commission is maintained because of the continuing requirement that all project actions require Commission approval, including consent of the Federal cochairman.

IMPORTANCE OF NEW CONCEPT

We place a considerable value upon this modification of our program, Mr. Chairman. And I would like to attempt a statement defining why we think that is important.

Senator STENNIS. All right.

Mr. WHITEHEAD. First, we think it is important to achieve the maximum flexibility permitted by the Appalachian Regional Development Act. And I might parenthetically add that we have confirmed our feeling about the interpretation of the act with the Public Works Committee, and we have corresponded with Senator Jennings Randolph, Chairman of the Senate Public Works Committee. The Senator has responded indicating that this has the approval of the committee. For instance, quoting from the letter, Senator Randolph states:

> I believe this new approach is completely consistent with the committee's intent in the 1971 amendments, and we commend you and the Commission for the initiation of this concept.

That letter is dated March 6, 1974. We have similar letters from the majority and minority members of the House Public Works Subcommittee.

I have got several more reasons why we think this is an important program advance.

Senator STENNIS. All right, good.

Mr. WHITEHEAD. Second, we think that through this area development program approach it will enable us to look at the problems of the region in a little different way. Breaking the region down for planning purposes into north, south and central, we think ought to enhance our thinking, and give our planning a sharper focus and a little bit more purposeful direction.

Third, we think it important to evidence the regional character of the Appalachian Commission in its program. The coordination required under this new arrangement, the mutually supportive strategies that will be necessary, should in our opinion rebut one of the basic contentions of Commission critics.

Four, we think this is an advance in that it will permit us to allocate Commission funds on a more equitable basis, that is a basis more reflective of the true needs of the region as we break it down, north, south, and central parts of the region. I think we can put increased emphasis where the heart of the problem is, namely in central Appalachia.

Fifth, we think it is an advance to demonstrate the ARC institutional concept as a potential compromise between alternative program options lying somewhere between pure revenue sharing on the one hand and the traditional categorical grant-in-aid process on the other. We are attempting to demonstrate, Mr. Chairman, that the Commission concept might be a compromise on this kind of an issue acceptable both to the administration and to the Congress.

And last, we wish to demonstrate the uniqueness of the Appalachian Regional Commission as a joint Federal-State institution for more effective and more responsive action on governmental problem solving. Our subregional plans, crude though they may be, could not even be addressed by any other agency so far as I am aware.

So that is why we consider this an important advance and modification in our program, growing out of the number of years experience that we and our States have had working with us since 1965.

I would like to show some slides that might illustrate some further points.

AUTHORIZATION FOR PROGRAMS

Senator STENNIS. All right. Let me ask you a question right there. Now, this table here that you show on page 5 or wherever it is, if the Congress saw fit they could shift it around or back out one of them or change the amount of money from one to the other?

Mr. WHITEHEAD. Yes, you could. But the evolution has been just the other way. When the Commission was first created by the Congress, we had in the statute a program by program authorization limiting the amount of money that could be appropriated for each one of those sections in the act. But in 1971 when the Congress extended the Commission for 4 years, the Congress amended that portion of the act and in effect created only two authorizations for the Commission, one for its highway programs and one for all other programs. And it is taking advantage of that authority upon which this area development program is based.

Senator STENNIS. Well, that illustrates—Mississippi did not get in on the start of this program.

Mr. WHITEHEAD. That is true.

Senator STENNIS. Then, when we did come in, you had already allocated a lot of your money; that is for highways. At least you had a plan.

Mr. WHITEHEAD. That is true.

Senator STENNIS. But now you have extended the plan geographically so as to include all?

Mr. WHITEHEAD. Yes, Mississippi is now participating.

Senator STENNIS. Well, to what extent?

Do you have those figures available?

Mr. WHITEHEAD. Yes, there have been several agreements worked out.

Senator STENNIS. Well, they can look there for it while you give your slides.

Mr. WHITEHEAD. Okay; why do I not get into this first.

We have three bits of good news to bring to the attention of the committee, Mr. Chairman.

INCLUSION OF MISSISSIPPI AND NEW YORK

Senator STENNIS. Pardon me just a minute. Now, you look at those other States, too, those other States that were left out.

Mr. WHITEHEAD. Yes, I can report on all three—Mississippi, Alabama and South Carolina as well.

Senator STENNIS. New York was put in as a member, were they not?

Mr. WHITEHEAD. Yes, but they were put in very heavily. There has been no problem with New York and there have been no complaints. I am sure the biggest problem has been accommodating the highway needs of Mississippi, Alabama and South Carolina. But I now think that we have worked out an adjustment which is acceptable to the States involved, at least through next year, Mr. Chairman. Now, our act expires in June of 1975 and beyond that, of course, it may be a new ball game.

Senator STENNIS. I do not see how New York got so far ahead of these other States that came in late, because I think that all of the latecomers came in at the same time, did they not?

Mr. LEWIS. Opportunity for New York to join was put into the statute in 1965, Mr. Chairman, and in 1967 was specifically written in in terms of an additional amount of mileage authorization and of dollar authorization.

Senator STENNIS. On the corridor highway?

Mr. LEWIS. On the corridor highway.

Mr. WHITEHEAD. I think that is the key point, Mr. Chairman. When New York came in, the Congress increased the authorization of highway corridor that the Commission could construct in order specifically to accommodate New York.

Senator STENNIS. Well, what other States came in when New York did?

Mr. LEWIS. Only Mississippi and New York, just the two States were added.

Senator STENNIS. Well, why did Mississippi's share in the program peter out?

Mr. LEWIS. New York's admission was provided for in the 1965 Act which allowed the Commission to study the counties to be admitted. In about the fall of 1965 they were brought in pursuant to that study, the statute was amended by the Congress in 1967 to bring specific Mississippi counties in.

Senator STENNIS. Well, let us research that out, please, and give me something for the record. I was not on that bill back in those days—but I am not going to sit here and let any State be discriminated against if I can avoid it, by the Congress or by anyone else.

I am not just pointing a finger at you folks, but let us get the facts first. And then we will——

Mr. WHITEHEAD. I think the current membership of the Commission has been very supportive, aggressively supportive of Mississippi and Alabama.

Senator STENNIS. Well, I appreciate that.

Mr. WHITEHEAD. Well, the problem will probably not be solved, Mr. Chairman, until the next evolution of the Appalachian Act if it should be extended beyond June of 1975.

Senator STENNIS. Well, I want to be around when it happens if I am here, and I want to be prepared.

Mr. WHITEHEAD. Well, we are sure you will, and we are delighted that you will.

Senator STENNIS. Well, but you still have to get your facts in. I do not expect you to come to me unless you have the facts.

Mr. WHITEHEAD. Well, first of all, Mr. Chairman, some figures you have asked for—the allocation for Alabama for highway corridors through 1978 is $16,672,000; for Mississippi, $11,156,000; for South Carolina, $3,872,000. So those are the dollar amounts that have now been allocated by the Commission to those three States.

Senator STENNIS. Now, that is helpful. I want to get the history back to the beginning when New York, Alabama, and Mississippi came in, how much money was available, and how much New York got, and how much we did not get, because I know for years I was told that Mississippi was not eligible for this money. I do not say you did, but that is the word that I got.

Mr. WHITEHEAD. That is correct, but I can say that we have worked very hard to find a way. As a matter of fact, I think the way that we found demonstrates the partnership aspect of the Commission's operation. Ten of our States gave up a proportion of the money allocated to them in order to bring in Mississippi, Alabama, and South Carolina.

Senator STENNIS. Well, I am glad you told me that. I did not know that.

Mr. WHITEHEAD. It was a remarkable demonstration of good will and cooperation, because 10 of our States were in the program, decided to share the allocation with all 13 States.

Senator STENNIS. When did that happen?

Mr. WHITEHEAD. Just this past year, Mr. Chairman. It is one of the advancements I cited to you.

Senator STENNIS. Thank you very much. That is a fact, and put that into the file that you are going to let us have to put into the record.

Thank you again. I was not on duty last year until late on in October. But I thank you.

Mr. WHITEHEAD. We will be ready to give you that history.

Senator STENNIS. All right, you have your chart.

[The information follows:]

Background on inclusion of New York and Mississippi within the Appalachian Region program and their relationship to the Highway program.

1. Inclusion in the Region:

A. New York -- The Appalachian Act as passed March 9, 1965 listed specific counties in the eleven states that were to be included in the Region. This did not include any counties in New York or Mississippi. However, the Act directed the Commission to study and consider, in consultation with the Governor of New York, the inclusion of counties in New York contiguous to the Appalachian Region. If the Commission found that such counties shared the social and economic characteristics of the Region and their inclusion would further the purpose of the Act the Commission would invite and New York could accept the inclusion of such counties in the Region. An invitation for the inclusion of 13 counties was issued by the Commission and was accepted by the Governor of New York on August 18, 1965.

B. Mississippi -- In 1966, at the request of the Governor of Mississippi the Commission staff undertook a study to determine whether any portion of Mississippi was integrally related to the Appalachian region. Early in 1967 the Commission recommended to the Congress the inclusion of 26 Mississippi and 2 contiguous Alabama counties. In October, 1967 the Congress enacted the 1967 Amendments which brought 20 Mississippi counties into the Region as well as a 14th New York county and the two Alabama counties.

2. Inclusion in Highway Program:

A. New York -- When the Commission invited New York to join in August 1965 it called for New York's full participation in all programs except for the Highway program. It based future participation in the Highway program upon a detailed study of New York's regional highway needs. That study was done, corridors were selected, and the other States, in March 1966, advanced from their allocations $25 million to New York to initiate work on its corridors. In the same amendments to the Act made in 1967 the Congress increased the authorized corridor miles from 2,350 to 2,700, increased access road mileage from 1,000 to 1,600 miles and increased funding authorizations by $175 million. Subsequently, the Commission revised its allocations to provide a total of $108.8 million for New York corridors, and $26.6 million for the connecting Pennsylvania corridor. The balance of the $175 million was allocated largely to access roads.

At that time the corridor system included ten States. Since Alabama, Mississippi and South Carolina were not included in the corridor program, they were given special treatment in allocations for the access road program receiving nearly half of the access road funds allocated through that time. Additional highway funds were authorized by the Congress in 1969 for $150 million and in 1971 for $925 million, but the authorized highway mileage was not changed.

B. Mississippi -- In the fall of 1970 a study was initiated of highway corridor needs in Alabama, Mississippi and South Carolina. In July 1972 the Congress provided an increased amount of $25 million for the highway program in 1973. In the Conference Report of the Appropriations Committees (House Report Number 92-1310) it was requested that the Commission render all possible assistance to enable those jurisdictions not in the development corridor program to participate. In March 1973 the Commission approved two additional corridors in those States, and authorized 116 miles of those corridors as eligible for construction. Initial work on these corridors was to be financed in two ways. First, the three States agreed to use $11.7 million of their allocated but unused local access roads funds to initiate work. Secondly, the other ten States agreed to set aside $5 million for each of the years 1975-1978 for the three States corridor program. At the present time, from all funds available to the highway program through 1978 the Commission has allocated the following miles and dollars for the Corridor program of the three States as follows:

State	Miles	Amount of Allocation
Alabama	73.6	$16,672
Mississippi	31.7	11,156
South Carolina	13.1	3,872
Total	118.4	$31,700

PROGRESS IN REGION

Mr. WHITEHEAD. I was starting to say we have some good news to report to the committee this year. The first is the reversal of out migration which has plagued the region since the very beginning. Secondly, of course, is the resurgence of coal, and thirdly is the refinement in the Commission program which I have mentioned.

This chart shows net population migration projected through the year 1980. It demonstrates that for the region as a whole, between 1950 and 1960, the region experienced a 12.5 percent rate of out migration. The region has been a fountain of out-migration for much of its history.

This is, however, the first turnaround that could be reported in half a century. In 1960 out-migration dropped considerably. It was cut about half, but still a more than 6 percent out-migration rate for the region. It was only, Mr. Chairman, since 1970 that we see a small, but we think significant, reversal in that trend.

Now we find, if these projections continue through 1980, the chart will be above the line, because we are now experiencing for the first time in-migration. Some better than 4 percent in-migration rate is projected.

The second bit of good news is, of course, what has happened in the energy situation. As coal becomes more competitive with oil and gas, this gives to the region great problems and also great opportunities which we hope to capitalize on. The problems are just those that you were discussing with the TVA witnesses, that is, it raises the issues of environmental protection, occupational health and safety standards, and appropriate taxation, and so on.

But you can see that underlying Appalachia there is a great part of the bituminous coal reserves of the United States. It represents a great opportunity, and we would like to help answer the question. Now, this coal resource may be utilized for the benefits of the citizens of Appalachia. Obviously, it is going to provide not only better employment, but better employment, higher skill levels. Working in the mines is not what it once was.

By changing the planning and budgeting process of the Commission we hope to keep pace and take advantage of the changes I have just mentioned. We hope to, by considering the region for planning and budgeting purposes into its various subcomponents—north, central, and south—we hope to sharpen the focus of our thinking, make our action more purposeful, and enable us to answer the statutory mandate that we make our investments in those parts of the region having the greatest potential for future growth and where the return on the Federal investment will be the greatest.

We have worked hard trying to develop capability of the area's residents through the vocational and technical education program, and by upgrading the health of the citizenry. Now, we hope to help promote jobs availability, and finally to link the two together.

NORTHERN APPALACHIA

Northern Appalachia is an area of the country that became industrialized in the latter part of the 19th century. It boomed, first of all, due to its proximity to the great eastern markets, secondly to the availability of cheap railroad transportation.

Senator STENNIS. Pardon me, I was——

Mr. WHITEHEAD. This is northern Appalachia. This particular shot is Scranton, Pa. It represents a typical population center that we find in the northern part of our region. It is there the way it is and the size that it is because it was close to eastern markets, particularly those lying outside of the region, and secondly because it had a railroad service, and thirdly because it was an area rich with natural resources.

But when we get into the mid-20th century, much of these advantages were lost, and as railroads declined and as new technology made the factories obsolete, then we found deterioration of the cities, and we found degradation of the environment contributing to a general economic downslide. Communities lost their major employment sources, commerce declined, the quality of the labor force declined, as the better educated and the younger people and the more ambitious people left the region. Now, the result was a stagnant economy with an outmoded physical structure and insufficient tax base to replace it, and an unattractive urban environment, and an abused natural environment.

ADVANTAGES IN APPALACHIA

But in spite of these deficiences, northern Appalachia continues to possess certain inherent advantages. It still is close to the markets; it still has an urban structure that is very important; and it still has natural resource base. And therefore, I think we see the same outmigration reversal in northern Appalachia as we saw as a whole, although not as dramatic a turnaround.

Senator STENNIS. That northern area is Pennsylvania and New York?

Mr. WHITEHEAD. Pennsylvania, New York, Ohio, and parts of West Virginia and Maryland.

Senator STENNIS. This is very interesting.

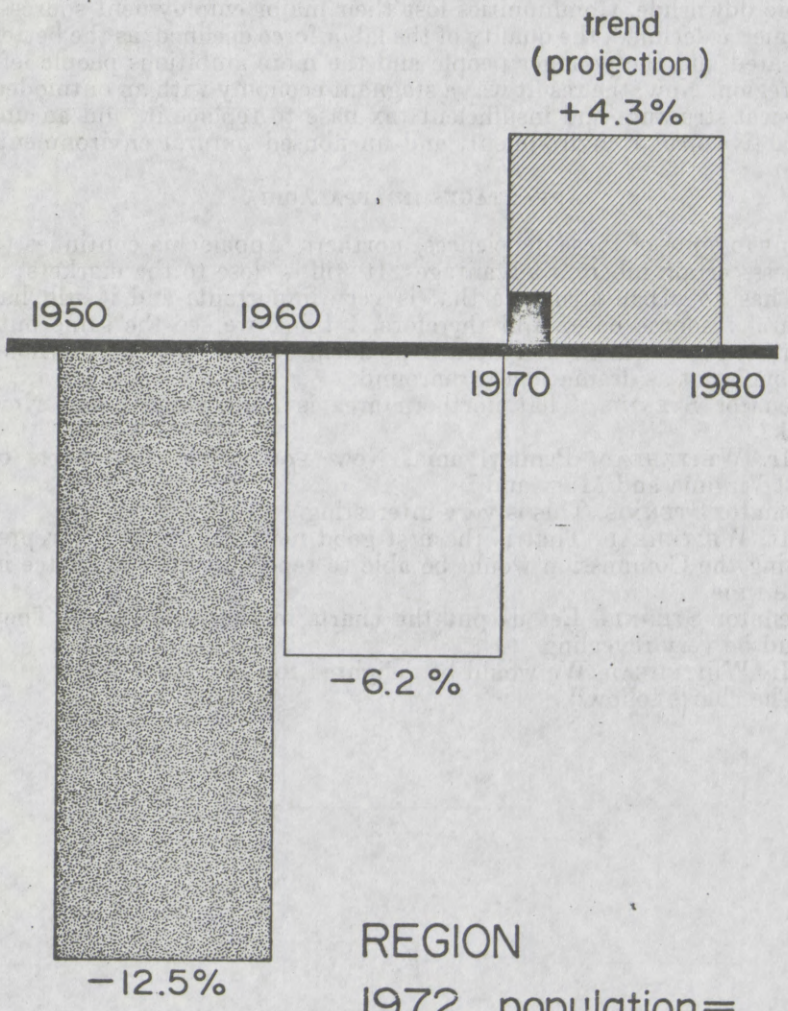
Mr. WHITEHEAD. That is the first good news that anybody representing the Commission would be able to report to the committee in some time.

Senator STENNIS. Let us put the charts in the record, too. They would be very revealing.

Mr. WHITEHEAD. We would be delighted to.

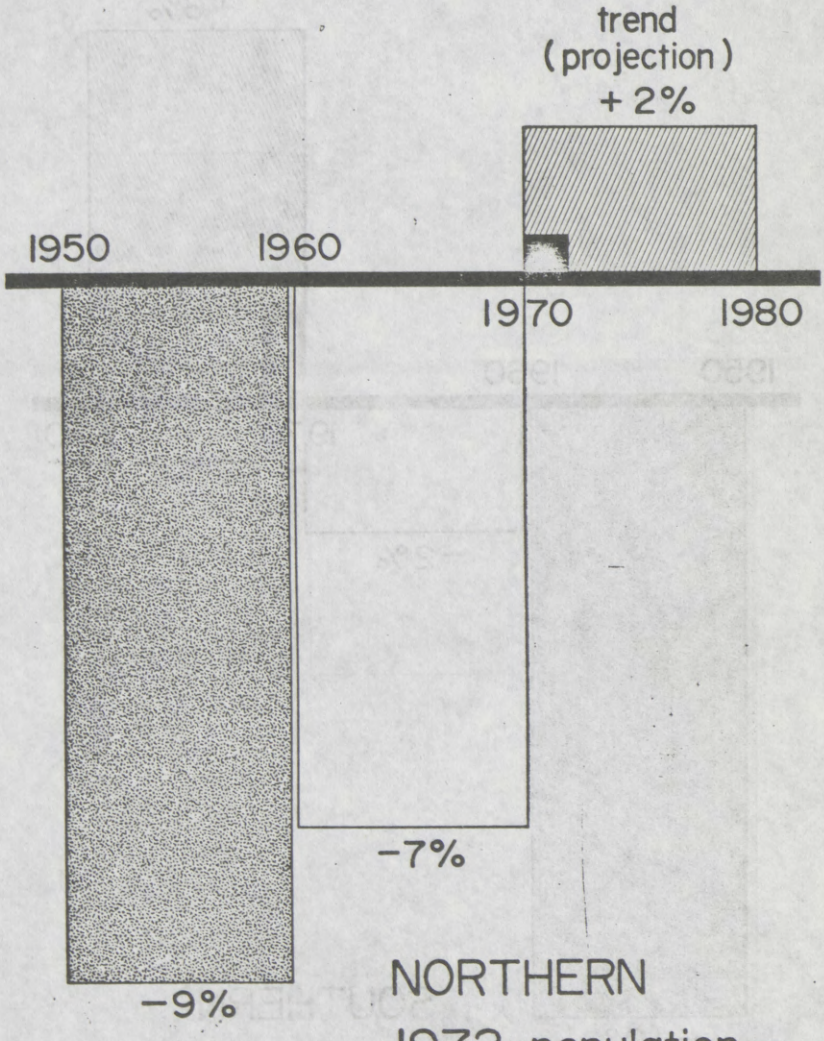
[The charts follow:]

Net Population Migration 1950–1980



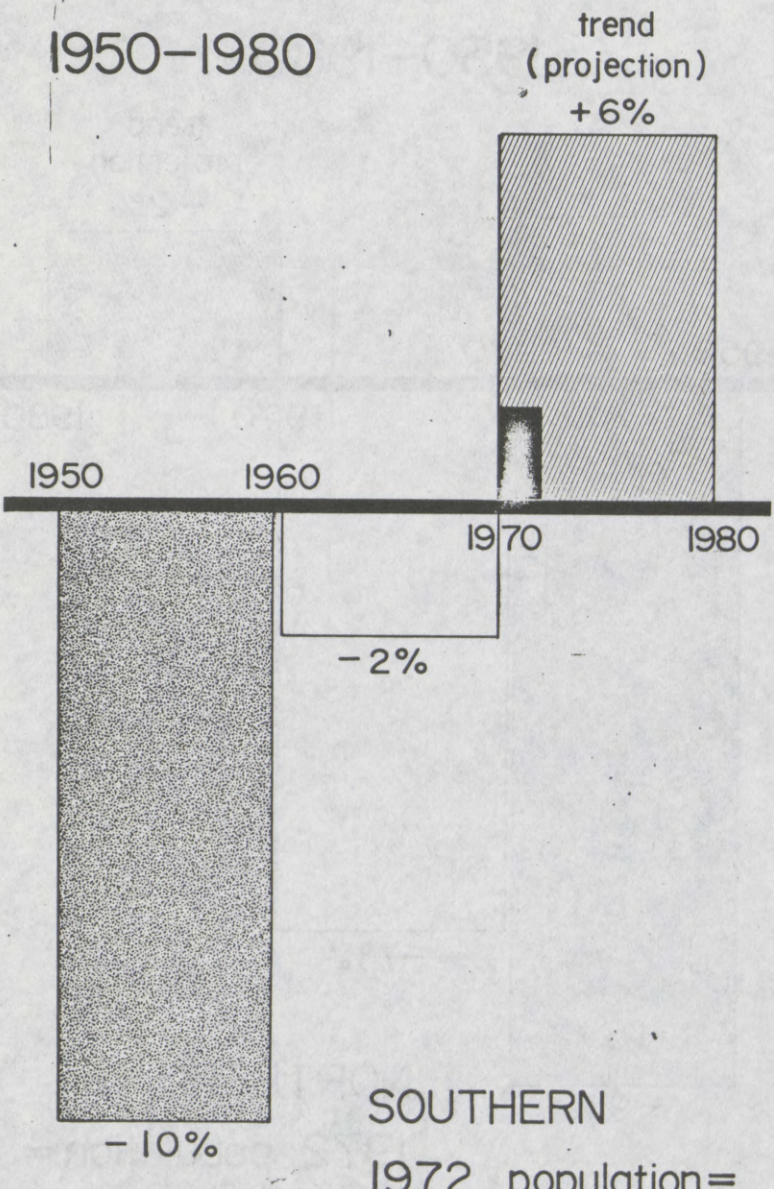
REGION
1972 population=
18.65 million

Net Population Migration 1950–1980



NORTHERN
1972 population =
9.9 million

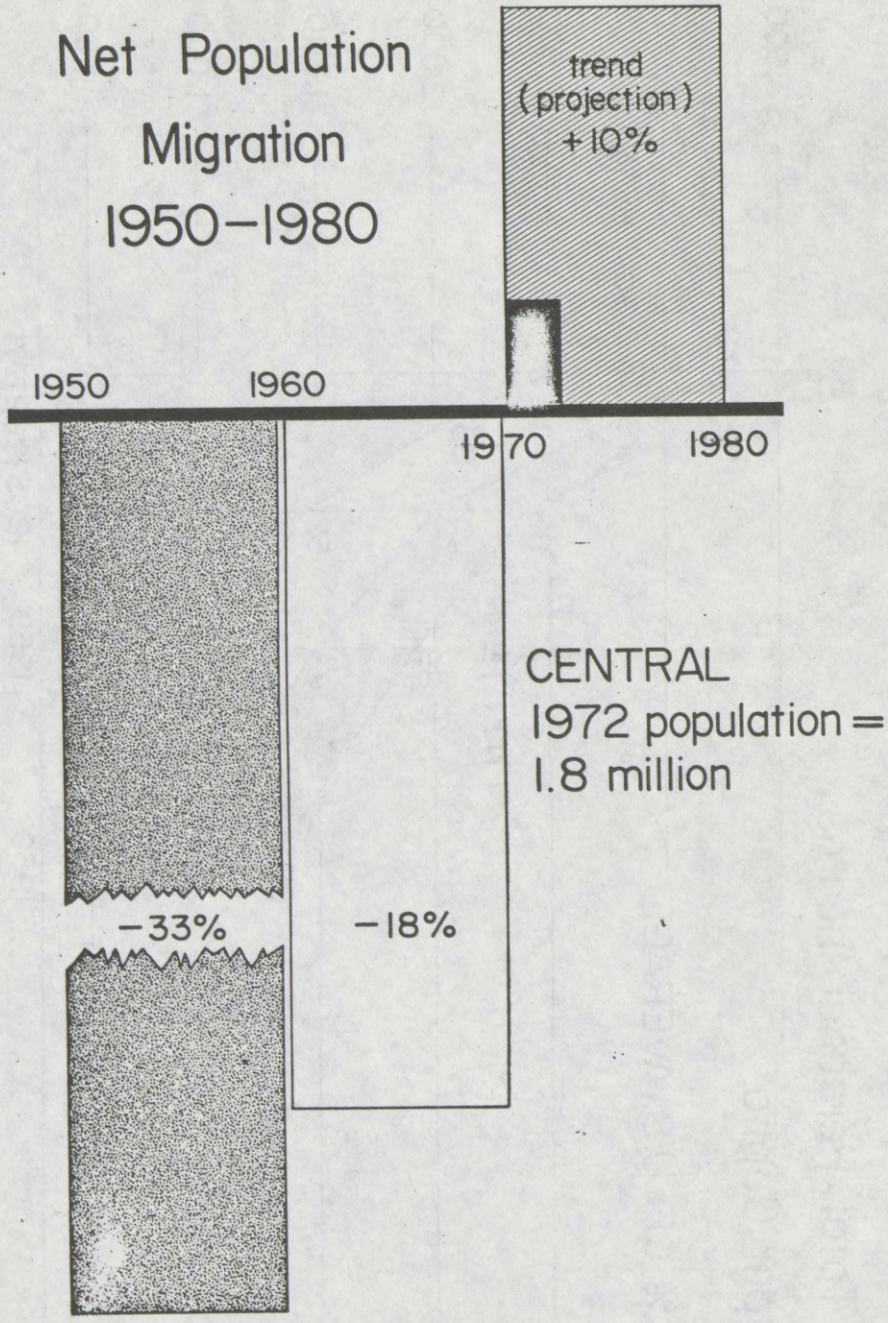
Net Population Migration 1950–1980

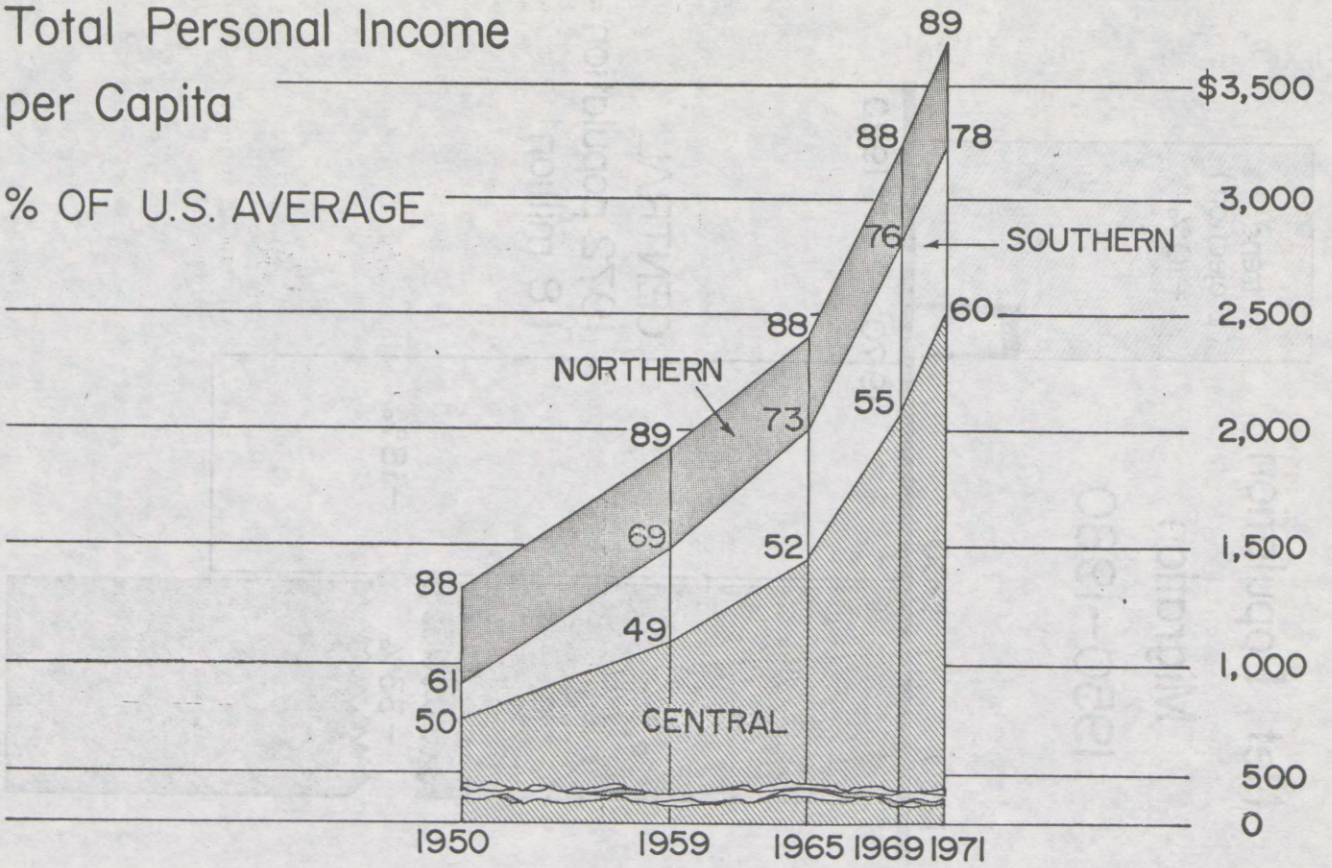


SOUTHERN

1972 population=

7.0 million


Net Population
Migration
1950–1980
trend
(projection)
+10%
1950
1960
1970
1980
CENTRAL
1972 population =
1.8 million
–33%
–18%


Total Personal Income
per Capita
% OF U.S. AVERAGE
89
88
78
76
SOUTHERN
88
60
NORTHERN
89
73
55
69
52
88
49
61
50
CENTRAL
$3,500
3,000
2,500
2,000
1,500
1,000
500
0
1950
1959
1965
1969
1971

3612

NORTHERN PER CAPITA INCOME

What has happened to the income of northern Appalachia is shown on this chart. Since 1950 the dollar income per capita has risen from something less than $1,500 to something better than $3,500. But I think the important thing is that there has been no growth at all in terms of the percent of the U.S. average—that is, the dollars have gone up primarily because of the inflation, which you had discussed with TVA. But the comparison with the income of the average person in the United States, the people of northern Appalachia have just maintained the position they had in 1950. That is, the percentage as compared to the national average in 1950 was 88 percent; 89 percent in 1959; 88 percent in 1965; it is 89 percent now. Virtually no change at all, either stable or stagnant, dependent upon your point of view.

Now, the railroad service——

Senator STENNIS. Let me run up and vote.

[A brief recess was taken.]

Senator STENNIS. All right, we had better proceed. Now, let me make it clear, I am not filing any blanket indictment here against you gentlemen insofar as corridors. I think you have treated Mississippi mighty well in these programs. You were slow getting into the highway part of it, the highway corridors, as it is called. But I think you have been very considerate. I want to make that clear. Although I am blaming myself on this other sum for not getting into it.

All right, sir, your railroads.

NORTHERN RAIL TRANSPORTATION

Mr. WHITEHEAD. I was making the point that the existence of cheap rail transportation was a great advantage to the northern part of the region, particularly in the late 19th century, because it permitted communities up there to really take advantage of the industrial revolution, which until that time had been limited to cities on the seacoast, and those having canal transportation.

But the railroads are just as important in northern Appalachia today as they once were because of the settlement patterns that we find there.

Senator STENNIS. You mean just as essential?

Mr. WHITEHEAD. Yes, sir, absolutely. And as a matter of fact, we are testifying and submitting additional information to the ICC hearings because we are concerned about the potential impact on the region of some of these railroad abandonments that have been proposed.

Senator STENNIS. Well, I am glad you told me that, because I got the impression they were not as important as you indicate. All right, go ahead. You are the witness, though.

Mr. WHITEHEAD. Just on that last point, Mr. Chairman, I cannot fail to say that I think abandoning railroad service to some of the Appalachian communities we have been making tremendous investments in would be to wipe out with one hand a great investment that the Congress has supported.

Senator STENNIS. All right, we will talk about that a little bit more later. Go ahead, this is interesting.

Mr. WHITEHEAD. I wanted to show a chart that gives you an idea, a schematic, of what a typical northern Applachian settlement pattern is, and later on I will show how it varies from the kind of settlement that we find in central and southern Appalachia. Here we have an intermediate sized population center, perhaps 25,000, 50,000, perhaps 100,000 people, there is generally one per county, and it serves or provides all or most of the public services for the people in the outlying area.

Our problem in the future is how to rehabilitate those centers so that they once again can support the outlying areas and supply them with the services that they find necessary. But the question is, in northern Appalachia, to rehabilitate, to resurrect, and to renovate what is there already.

TYPES OF PROGRAMS

Environmental insults plague all of Appalachia, but in northern Appalachia we are cleaning up mine refuse, gob piles, trying to prevent subsidence of land and buildings into abandoned mine excavations by drilling down from the surface into the old mines, trucking mine refuse at the surface to a plant where it can be mixed with water into a kind of slurry, and then pumped down through those drillings into the abandoned mines to fill them up with earth supporting materials, all the time cleaning up the surface eyesore at the same while. We are also converting open dumps to sanitary landfills, a necessary and not an easy operation, and it requires time and money and community leadership to find acceptable disposal sites. Not everybody wants one of these things in his backyard. They want one available to their community, but they do not want it located next door. And it takes skillful public leadership to find an acceptable area to locate one of these.

It also takes such leadership to balance the competing demands and devise in other parts of the region the most efficient collection route, because in a dispersed rural population it is very difficult to find the most economical way to pick up this trash. And third, we depend on local leadership to negotiate the multicounty agreements regarding the sharing of costs and control of such operation.

Now currently the Commission child development projects fund 350 child care centers, and in one way or another serve 125,000 children. But important as those numbers are, they are no more important than the benefits that result from the Commission's requirement to have the right kind of planning go into one of these projects where we require interagency planning at the State level to work out the details. We require agencies to work together.

To upgrade the local labor force, we are building vocational and technical schools for secondary, postsecondary, and adult students. By last fall we had 300 such facilities in operation. They housed some 200,000 persons. They were not confined to dead-end curriculums in agriculture or home ecomomics, but they are training for job-relevant courses in such fields as computer science, in machine shop operations in modern printing employment, and in skilled welding techniques.

The Commission achieved national recognition for its health programs when Northern Appalachia Health Council in southeast Ohio was chosen by HEW as the site of its only rural demonstration in emergency medical service. We are advised that the Council was

chosen in large part because of the foundation of facilities, services, and comprehensive planning which have been sponsored by the Appalachian Commission. This communications console links ambulance, hospital, sheriff, or State police with doctors and specialists to provide whatever the patient needs.

SOUTHERN APPALACHIA

Now, as northern Appalachia attempts to recover what it once was and what it once had, southern Appalachia is building it for the first time, as it industrializes and as it urbanizes. Population growth in southern Appalachia is its most outstanding characteristic and biggest problem. As a matter of fact, southern Appalachia is suffering from growth pains in many parts, as community infrastructure becomes inadequate, housing in short supply, and schools and hospitals crowded.

Southern Appalachia is really in transition from an agriculture and resource base economy to a growing service and trade sectors. It is expanding and diversifying manufacturing, and this growth is accompanied by significant advances in population, housing, and income.

Here again, compared with the initial chart, we see an even greater turnaround in this migration problem in the southern part of the region, going from 10 percent outmigration in the 1950's to 2 percent outmigration in the 1960's and 6 percent inmigration in the 1970's.

Senator STENNIS. Call out the States, now, that you consider southern. I think I know from what you have already said.

Mr. WHITEHEAD. Yes, sir. Alabama, Mississippi, Georgia, South Carolina, North Carolina, parts of Tennessee, and parts of Virginia.

Senator STENNIS. Kentucky goes in with the north?

Mr. WHITEHEAD. Kentucky is in central Appalachia.

Senator STENNIS. All right.

Mr. WHITEHEAD. Now, the income figures from southern Appalachia as compared, say, to northern and the United States as a whole, indicate that not only is the dollar per capita rising from something in the neighborhood of $1,000 per capita in 1950 to better than $3,000 today, but southern Appalachia is doing a better job of closing the gap on the U.S. average than is northern Appalachia, because southern Appalachia was at 61 percent of the U.S. average in 1950 and they are at 78 percent of the U.S. average today, or at least in 1971. Probably closer than that today.

SOUTHERN APPALACHIAN SETTLEMENT PATTERN

Southern Appalachia has a different settlement pattern than we find anywhere else in the region. It is a more sophisticated and complex hierarchy with city sizes ranging from large, metropolitan centers, some outside the region like Atlanta, some inside, Birmingham—but large metropolitan centers through intermediate sized cities ranging down to small towns and hamlets.

Now, this settlement pattern arose out of the agricultural heritage of the South where farms depended on local markets, which in turn served even larger markets, and again market centers and commodity exchanges. It is a more complex pattern than we found in the North, which was simply one large community, frequently in a county, serving a lot of little hamlets.

Our job is to help this part of the region achieve a balanced growth. Those major population centers are moving along very rapidly. Our job is to give the intermediate cities and the small towns the basic infrastructure it needs to accommodate growth and to provide a healthy and educated citizenry. This means focusing on the second and third order population centers by making the right kind of investments in such projects as access roads and in sewers and in sewage treatment plants. All of these are important to create industrial parks to attract modern, taxpaying, high wage paying, diversified industry.

But we must also tackle the harder problems to remove the present barriers to growth that exit. That means throwing off the shackles of ignorance and opening men's minds through education, just as we care for the physical needs in extended care facilities or in hospitals, since in the last analysis a physically, mentally, and emotionally healthy populace will be required to select and support the enlightened leadership southern Appalachia's vitalization will demand.

CENTRAL APPALACHIA

To most people Appalachia brings to mind the severest poverty, the worst health, education, and social conditions, as represented by the hard scrabble for existence of the lone mountaineer.

Senator STENNIS. Well, if you will excuse me, I have to go to another vote. It is the last call. I will be right back.

[A brief recess was taken.]

Senator STENNIS. All right, gentlemen. We can proceed now.

Mr. WHITEHEAD. All right. I will try to finish up, Senator.

This is probably more representative of Appalachia than the other slides show. Here is the other one. That is what most people think that our problem is, and that problem does exist.

But this scene is more typical. This shows the problem of central Appalachia, where communities have been forced into dense population settlements in small pockets of land. There is a scarcity of flat, developable land, which has prevented growth. Central Appalachia is characterized by isolation resulting from the rugged terrain, which has squeezed these communities into a little valley between a mountain on one side and a river on another, and none of them are big enough to be able to efficiently conduct areawide programs singly, individually, or alone.

They are all strung together like beads on a string by a road and a river. Our job is to help them plan collectively so that together, three or four in an appropriate cluster can provide the public and private services their citizens require.

Now, here is the most dramatic impact of the migration reversal that I have been talking about. Although the numbers of people, again, are not large, for this very reason, the impact on central Appalachia has been the most dramatic. We think the implications for the future are most dramatic.

Central Appalachia in comparison with southern and national on the income chart again is rising in dollar income and also in how it is doing as against the U.S. average, from 50 percent in 1950 to 60 percent in 1971.

To illustrate the problems of land development, here is land within the corporate limits of a small city. It is an abandoned strip mine that was leveled off and on which was constructed a regional school. But that was within the corporate limits of a community in Virginia, and developable land was scarce.

Senator STENNIS. What part of Virginia?

Mr. WHITEHEAD. In the southwest. It is in Norton, Va. They did a very good job there, but that shows how scarce developable land is.

This is something on which you were commenting with TVA, this problem of the junked cars, which is endemic to all of Appalachia, but it is particularly a problem in the central portion. We are conducting some demonstrations there. So far they have been successful, but they indicate that to continue they will require some strong State support both at the executive and legislative level.

We are also, as you know, working to open up the region, particularly in central Appalachia, for transport to jobs, school, such as this highway corridor section.

Senator STENNIS. A six-lane highway.

Mr. WHITEHEAD. Yes, we can if traffic projections require it.

Senator STENNIS. You are building for the future. That looks good.

Mr. WHITEHEAD. That is exactly it. As a matter of fact, that would be a good slogan for us, because sometime the present traffic may not require that many lanes. It is to open up the area for development, and what the roads will not do we hope the airline traffic will. And even more importantly, in the future we hope to be able to do a little bit more in terms of rural mass transit to bring transportation facilities within the reach of more Appalachian citizens.

Central Appalachia has some of our most imaginative health plan projects, really classic demonstrations in the way to provide medical, dental service to dispersed rural populations, expanding the services of the doctors through an appropriate team and linkages with others.

HIGHWAY PROGRAM ACCOMPLISHMENTS

The good news for our highway system, Mr. Chairman, is that one-third is already completed and open to traffic, and half will be completed or under construction by June of next year. But we realize that we still have a long way to go and much to do, particularly in Mississippi.

Senator STENNIS. How much have you spent in all on your highway program, just in round numbers?

Mr. WHITEHEAD. We have since 1965, obligated or committed $1.3 billion according to my budget officer.

Senator STENNIS. All right.

Mr. WHITEHEAD. Another probably $1½ billion over our authorizations would be required to complete the system at the present rates.

HIGHLANDS APPALACHIA

The fourth Appalachia is highlands. It overlays the other three, as it laps the Appalachian Mountain crest running north and south through the region. Together with selected sites in Mississippi and in

Ohio, the highlands will benefit from special demonstration projects we hope to conduct next year to capitalize on its natural beauty, which gives it such potential for tourism and recreation and environmental development. Its moods, and its vistas, its seasons really defy description and must be experienced to be believed.

Thank you very much, Mr. Chairman.

Senator STENNIS. Thank you very much.

While we are on this, I used to drive back and forth through Mississippi, and sometimes we would go down through North Carolina, through—not Charlotte; over there to the east—Asheville, almost due west to Chattanooga. And there is a large area there where all the vegetation has been killed. It is a copper hill.

What did that?

Mr. Jones knows about it.

Mr. JONES. Copper mines; sulfate, it killed the vegetation. It was destroyed.

Senator STENNIS. Well, you keep showing your pictures, because you give me hope, and I know you give others hope and understanding, too. Of course, down South now we still maintain you cannot put all the things that make living worthwhile down there into a per capita income column.

Mr. WHITEHEAD. That is true; that is true.

Senator STENNIS. We have a lot of fresh air and a lot of dogwood blooms and all. We want to keep those, but you are really making hay on this thing. That is fine.

Mr. WHITEHEAD. We hope, Mr. Chairman, that we have a program that will preserve sectional differences. I think it would be a shame if the results of all of our efforts were to create a megalopolis from north to south and east to west. People ought to have a choice as to where they live and there ought to be a difference in living in one part of the country from another.

Senator STENNIS. Yes, yes. We have about 5,000 Indians living down home in Mississippi. Somebody is always wanting, you know, to get in there and make Anglo-Saxons out of them. I say, on that point, leave them alone; leave them alone. They are the original Americans, you see, and give them opportunity and all to help them in their leadership problems and everything. They do not. Don't try to convert them over to Anglo-Saxons or anything else. They are the original American Indians.

Well, what else do you have now?

Mr. WHITEHEAD. Well, that concludes my statements.

Senator STENNIS. Well, that is a very fine presentation. I am glad you had those pictures and all.

It has been 2 years since I have been here, and I believe that even 2 years ago I had to get someone else to hold the hearings. In fact, as long as that war in Southeast Asia was going on, I was like a prisoner, just tied down to those military bills, you see. But I am glad to get to see this.

Have you been showing the pictures all these years?

Mr. WHITEHEAD. No; last year was the first presentation we made of these pictures.

Senator STENNIS. Well, that is good. Keep doing that. Keep doing that.

NEW BUDGET PLAN

Now, I want to ask this now. On this new plan that you have that is somewhat akin, or considerably akin, to revenue sharing, this fiscal 1975 is the first year that you propose to use that?

Mr. WHITEHEAD. Yes, sir.

Senator STENNIS. And I am just trying to get familiar with it, and I have no pet project, but I would want to go over this some with the Governors, thank you, if this thing stays in the bill. Your position is that it is within the law already?

Mr. WHITEHEAD. Yes, sir.

Senator STENNIS. You were just presenting it to us as kind of a courtesy, and you are going to go on and do it anyway, unless you are prohibited from doing it?

Mr. WHITEHEAD. No; I would not do it but for the consent of this committee.

Senator STENNIS. Well, I was not accusing you of usurping any power, but if you have got the authority and all and we have it presented to us and do nothing about it, the implication is that we approved it. And I am not inclined to disturb it.

Mr. WHITEHEAD. Well, I think it would be important for you, if the occasion arose, for you to discuss it with Governor Waller and other Governors.

Senator STENNIS. Well, I will later, but I am going to discuss it with the staff and see if we do not approve this, we ought to put something in this that says we do not approve it, or otherwise you are given license to move. And as I understand it now, I am going to be for it.

Now, let us see if Mr. Jones has something on his mind.

You ask some good questions. You always do.

ESTIMATED OBLIGATIONS BY REGIONS

Mr. JONES. Well, mainly I asked the question, do we have an estimated obligation of the amounts by regions, for the three regions, for the current fiscal year and for the proposed budget and this new procedure.

Mr. WHITEHEAD. Can I supply that for the record, because we do not have it broken down that way right now.

Senator STENNIS. You can break them down?

Mr. WHITEHEAD. I can.

[The information follows:]

AREA DEVELOPMENT PROGRAMS—ESTIMATES OF OBLIGATIONS BY SUBREGION

[Dollar amounts in millions]

	1972 population	Program amounts—Fiscal year—		
		1973	1974 estimate	1975 estimate
Northern	9,884,700	$39.3	$40.1	$42.6
Southern	6,954,600	48.4	48.9	53.6
Central	1,817,700	21.6	20.1	24.8
Special highlands program				2.0
Total	18,657,000	109.3	109.1	123.0

DERIVATION OF ESTIMATES

Amounts for FY 1973 by subregion have been obtained from actual project approvals, exclusive of special mine area restoration projects funded by a special 1973 supplemental appropriation for Tropical Storm Agnes.

Estimates for 1974 and 1975 follow allocations to States. Amounts for those States which are included in more than one subregion and which are not allocated by subregion have been distributed proportionately to the actual distribution of projects in the past several years.

NEW BUDGET PLAN

Senator STENNIS. Then, this is not an absolute guide, but just put the population along there with these areas, because I think the committee ought to go into it. As you said there, that you would not do it unless the committee approved it, but we ought not to leave any doubt as I see it.

How does the House committee feel about it?

Mr. WHITEHEAD. We appear there tomorrow morning, however we have had informal discussions that indicate that they are interested.

Senator STENNIS. All right. All right.

The ones I have been interested in down home, I was just told flatly they were not eligible for the highway corridor, that we got in too late and all the money has been planned and so forth.

Mr. WHITEHEAD. That was the truth, Senator, until we get 10 of the States willing to give up a little of their money for the other three.

Senator STENNIS. Well, I appreciate what you have done, and I remember now that someone had mentioned that to me. You know a lot of things that went out with that anesthesia they gave me never have come back to my mind.

Mr. WHITEHEAD. Mr. Chairman, I cannot tell you how delighted we are to be able to appear personally before you. Last year, Senator Schweiker handled the hearing, and we showed some slides, not these. But we are delighted to have you back.

RAILROAD SITUATION IN APPALACHIA

Senator STENNIS. Well, I am delighted to be here, and I am fortunate to be here, quite frankly. Thank you again for your remarks. Thank you very much.

You have shown some new facts and very vivid illustrations about the railroads. I had gotten somewhat the wrong impression. Down home, back when you were building all these railroads up there in the East and the North, you remember, we lost that war. We did not have any money in the 1860's, 1870's, 1880's, and 1890's. We dug up a little, bartered in England, and built some railroads, but we did not overbuild. We did not overbuild—in some areas I have understood that they overbuilt.

Now you may disagree with that. But what I am coming to is, now the most prosperous railroads are in the South, in spite of the fact that our per capita income is below the national average. So I asked the question, how has that happened. And the railroad men tell me, well, we did not overbuild, and I think he knew what he was talking about, in part that is. In our area, it was not overbuilt.

Southern Railway is just booming, you know, making money. They have excellent leadership, and it is a great network now, from Washington to New Orleans. It runs on around by Montgomery and Mobile, you know, quite an area.

Mr. WHITEHEAD. I think there are a number of ways——

Senator STENNIS. Yes, comment on that. You know more about it than I do. Comment on that.

Mr. WHITEHEAD. I think there are a number of ways in which the South profited by the lessons and the mistakes made in the North, and you have cited one. Yes, it is true that I think to some extent railroad building perhaps got out of hand at one period of our history in the Northeast and northern Appalachia. They had little railroad spurs into every little community.

But what are we going to do now? Are we going to abandon those communities and turn the clock back, or are we going to provide the kind of investment necessary to keep them going?

Now, I think for this reason the South had a much more rational growth pattern than is shown in the North. That chart showed different sizes, different gradations of cities linked together in a much more rational way than we find in the North. This is a great potential advantage for the South. In the Appalachian Commission, if our planners do their job, we will be able to help capitalize on that potential which the South has.

Perhaps Mr. Moravitz, who is a professional planner, would like to comment on this.

Senator STENNIS. All right. Yes, sir.

Mr. MORAVITZ. Yes, sir. I think one of the keys is that which you alluded to, that is the way of life that we are talking about. The South has the opportunity to build on some of these smaller communities, bring the jobs in and accommodate the people that are living a little farther out from the town that is one of the strategies that is going to be useful. We will not overbuild big cities. We will not have that situation that we have in northern Appalachia, with a great deal of decay.

Senator STENNIS. Well, you have made a good point. We have had a great deal of migration away from our cities in Mississippi, for a long time, looking for industrial jobs, you see, agriculture was going down. But they are coming back now; that is, many of the same people are coming back, many of them. They come back, you know, and have little factories where some little counties did not have any until here in the last few years.

NEW JOBS IN REGION

Mr. MORAVITZ. Our latest reading, Mr. Chairman, since the Commission has been in existence, 750,000 jobs have been added to the Appalachian region, and about half or a little over half have been in the southern part of the region.

Senator STENNIS. Well, stay with it. You are not going to suffer for money, as far as I am concerned here. I may switch it around some if I want to, but we have had a program, too, that goes along with your program, this rural waterworks program.

You have helped us out on that, where you give some grants. It has all been stopped now by the administration. I have been trying to give them hell about it. They want me to vote for $1,200 million for aid to South Vietnam in military aid, but I cannot get $30,000 as a grant, you see, for a little rural waterworks plant where we are going to pay back all the rest of it with interest. I want to try to get that score evened up a little, although I am going to support some aid to South Vietnam. But you keep on here.

How long have you been with——

Mr. WHITEHEAD. I have been Federal cochairman for 3 years. Before that I served a year as general counsel.

Senator STENNIS. Do you get satisfaction out of your work?

Mr. WHITEHEAD. It is the best job in town outside of your own, Senator.

Senator STENNIS. Well, that is fine.

COMMISSION OFFICE LOCATION

Your office is here in Washington?

Mr. WHITEHEAD. Yes, sir. We are about a block above Dupont Circle on Connecticut Avenue.

Senator STENNIS. Do you call this the Appalachian headquarters, or do you have a headquarters out in Appalachia somewhere?

Mr. WHITEHEAD. No, we are fortunate in that. Washington really is more convenient for people to get to than any place physically within the region.

Senator STENNIS. That is right. You have to get these people in here.

Mr. WHITEHEAD. We are feeling very intensely the problem of termination and moratorium, impoundments, and other Federal programs that you have mentioned, water and sewage is an outstanding example. One of the advantages of the area development proposal that is before you now is that it will permit a Governor to more readily respond to that kind of local situation.

We are asking for an increase which in large part could be devoted to not only supplementing water and sewer grants but actually providing the first dollar in those grants. So that is in our budget, too.

Senator STENNIS. Well, we have lots of those water and sewer associations, as they call them. They are paying back all of their money. That is, they did not get any grant, did not ask for any. They can justify it without any, but the margin of difference many times is just a few thousand dollars of a grant. You see, these water users own that system, and they have a man who reads the meters and so forth and collects the money, and that is about all they have to do.

Well, Mr. Jones, do you have something?

Does anyone else on the staff have questions?

Any other comments now then, Mr. Chairman?

Mr. WHITEHEAD. Well, I guess not.

Senator STENNIS. You guess not? Well, you do not hold back anything that you want to add, or is there anything that you want to say, questions or comment?

Mr. WHITEHEAD. No, I think that completes our statement. I just again want to mention that it is a pleasure to appear here, and we have missed you, but we have enjoyed working with your staff.

Senator STENNIS. Well, thaink you. Thank you very much. I appreciate your courtesies to them and to me and all.

HIGHWAY EXPENDITURES

Senator STENNIS. All right. We go now to what we call outside witnesses, you know, witnesses beyond the Government.

Has anybody written us a lot of letters about Appalachia?

Mr. JONES. No, sir, not about Appalachia.

Senator STENNIS. Well, you have really gotten on top of this now about those highways and everything. I did not realize you had spent that much money. You say you have spent $1.2 billion, and you have about $1.5 billion to go, roughly?

Mr. WHITEHEAD. Yes, sir. The Congress has directed us to build a system of better than 2,700 miles, and in one way or another, we have got some 2,600 miles of that system under either design, location studies, right-of-way acquisition, or actual construction. It is a big system, and it is going to make a big difference for the region. It complements the Interstate Highway System, of course, but it is going to open up a great deal of the region that was really never accessible before.

Senator STENNIS. Well, I have been trying to reconstruct in my mind the names of some books I want to recommend. There is an author named Boorsky, B-o-o-r-s-k-y, I think he is from Oklahoma. And in the last 12 or 15 years he has written three books, kind of a new approach to the history of America. I think you would enjoy this immensely. The first was on Colonial America, then he goes into all these colonies as they developed, and shows a little why there was so much difference in Massachusetts and Virginia, for instance. You know, Massachusetts is on the seacoast and developed the ports and got into industry and Virginia living on the little tributary rivers. Anyway, you will enjoy it.

And the second book, I believe, is the best one of them. It is the experience of becoming a nation, you know, and the motivations and everything. For instance, he takes up all about the uncertainty of the boundary. How far does America extend? It shows at first, you know, it cut off at the foot of the Appalachian Mountains. They did not plan or think anything beyond that. Finally, Thomas Jefferson, you know, and the Louisiana Purchase—you will enjoy it. It is the kind of a book you can just pick up at page 186 and start reading, you know, and be interested.

But that fellow Boorsky, if you think you are interested in it, you will have to be on a waiting list to get them. They are in paperback form now. I will get the names of all three of them and send them down to you.

Mr. WHITEHEAD. I will enjoy reading them, Senator.

Senator STENNIS. It even gets you into medicine back in the old days, using herbs and leaves and whatever they could find. They discovered a lot of new things that became a part of medicine, you know.

Mr. WHITEHEAD. Well, I am an amateur apiarist, you know——

Senator STENNIS. All right. Well, thank you again, gentlemen, very much.

SUBCOMMITTEE RECESS

The subcommittee will now stand recessed subject to the call of the Chair.

[Whereupon, at 5:27 p.m., Monday, April 8, the subcommittee was recessed, to reconvene at the call of the Chair.]

PUBLIC WORKS APPROPRIATIONS FOR FISCAL YEAR 1975

THURSDAY, APRIL 11, 1974

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 2:28 p.m., in room S–128, the Capitol, Hon. Henry Bellmon presiding.

Present: Senators Bellmon, Stennis, Magnuson, Hatfield, Young, Stevens, and Schweiker.

FEDERAL POWER COMMISSION

STATEMENT OF JOHN N. NASSIKAS, CHAIRMAN

ACCOMPANIED BY:

WILLIAM L. SPRINGER, VICE CHAIRMAN
ALBERT B. BROOKE, JR., COMMISSIONER
RUSH MOODY, JR., COMMISSIONER
WEBSTER P. MAXSON, EXECUTIVE DIRECTOR
T. A. PHILLIPS, CHIEF, BUREAU OF POWER
MARSH H. MOY, COMPTROLLER
JOHN R. MATSON, OFFICE OF THE COMPTROLLER, BUDGET OFFICER

SUBCOMMITTEE PROCEDURE

Senator BELLMON. The subcommittee will come to order.

This afternoon we are glad to welcome the Federal Power Commission to present its fiscal year 1975 budget request. The Chairman of the Commission, Mr. John N. Nassikas, will present the request.

Chairman Stennis hopes to be here in a few minutes. He has another commitment and has asked that I be here at the hearing and preside until he arrives. In addition, we may have some interruptions from time to time due to rollcall votes on the campaign financing bill which has been before the Senate for some time. But we hope that we can continue to hear you.

Before proceeding, Mr. Nassikas, we ask that you introduce to the committee and for the record those people who are with you.

Mr. NASSIKAS. This is Commissioner Brooke and Commissioner Moody. Commissioner Springer will be here shortly, Commissioner Smith had a previous commitment and couldn't come. This is Mr. Phillips here for the Bureau of Power, John Matson, our budget officer; Marsh Moy, the comptroller; and Webster Maxson, our executive director.

PREPARED STATEMENT AND JUSTIFICATION

Senator BELLMON. Mr. Chairman, we have a copy of your prepared statement, and we will place it in the record as well as the fiscal year 1975 budget justification for the Federal Power Commission. You may wish to summarize the statement or highlight it in any way you see fit.

Mr. NASSIKAS. I will highlight the statement and try to be very brief, and I will expect interruptions at any time, Mr. Chairman.

[The statement and justification follow:]

Mr. Chairman, for FY 1975 the Federal Power Commission is presenting a budget estimate totalling $32,393,000 and 1,337 positions. This includes an increase of $3,697,000 and 40 positions over the agency's FY 1974 budget.

At the outset it is to be noted that $2,230,000 of the $3,697,000 increase is for office space and related requirements. For the first time, in FY 1975, this item is to be included in each agency's appropriation instead of in the appropriation for the General Services Administration, pursuant to the "Public Buildings Amendments of 1972," Public Law 92-313. This major item aside, the rest of the dollar increase, amounting to $1,467,000, is for increased pay costs and the cost of additional personnel, in the amount of $922,000, and increases for travel, contractual services, printing, supplies, and equipment, estimated to be $545,000.

The following summary table shows the distribution of the $32,393,000 estimate among Federal Power Commission programs and indicates the application of the increases among the programs.

SUMMARY OF ACTIVITIES

1975 BUDGET TO THE CONGRESS

	1973 Actual		1974 Estimate		1975 Estimate		Change 1974-1975	
	Positions	Amount	Positions	Amount	Positions	Amount	Positions	Amount
I. Hydroelectric Power Regulation	200	$ 3,073,137	209	$ 4,789,000	215	$ 5,367,000	+ 6	+$ 578,000
II. Electric Power Industry Systems Evaluation	132	2,375,897	134	3,093,000	138	3,438,000	+ 4	+ 345,000
III. Electric Power Utilities Regulation	147	3,005,679	154	3,533,000	160	3,991,000	+ 6	+ 458,000
IV. Natural Gas Pipeline Regulation	366	6,575,190	390	8,747,000	402	9,839,000	+12	+ 1,092,000
V. Natural Gas Producers Regulation	192	3,527,214	203	4,164,000	205	4,732,000	+ 2	+ 568,000
VI. Natural Gas Industry Systems Evaluation	31	903,167	13	384,000	13	420,000	-	+ 36,000
VII. Services to Other Agencies and Public	93	1,683,311	88	1,856,000	88	2,031,000	-	+ 175,000
VIII. Conservation Research					3	100,000	+ 3	+ 100,000
IX. Administration	99	1,616,817	106	2,130,000	113	2,475,000	+ 7	+ 345,000
Total Costs Funded	1260	$22,760,412	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Changes in Selected Resources	-	+ 359,483	-	-	-	-	-	-
Total Obligations	1260	$23,119,895	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Reimbursables	3	+ 109,606		-		-		-
Unobligated Balance	-	+ 847,499		-		-		-
Appropriation or Request	1263	$24,077,000	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Distribution of Costs by Major Object Classes								
Personnel Compensation		$18,828,607		$22,019,000		$22,900,000		+$ 881,000
Travel		568,467		710,000		760,000		+ 50,000
Other Costs		3,363,338		5,967,000		8,733,000		+ 2,766,000
Total Costs Funded		$22,760,412		$28,696,000		$32,393,000		+$3,697,000

When the Federal Power Commission was established in 1920, its functions were to collect information concerning the use of water resources for electric power generation, to license hydroelectric facilities, and to establish a uniform system of accounts for all licensees. Over the 54 years since that time, there has been a considerable accretion of functions and responsibilities relating to such matters as wholesale electric rates, watercourse and river basin development, corporate regulation, environmental quality, natural gas pipeline certification and rate regulation, natural gas producer certificates and rates, electric systems coordination and reliability, resource allocation, and energy conservation. Today the agency is a principal governmental reliance in meeting U.S. energy problems.

Yet all of the developments of the last 54 years affecting this agency are insignificant by comparison with the recent dramatic reversal of our energy supply-demand situation. Post World War II population growth, shifting patterns of population concentration, new energy reliant technologies and mechanization, basic changes in the economy, the emergence of new values and life styles, and a host of other factors have raised the Nation's demand for energy above the deliverable supply, threatening productivity, employment, price stability, and the economy generally. Although the present energy situation was many years in the making, and although the evidence for some time has pointed toward potentially crippling shortages, it is only in recent months that the situation has become a matter of grave public and private concern. The potentially disastrous effects of widespread electric power shortages are not yet fully appreciated.

The effective performance of the Federal Power Commission's functions in FY 1975 is a matter of critical importance to the country. As in previous years, I am today presenting a budget which represents the minimum resources necessary to meet this agency's responsibilities in a manner which will best serve the public interest.

Natural gas constitutes one-third of the Nation's total energy consumption. I testified to the deepening natural gas shortage in the fall of 1969 before the Senate Interior Committee and have underscored the necessity for policies to reverse the trend of diminishing supply and increasing demand before the Congress, in decisions of the Commission, and in various public forums both here and abroad. Due to the inherent interrelation and interdependence of the various energy forms, the recent shortages of fuels which ordinarily can be substituted for natural gas, such as fuel oil and propane, have intensified the problem.

Demand for natural gas has been outstripping additions to supply for several years. The anticipated deficiency in meeting firm contract requirements for the current 12-month period ending August 1974, exceeds the actual deficiency for the preceeding 12-month period by 53 percent. The extent of shortages vary among pipelines, but the imbalance on a nationwide basis between natural gas supply and demand has resulted in curtailment by major pipelines of deliveries to consumers by 10% short of national demand. The inevitable result is economic dislocations. I do not envision any immediate increase in supply to meet demand. At best we will

be forced to further deplete our diminishing inventories of natural gas, while stimulating supply to the maximum extent possible, and increasing all supplemental sources of natural gas in order to prevent production levels from declining.

To date, 37 jurisdictional pipeline companies have filed with the Commission proposed curtailment plans relating to firm contracts. Eight of these filings have resulted in final Commission orders. The remaining 29 are in various stages of analysis as pending formal proceedings.

Due process requirements of the Natural Gas Act and the Administrative Procedure Act necessitate extensive data gathering and submission upon a record in the hearing phase of each curtailment proceeding. Since interstate natural gas pipeline systems traverse distances frequently exceeding 1,000 miles, the needed market information is extensive. Additionally, since many pipelines sell natural gas to other pipelines, a comprehensive market analysis of each pipeline's direct and indirect sales is necessary.

Petitions for emergency or extraordinary relief from curtailment have been filed by 72 parties to date, and the disposition of these petitions involves separate expedited formal hearings on the record in which all parties are given an opportunity to participate. The continuing decline in the supplies of natural gas undoubtedly will result in the filing of many more petitions for such relief from curtailment plans.

Notwithstanding the tight supply situation overall, some pipeline companies have quantities of natural gas available for market expansion. Applicants seeking authority to expand their markets are required to submit detailed market analyses

similar to those required in a curtailment proceeding, to enable the Commission to determine the appropriateness of the end-uses to which incremental supplies might be applied. In addition to the increased manpower requirements associated with formal proceedings concerning these matters, a rapidly increasing amount of staff effort is expended in responding to inquiries made by the consuming public regarding the supply situation generally, by Members of Congress, by State Public Utility Commissions regarding the status of proceedings, and by those seeking relief from curtailment.

Necessary coordination with other Federal agencies responsible for fuel allocation, including the Federal Energy Office, and with the Departments of Agriculture and Commerce for purposes of securing information within their respective capabilities has added also to the Commission's workload.

Since 1969, the Commission has taken a wide range of actions to elicit additional supplies of natural gas, to reverse the downward trend in exploration and development. In 1973, natural gas exploration increased sharply in response to Commission policies increasing wellhead prices, advanced payment program, release of small producers from rate ceilings, emergency measures for short-term sales and other policies designed to improve the efficient allocation of our limited gas resources. Preliminary data indicate that the total gas well completions last year surpassed by about 17 percent the all-time high reached in 1961. This level of drilling is expected to be maintained in 1974 which may result in adding incremental supplies of gas adequate to stay even. It is doubtful that production can be substantially increased

in the next three years due to the substantial lead times between an exploration and development program and delivery of gas to market.

Early in 1971, the Commission initiated the National Gas Survey to provide a comprehensive study of all aspects of current natural gas industry operations in the United States. The survey's efforts included a staff study of the Nation's proved gas reserves, the first such study ever undertaken by a Federal agency. The results were published in 1973 as a Staff Report entitled National Gas Reserves Study, showing the Nation's proved gas reserves as of December 31, 1970, to be 258.6 Tcf compared to the American Gas Association estimate of 286.7 Tcf.

The National Gas Survey for Fiscal Year 1975 will consist of two parts:

(1) The major undertaking requiring the majority of the requested positions will be the independent continuing analysis of the Nation's natural gas reserves;

(2) In-depth examination of policy issues relating to conservation, rate design, Research and Development, financing, import-export policy, supply-demand equilibrium, inter-competitive relationship of substitutable fuels, environmental impact of resource development and utilization, and the evaluation of alternate methods of attainment of capacity for self-sufficiency.

This country always has been accustomed to an abundant supply of electric energy at relatively low prices. The era of cheap electricity, coal, oil and natural gas has passed. We have been profligate in using electric power and energy resources. We have now established conservation as an essential policy to utilize our resources more efficiently and eliminate unnecessary waste. In 1972, 25.7 percent of all primary resources in the United States was used in the generation of electricity. This percentage is expected to grow, and the 1970 National Power Survey estimated that electric power generation would require more than 30 percent of our energy by 1980 and as much as 41 percent by 1990, increasing to 50% by the year 2000.

Eighty percent of electricity today is derived from fossil fuels, and the adequacy of the Nation's electric power supply is therefore critically dependent upon maintaining an adequate supply of these fuels. In recent years it has been increasingly clear that there are threats to the supply of each of the fossil fuels used for electricity generation, and the Commission has implemented a series of information programs to define and anticipate fuel problems and to devise corrective actions.

With the rise of environmental concerns, restrictions have been placed on the use of various fuels, and to ascertain the effect of those restrictions in reducing pollution and possibly impairing the adequacy of electric supply, both present and future, the Commission since 1971 has been gathering detailed information on fuel characteristics and air and water quality from all major electric generating plants. The information so gathered has been a basic resource for investigations by the Commission and by the Environmental Protection Agency

leading toward balanced Federal actions with respect to power plant environmental considerations.

Since 1972, the Commission also has been gathering and publishing information on the cost and quality of fuel purchases by the electric utilities. This information shows both national and regional trends in fuel costs, and the relationship of sulfur content to the price of fuels.

With the enactment of the Emergency Petroleum Allocation Act, the FPC undertook to provide both data and advisory assistance to the Federal Energy Office relating to oil requirements of the electric utility industry. The FPC obtains each month from electric utilities their projected electric loads and their fuel requirements to meet these loads. By comparison with information in the FPC files, these data are analyzed for reasonableness and for the impact of conservation measures in reducing oil demand. The computed requirements for residual oil allocations and middle distillates are provided to the Federal Energy Office, which then establishes monthly allocations to the electric utility industry based on these demand factors and on their own supply information. The FPC Staff also assists the FEO in evaluating special situations, such as localized electric power supply problems which require uninterrupted oil supplies.

Following publication of the Commission's 1970 National Power Survey, it became clear that several issues require continuing analysis and attention. Accordingly, in 1972, the continuing National Power Survey was established to study electric policy issues and requirements, including conserva-

tion, fuel requirements, power supply, finance, research and development, and to recommend policies and actions to rationalize the growing conflicts among the concurrent goals of reliable electric power, reasonable electric power prices, and a clean environment. Trends since the establishment of the current National Power Survey make its mission more urgent. Information developed by the National Power Survey contributes to the effective discharge of Commission responsibilities to promote and encourage the economy, adequacy and reliability of electric power, to effect efficient utilization and conservation of natural resources, to encourage the voluntary interconnection and coordination of electric utilities throughout the United States, and to inform the Congress, industry and the public of these matters.

Although most of the more favorable hydroelectric sites have been developed, opportunities remain for increasing the developed hydroelectric potential. In addition to providing capacity especially favorable for peaking service, hydroelectric plants reduce utility fuel requirements. Following delays caused by litigation and NEPA requirements, including the Greene County decision, the Commission is attempting to expedite the consideration of license applications by non-Federal interests for new hydroelectric facilities and to determine other possible installations that might appropriately be considered. For some years the Commission has maintained an inventory of developed and undeveloped hydroelectric projects and has published the re-

sults periodically, the latest publication providing data as of January 1, 1972.

We are working closely with the utilities and the state commissions to encourage the transfer, to the extent that it is available, of electric energy generated by hydroelectric, coal, or nuclear-fueled generating facilities to displace electric energy that would otherwise have to be generated by oil or gas-fired units. In this manner, it has been estimated that as much as 20 million Kwh of electricity per day may be furnished to fuel-short utilities in the Northeast and along the Atlantic Coast. We are also working with the utilities and the Federal Energy Office to bring about conversion of plants from oil to coal where this is technically feasible and air quality conditions will permit. Upon completion of an overall conversion program, up to 200,000 barrels of residual oil can be saved daily in those generating units to be converted along the Atlantic Coast.

It is estimated that some 20-30 percent of the fuels now consumed by the Nation could be saved if those fuels were used more efficiently at the point of consumption. Only fragmentary evidence is available concerning how fuels generally are now used, but the case studies in various locations around the country reveal a set of promising immediate and longer term actions. For example, waste heat can be recovered in light industries and used to preheat materials, and can be used to heat the factory. Improved maintenance and adjustment of industrial burners can save about 10 percent of the fuel now used in

furnaces. Some new technologically improved equipment is available which can significantly enhance fuel efficiency.

Most of these fuel savings, whether industrial, commercial, or residential, can be effectively introduced through utility actions to help their customers improve fuel efficiency. The FPC Chief Engineer's Office has undertaken a program whereby utility marketing experts can turn their efforts more fully to customer-oriented energy saving activities.

Commission Order 495 requested utilities to initiate energy conservation programs on a voluntary basis. Since the Order was issued last November, 135 utilities have filed reports on 1972 actions that had been taken in that regard. These actions are modest, but in the right direction. Commission Order 496, issued in late November, established a targeted overall nationwide electric energy reduction of 10 percent and required Class A and B electric utilities to project their monthly fuel savings that might arise as a result of conservation actions. Order 497, issued in December, requires a monthly statement of savings and projected requirements for fuel, as the result of conservation actions, for the regulated utilities. Order 498, building on earlier Commission actions to meet the reduced availability of natural gas, requested all natural gas pipeline companies to consider the possible adoption of fuel efficiency actions, requested State regulatory commissions to allow energy-conserving costs, set a target of 10 percent demand reduction, and required applicants for special relief to

provide evidence of their conservation actions. Responses are arriving at the FPC.

The Chief Engineer's Office is monitoring the various technical opportunities for energy improvements for the purpose of providing information to assist the utilities and the State commissions in determining how best to help their customers improve their utilization of fuels. To meet the winter 1973-1974 emergency, the Chief Engineer issued a set of guidelines on improvements that could be made in light industry to save fuels, which now is in its second printing. The U.S. Chamber of Commerce has reprinted and distributed an additional 18,000 copies, and we understand that state agencies are using the guidelines in training sessions for industrial users. A second similar manual is now being prepared and will provide technical information on how to adjust and maintain industrial burners to achieve the expected 10 percent fuel savings.

We have initiated a definitive study of the electric resistance heating problem, which is more than an issue of pure fuel efficiency. For instance, electric resistance heating requires no furnace, permitting major potential changes in building design and use; the supply and maintenance systems for electric heaters and other forms of space conditioning are quite different; and the need to look 20 to 30 years in the future could change current preferences.

Data concerning exactly how natural gas is used in the various end items and processes is deficient--even simple information as to how much natural gas is used for process

heat and how much is used for space heating in industry. We are relatively uninformed about how much natural gas is required for critical feedstocks (such as in agriculture), and where substitutable fuels such as naphtha or methane might reasonably be introduced to replace gas. We therefore plan a detailed study of the end use of natural gas to determine: (1) how to use natural gas more efficiently, (2) the extent to which substitutable resources can be utilized in place of natural gas.

The expanding involvement of the Commission in environmental quality, curtailments, and conservation have greatly increased the Commission's need for more current data on national and regional energy consumption patterns, by source, form, and end-use, including supplies of alternative fuels. The Commission is also seeking to collect information on intrastate and other nonjurisdictional sales of natural gas to assist in FPC regulatory purposes.

The FY 1975 estimate includes funds for continuing the full-scale development of the Commission's Regulatory Information System (RIS). This program, begun in FY 1973, looks toward a fully automated computer system serving all levels of FPC management. It calls for the application of advanced systems techniques to the entire spectrum of responsibilities and functions of the agency, and will permit more effective analysis and action regarding the full range of FPC responsibilities, including the publication of energy information on a much more timely basis.

The heart of RIS will be a data bank available to all FPC staff members in their daily operations through computer terminals. The bank will initially contain only information collected from utilities and natural gas companies. Under the planned second phase of implementation, information from regulatory filings, exhibits in proceedings, studies and other sources will be included.

The Commission has long recognized the need for a much stronger national energy R&D program. The investment of $10 billion in the next five years or upwards of $20 billion in the next ten years in federally funded R&D will assist in attaining a relative energy independence in the next two decades as well as to find more efficient and environmentally compatible methods of supplying the energy needs of our society. By Order No. 408, issued in August 1970, and Order No. 483, issued in April 1973, the Commission modified its regulations and accounting procedures to encourage energy R&D investment by jurisdictional companies. In 1973 the electric power industry established the independent Electric Power Research Institute, which is now supported by an electric power industry annual budget approaching $100 million per year. In January 1974, the natural gas industry released a study entitled, "Natural Gas Research Plan, 1974-2000," which details a proposed national gas R&D program totaling $2.3 billion over the first five years. Gas industry committees are working on implementation of the plan, the key element of which is the formation of an independent research organization, sup-

ported by the gas industry and thus the consumer, which will assume major responsibility for the R&D program.

In January of this year, I established a Staff R&D Task Force with representation from all of our professional Bureaus and Offices to work with both jurisdicitonal industries and the emerging Federal R&D program to assure a prudent use of financial resources and an effective R&D effort. A reliable energy future depends on today's national R&D program - both Federal and industry supported.

The energy shortage has greatly increased the problems relating to energy and the environment. This Commission is dedicated to the proposition that we can have both sufficient supplies of energy and a healthy environment.

However, the National Environmental Policy Act of 1969 and, in particular, the Greene County decision in 1972 have put a heavy burden on our staff which must now prepare independent environmental impact statements for each action which we judge to be a "major Federal action significantly affecting the quality of the human environment." Although we require complete and detailed environmental reports from all applicants for authority to construct or modify jurisdictional facilities, an average of about three man years of staff effort is required for each of about 30 environmental impact statements per year. About 25 of these are for projects leading to new energy supplies and the other five are for changes to hydroelectric projects that relate to better resource management. In a years'time, staff will also examine the environmental consequences of at least an

additional 400 applications for which it is able to demonstrate that the environmental impacts are not significant and thus environmental impact statements are not required.

Staff also reviews and prepares comments on environmental impact statements of other agencies for projects of direct concern to our jurisdictional responsibilities.

To reduce the staff effort expended and to improve the quality of our environmental judgment, a generic approach to the evaluation of environmental impacts has been developed. This approach is pertinent to river basins where there are a number of potential hydroelectric sites and licensed hydroelectric projects requiring relicensing. Since most relicensing applications concern facilities that have been operated for 50 years or more, the evaluation is a part of the determination as to whether relicensing for an additional number of years is in the public interest. The basin-wide analysis identifies key environmental issues and then evaluates them in common to all of the pertinent facilities. Under such procedure, we not only save staff time otherwise spent in partially duplicative studies but are better able to put each licensing decision in a better environmental perspective.

Of particular importance in FY 1975, our staff will be working with the Department of the Interior in analyzing several proposals for the transmission of natural gas from the United States Arctic north slope to markets in the lower 48 states. A single environmental impact statement will be prepared which will satisfy the requirements of both agencies. The statement will evaluate all competing proposals.

A number of our key staff personnel are engaged in interagency studies of energy supply, delivery and management

systems. Under the aegis of the Council on Environmental Quality we provide unique capabilities to groups studying offshore nuclear power plants, safety of LNG facilities, and outer continental shelf development, three programs vital for future development of new energy resources and facilities.

In numerous appearances before committees of both Houses of Congress, I have recommended deregulation with strict monitoring and surveillance of prices, incremental volumes, and competitive market conditions to protect the public interest which should increase the commitment of risk capital to a greatly expanded exploration and development program to meet the growing demands of a productive economy. The persistent decline in reserves and new findings exacerbates the national energy emergency and affirms the conclusion that we have expressed for over four years that major national actions are required to reverse diminishing natural gas supplies. The emerging shortage of other deliverable fuels and the slippage in the nuclear program over the near term compels further conservation and reliance on oil imports until we can develop the balanced energy resources in the United States to become energy independent.

Over a period of years, the FPC has sought broadened authority to collect and publish information with respect to the natural gas industry commensurate with the authority the Commission exercises to obtain information from entities of the electric industry, whether or not subject to the Commission's jurisdiction under the Federal Power Act.

Our proposed amendment to Section 14 of the Natural Gas Act will enable the Commission: (1) to secure information concerning the production and marketing of natural or artificial gas from companies not now subject to the jurisdiction of the Commission and (2) to collect on a current and continuing basis the total estimated natural gas reserves of all fields or reservoirs in the United States whether or not a company is jurisdictional.

As U.S. energy problems have accelerated activity generally under the Federal Power Act and the Natural Gas Act, the Commission's caseload has expanded correspondingly. The estimated construction cost of new energy facilities for which the Commission now has applications in process is approximately $3.2 billion, including 18,000 megawatts of new capacity in 35 hydroelectric projects and $1.6 billion worth of construction contemplated by 238 pipeline certificate applications.

There is currently in operation 60 million kilowatts of conventional hydroelectric power and an additional 14,500,000 kilowatts of pump storage capacity in operation or applied for. Present hydroelectric facilities constitute about 15% of total existing U. S. generating capacity. About one-half of the present hydroelectric capacity operates under Federal Power Commission licenses. The potential additional hydroelectric capacity is estimated at 125 million kilowatts, of which 32,500 is in Alaska, and 92,700 in the lower 48 states.

In FY 1973, the Commission's workload relating to natural gas pipeline facilities involved the processing of 757 applications for certificates representing costs estimated at $2,834,000,000, for 6,140 miles of additional transmission pipeline and 595,731 additional compressor horsepower.

Because of inflation, financing problems, increased costs of fuels, materials, and labor, and many other economic problems, rate matters filed with the Federal Power Commission continue to increase in number and complexity. On March 1, 1974, there were 130 formal electric rate and interconnection cases on hand involving just under $190,000,000 in proposed annual increases. Until 1970, electric rate schedule reductions exceeded rate increases in spite of a rising cost of living. Last year, FY 1973, rate reductions accepted for filing totaled only $270,000 while annual rate increases accepted for filing totaled $16,000,000. An additional $63,000,000 in annual electric rate increases were suspended and set for hearing.

In such terms, our workload increases are substantial. However, much more significant in relation to our workload is the increasing complexity of the cases, due in large part to shortages, which add new dimensions in almost every case.

Mr. Chairman, after discussion with the Appropriations Subcommittees concerning the need to recover from the regulated companies a greater portion of the costs of administering FPC programs, the Commission on March 18, 1971, issued Order No. 427 which increased

fees generally, instituted new fees to be paid by public utilities, and assessed new annual charges against public utilities and natural gas companies. Regulated companies appealed the Order to the U.S. Court of Appeals for the District of Columbia Circuit, challenging the new annual charges against public utilities as well as those to be paid by natural gas companies. Thereafter, all collections required by Order No. 427 were placed in a special account established by the Department of the Treasury, to be held in escrow.

By decision of August 15, 1972, the Court of Appeals set aside Order No. 427 insofar as it levied annual charges against both public utilities and natural gas companies. Previously required annual charges against public utilities under Part I of the Federal Power Act and new and increased filing fees pursuant to the Order were left undisturbed by the Court decision.

The U.S. Supreme Court granted certioriari, and in a decision handed down on March 4, 1974, the Court affirmed the decision of the Court of Appeals. Accordingly, annual charges in the amount of $2,444,568.40 collected since July 1, 1971, are being refunded to the regulated companies. The remainder of the escrow account, in the amount of $6,624,118.87, which was derived from the collection of fees, is being transferred to the Miscellaneous Receipts Account of the Treasury.

29-353 O - 74 - pt. 5 - 23

INTRODUCTION

With the enactment on November 27, 1973, of P.L. 93-159, this Commission's duties and responsibilities in the energy fields have taken on new dimensions in respect to emergency actions to meet the Nation-wide fuel emergency conditions. In addition to on-going major administrative initiatives of the Commission under the Natural Gas Act and the Federal Power Act covering the allocation of interstate natural gas supplies, the adequacy and reliability of bulk power supplies and the conservation of both energy forms, the Commission has assumed major support responsibilities in assisting the Federal Energy Office in that agency's allocation of other fuels (primarily petroleum at the present time) for use in electric utility generation and the exercise of such authority as the FEO may have to direct the physical conversion of petroleum and natural gas fueled electric generating capacity to coal firing.

These direct and support responsibilities include the Commission's administration, under emergency conditions, of a Nation-wide allocation program covering interstate pipeline supplies of natural gas. They include the Commission's fact gathering, analyses and recommendations concerning the allocation by FEO of petroleum fuel supplies for electric utility use. They include Commission analyses and recommendations to FEO for the conversion of electric generating stations to coal firing.

Under the Federal Power Act and the Natural Gas Act, the Commission has established energy conservation programs with respect to natural gas and electric power. Commission Order Nos. 495, 496, 497 and 498, issued between November 13 and December 21, 1973, established an ongoing energy conservation program for electric utilities, instituted emergency actions for conservation of fuel resources by electric utilities, and initiated a nation-wide conservation program for natural gas. These programs support the Administrative's objectives related to relieving the energy crisis.

The Nation-wide fuel emergency conditions have greatly expanded this agency's administrative workload arising from the exercise of its statutory duties and responsibilities.

The Federal Power Commission must exercise its responsibilities in the regulation of natural gas and electric power in an era when demand for these energies is rising faster than supply, and the supply situation is further complicated by environmental considerations.

Natural gas is the Nation's "premium fuel" the President told the Congress in his first energy message earlier this year. It is economical, convenient, clean, and has very low pollution characteristics.

In 1972 the natural gas producers of the country supplied about 14.1 trillion cubic feet of the "premium fuel" to interstate pipeline companies for delivery to ultimate customers. The 1975 production is not expected to be enough to meet demand, and potential users will have to rely on other sources of natural gas or other fuels. During the period September 1973 through August 1974, 17 major pipeline companies reported they would curtail their customer's firm requirements.

Unless new policies improve exploration and development, by 1980 Staff estimates we will produce a total of about 20.5 trillion cubic feet annually from domestic reserves with an additional 4.5 trillion cubic feet possibly available from supplemental sources to meet an anticipated demand of about 34.5 trillion cubic feet. These levels of supply would result in an unsatisfied demand for gas of about 9.5 trillion cubic feet in that year. By 1990 we would need

nearly 29 trillion cubic feet of gas over and above the 18 trillion cubic feet expected to be produced domestically in order to balance supply with demand.

Electric power is similarly caught between increasing demand and restrictions on the addition of electric power generating facilities to meet the demand as well as limitations upon the availability of primary fuels to serve generating capacity. Within the next ten years the industry must more than double its generating capacity if it is to satisfy this demand. Nuclear power will supply much of this new generating capacity but is experiencing difficulties in meeting the projected growth rates. Fossil fuel, including natural gas, must be relied upon to fill much of the need for at least the next twenty years.

In recent years the electric power industry has met well organized opposition from groups dedicated to the improvement of the environment. Their concern is well founded, but the result can be a slow-down in the construction of vital generating facilities while environmental effects are determined.

The climate of regulation has evolved from a situation where natural gas and electric power were abundant, with emphasis on cheap energy, to the present where gas and other fossil fuels are scarce and emphasis is on shortages, gas and electric power conservation, and environmental protection. Currently the most critical concern is availability of energy which is vital to our life style and which, in many specific instances involving the Commission, develops into adjudication of controverted environmental issues in prolonged proceedings before the Commission and the courts. The Nation is confronted with a national energy emergency. Problems of conservation and allocation of limited resources predominate.

Regulation requires the resolution of conflicting issues or their optimum balance in the public interest. More demands on manpower and regulatory technology are a concomitant of the broadening of interest. An expanded, better-trained and better-informed staff is the price of protecting the public interest as regulation becomes more complex.

The Federal Power Commission is requesting $32,393,000 and 1,337 positions in FY 1975. The request is $3,697,000 and 40 positions more than the estimate for FY 1974. The increase is primarily due to the funding of space and related requirements of the Commission in FY 1975, which must be borne by the Commission under PL 92-313, rather than funded by the General Services Administration. In FY 1975 this amounts to $2,230,000 more than in 1974. The balance of the increase, $1,467,000, is primarily to cover increased pay costs, and the cost of additional personnel and related services ($922,000). Increases for travel, contractual services, printing, supplies and equipment account for the final $545,000.

DISTRIBUTION OF 40 ADDITIONAL POSITIONS BY PROGRAM

Hydroelectric Power Regulation	+ 6
Electric Power Industry Systems Evaluation	+ 4
Electric Power Utilities Regulation	+ 6
Natural Gas Pipeline Regulation	+ 12
Natural Gas Producers Regulation	+ 2
Conservation Research	+ 3
Administration	+ 7

SUMMARY OF MAJOR WORKLOAD CHANGES 1973-1975

Filings, Applications, Audits, Inspections

Quantitatively the number of major work items filed with or initiated by the Commission continues to increase or remain at a

high level. These are certificate and license applications, rate filings, exhibits, audits, and inspections.

MAJOR WORKLOAD INCREASES

1973-1975

	1973	1975	Change
Project Applications	600	634	+ 4
Project Environment & Conservation	871	905	+ 34
Inspections	866	1030	+164
Electric Rate Filings	3782	3904	+122
Pipeline Certificates	757	977	+220
Pipeline Rate Filings	1370	1494	+124
Producer Certificates	4163	4974	+811
Accounting Audits	64	72	+ 8

Proceedings, Rulemaking, Litigation

The energy crisis, economic factors, and environmental concerns have resulted in an expansion of our legal workload.

CASE WORKLOAD INCREASES

1973 - 1975

	1973	1975	Change
Hydroelectric	12	31	+ 19
Electric Utility	116	141	+ 25
Pipeline Certificates	87	125	+ 38
Pipeline Rates	155	157	+ 2

Environmental

The Commission has had an environmental responsibility for many years. The Greene County decision (Greene County Planning Board v. FPC, 455 F. 2d. 412 CA2 January 17, 1972) requires the Commission to prepare its own Environmental Impact Statements rather than circulating the applicant's statement for comment as was done formerly. The preparation of such statements requires highly trained staff specialists and anywhere from 1 to 4 man-years of effort for each statement.

FPC ENVIRONMENTAL STATEMENTS

	1973	1975	Change
Hydroelectric	402	416	+ 14
Pipeline Certificates	15	28	+ 13

Regulatory Information System

The essential need for accumulating, processing and retrieving in useful form the vast amount of data needed for regulatory purposes, makes a sophisticated, timely and accurate regulatory information system mandatory. We are well under way on the development of this system. We expect manpower savings to accrue when the system is installed and tested.

Assistance to Others

Not identified in the formal work structure of the Commission are the considerable resources assigned to assist and to cooperate with other Executive Agencies and the Congress in matters vital to the resolution of the energy problem, and in other areas in which our staff expertise is needed. Our staff is called upon to testify in proceedings before the Atomic Energy Commission. We are active participants in many interagency studies and joint actions. In our assistance to the Congress an excellent example is "A Natural Fuels and Energy Policy Study," S. Res. 45, approved by the Senate May 3, 1971. This joint study committee, composed of the Committee on Interior and Insular Affairs, the Joint Committee on Public Works, and Ex-officio members of the Committee on Commerce and the Committee on Public Works, has used hundreds of man-hours of Commission Staff assistance during the past two years.

Conservation Research

The Commission proposes to initiate a conservation program for the purpose of identifying and evaluating those technologies that have demonstrated their fuel-saving potential, and in providing that evaluated information to the public utilities and others that can serve as the most efficent agents in disseminating the advice and bringing the potential nationwide fuel saving to actual achievement.

MAJOR WORKLOAD AND DOLLAR VALUES

Following is a summary of the number of and dollar amounts involved in applications for various licenses and certificates under the jurisdication of the Commission.

HYDROELECTRIC AND ELECTRIC POWER APPLICATIONS PENDING SEPTEMBER 30, 1973

	No.	Estimated Investment
Hydroelectric Projects		
New Capacity Projects		
Preliminary Permits	7	$ 916,222,000
Major Licenses	27	2,101,374,000
Major Relicense	4	138,233,000
Additions to Existing Projects	3	118,501,000
Total New Capacity - Major	41	$3,274,330,000

Constructed Projects		
Major Licenses	103	$ 257,518,000
Major Relicense	64	481,437,000
Total Major Constructed Projects	167	$ 738,955,000
Total Major Projects	208	$4,013,285,000
Electric Power Utilities Regulation		
Rate Increase Applications	55	$ 76,000,000

SELECTED NATURAL GAS PIPELINE AND PRODUCER APPLICATIONS PENDING SEPTEMBER 30, 1973

Pipeline Applications		
Certificates		
Construction and Operation or Acquisition	278	$1,366,138,925
Others	60	--
Total Certificate Applications	338	$1,366,138,925
Rate Increase Filings	129	516,404,708
Producer Applications		
Certificate Applications	1,838	--
TOTAL ALL APPLICATIONS	2,305	$1,882,543,633

Collections

Set forth below are the amounts estimated for collection in FY 1975, including amounts to be collected under order No. 427, which is subject to pending judicial review in the U.S. Supreme Court.

Part I - FPA	FY 1975
Administration of Part I	$ 3,685,000
Headwater Benefits	3,300,000
Other Part I Collections	1,598,000
Parts II and III - FPA	
Filing Fees	$ 956,000
Administration of Electric Regulatory Programs	2,913,000
Coordination and Reliability	2,673,000
Natural Gas Act	
Certificate and Other Filing Fees	$ 1,431,000
Administration of Natural Gas Programs	8,139,000
Miscellaneous	
Sale of Publications and Services	$ 16,000
Total Collections	24,711,000
Budget Requests	32,393,000

A summary of the FY 1975 budget request follows.

FEDERAL POWER COMMISSION
SUMMARY OF ACTIVITIES

1975 BUDGET TO THE CONGRESS

	1973 Actual		1974 Estimate		1975 Estimate		Change 1974-1975	
	Positions	Amount	Positions	Amount	Positions	Amount	Positions	Amount
I. Hydroelectric Power Regulation	200	$ 3,073,137	209	$ 4,789,000	215	$ 5,367,000	+ 6	+$ 578,000
II. Electric Power Industry Systems Evaluation	132	2,375,897	134	3,093,000	138	3,438,000	+ 4	+ 345,000
III. Electric Power Utilities Regulation	147	3,005,679	154	3,533,000	160	3,991,000	+ 6	+ 458,000
IV. Natural Gas Pipeline Regulation	366	6,575,190	390	8,747,000	402	9,839,000	+12	+ 1,092,000
V. Natural Gas Producers Regulation	192	3,527,214	203	4,164,000	205	4,732,000	+ 2	+ 568,000
VI. Natural Gas Industry Systems Evaluation	31	903,167	13	384,000	13	420,000	-	+ 36,000
VII. Services to Other Agencies and Public	93	1,683,311	88	1,856,000	88	2,031,000	-	+ 175,000
VIII. Conservation Research					3	100,000	+ 3	+ 100,000
IX. Administration	99	1,616,817	106	2,130,000	113	2,475,000	+ 7	+ 345,000
Total Costs Funded	1260	$22,760,412	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Changes in Selected Resources	-	+ 359,483	-	-	-	-	-	-
Total Obligations	1260	$23,119,895	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Reimbursables	3	+ 109,606		-		-		-
Unobligated Balance	-	+ 847,499	-	-	-	-	-	-
Appropriation or Request	1263	$24,077,000	1297	$28,696,000	1337	$32,393,000	+40	+$3,697,000
Distribution of Costs by Major Object Classes								
Personnel Compensation		$18,828,607		$22,019,000		$22,900,000		+$ 881,000
Travel		568,467		710,000		760,000		+ 50,000
Other Costs		3,363,338		5,967,000		8,733,000		+ 2,766,000
Total Costs Funded		$22,760,412		$28,696,000		$32,393,000		+$3,697,000

SOURCE AND APPLICATION OF FUNDS COLLECTED
FROM ALL SOURCES

1. SOURCE OF FUNDS	1973 Actual	1974 Estimate	1975 Estimate
Annual Fees from licensees:			
Collections for administering Part I of the Federal Power Act	$ 2,744,688	$ 3,405,000	$ 3,685,000
Collections for use of Federal lands	214,808	215,000	215,000
Collections for maintenance of navigation	427,404	427,000	427,000
Fines, penalties and other forfeitures	232	1,000	1,000
Collections for use of Indian lands	12,203,786	954,000	954,000
Oregon and California Land Grant	1,158	1,000	1,000
Subtotal annual fees from licensees	$15,592,076	$ 5,003,000	$ 5,283,000
Headwater benefit payments	1,874,299	2,800,000	3,300,000
Subtotal collections under Section 10(e) of the Federal Power Act	$17,466,375	$ 7,803,000	$ 8,583,000
Fees and annual assessments under Part II and III, FPA:			
Collections for administration of the coordination and reliability programs	$ 293,015	$ 2,046,122	$ 2,673,000
Collections for administration of the electric regulatory programs		2,373,892	2,913,000
Electric regulatory filing fees	814,783	869,000	956,000
Subtotal fees and annual assessments, Parts II and III, FPA	$ 1,107,800	$ 5,289,014	$ 6,542,000
Fees and annual assessments under NGA:			
Pipeline certificate fees	$ 1,867,175	$ 1,660,000	$ 1,431,000
Collections for administration of the natural gas pipeline programs	-	5,211,017	7,789,000
Collections for administration of the producer certificate programs	-	300,000	350,000
Subtotal fees and annual assessments, Natural Gas Act	$ 1,867,175	$ 7,171,017	$ 9,570,000
Miscellaneous:			
Sales of publications and miscellaneous services	12,766	16,000	16,000
TOTAL COLLECTIONS	$20,454,116 1/	$20,279,031 2/	$24,711,000 3/

1/ Includes $2,974,965 collected pursuant to Order No. 427 and held in special deposit pending outcome of litigation.

2/ Includes an estimated $12,460,031 in annual charges and fees pursuant to Order No. 427 which is under litigation.

3/ Includes an estimated $16,112,000 in annual charges and fees pursuant to Order No. 427 which is under litigation.

2. APPLICATION OF FUNDS	1973 Actual	1974 Estimate	1975 Estimate
Credited to "Micellaneous Receipts" - U.S. Treasury:			
Collections for Administering Part I of the Federal Power Act	$ 2,744,688	$ 3,405,000	$ 3,685,000
Portion of collection from projects on Federal lands	26,851	26,875	26,875
Portion of collection from maintenance of navigatio	213,702	213,500	213,500
Collections for administering the coordination and reliability programs	293,015	2,046,122	2,673,000
Collections for administering the electric regulatory programs	-	2,373,892	2,913,000
Electric regulatory filing fees	814,785	869,000	956,000
Pipeline certificate fees	1,867,175	1,660,000	1,431,000
Collections for administering the natural gas pipeline programs	-	5,211,017	7,789,000
Collections for administering the producer certificate programs	-	300,000	350,000
Sales of publications and miscellaneous services	12,766	16,000	16,000
Fines, penalties and other forfeitures	232	1,000	1,000
Subtotal "Miscellaneous Receipts"	$ 5,973,214	$16,122,406	$20,054,375
Payment to various states (37½ of collections from projects on Federal lands)	80,553	80,625	80,625
Payment to Reclamation funds from headwater benefits and projects on Federal lands	1,536,396	2,242,248	2,623,453
Special Fund for Department of the Army, from headwater benefits and navigation maintenance	659,009	878,752	997,547
Oregon and California Land Grant fund	1,158	1,000	1,000
Collections for use of Indian lands	12,203,786	954,000	954,000
TOTAL PAYMENTS	$20,454,116 1/	$20,279,031 2/	$ 24,711,000 3/

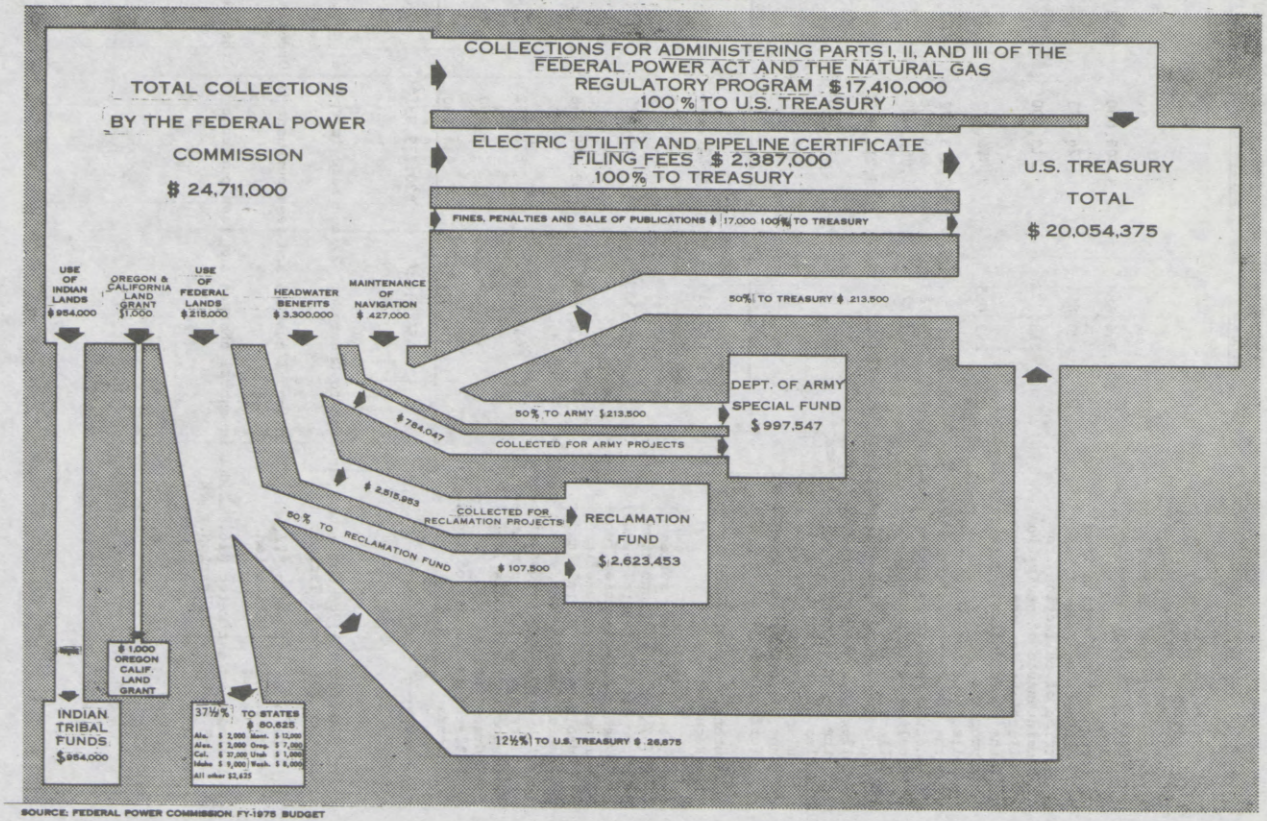
1/ Includes $2,974,965 collected pursuant to Order No. 427 and held in special deposit pending outcome of litigation.

2/ Includes an estimated $12,460,031 in annual charges and fees pursuant to Order No. 427 which is under litigation.

3/ Includes an estimated $16,112,000 in annual charges and fees pursuant to Order No. 427 which is under litigation.

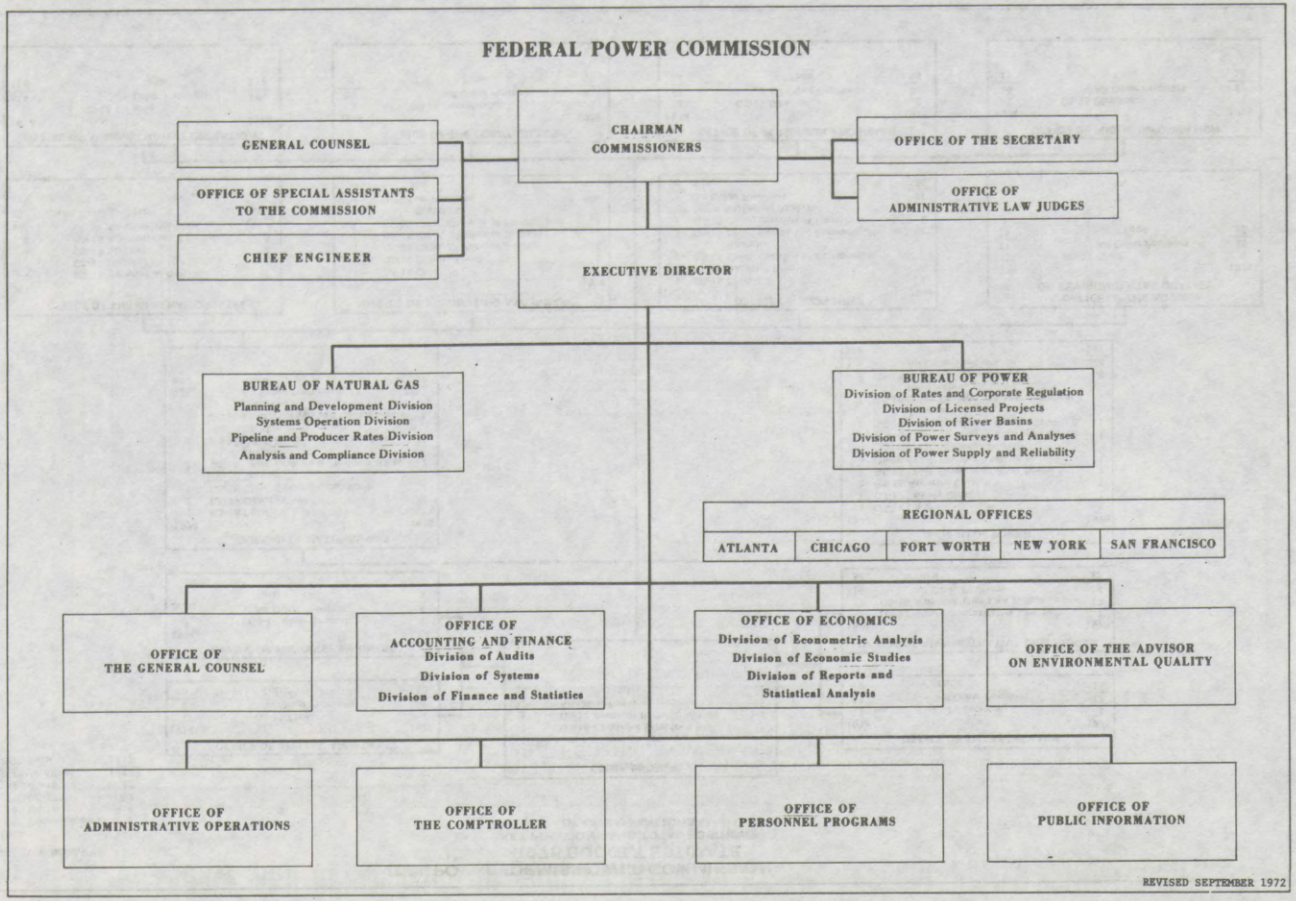
SOURCE AND APPLICATION OF FUNDS COLLECTED BY THE FEDERAL POWER COMMISSION

F.Y. 1975 Estimate



SOURCE: FEDERAL POWER COMMISSION FY-1975 BUDGET

3956


FEDERAL POWER COMMISSION
GENERAL COUNSEL
OFFICE OF SPECIAL ASSISTANTS TO THE COMMISSION
CHIEF ENGINEER
CHAIRMAN
COMMISSIONERS
OFFICE OF THE SECRETARY
OFFICE OF ADMINISTRATIVE LAW JUDGES
EXECUTIVE DIRECTOR
BUREAU OF NATURAL GAS
Planning and Development Division
Systems Operation Division
Pipeline and Producer Rates Division
Analysis and Compliance Division
BUREAU OF POWER
Division of Rates and Corporate Regulation
Division of Licensed Projects
Division of River Basins
Division of Power Surveys and Analyses
Division of Power Supply and Reliability
REGIONAL OFFICES
ATLANTA
CHICAGO
FORT WORTH
NEW YORK
SAN FRANCISCO
OFFICE OF THE GENERAL COUNSEL
OFFICE OF ACCOUNTING AND FINANCE
Division of Audits
Division of Systems
Division of Finance and Statistics
OFFICE OF ECONOMICS
Division of Econometric Analysis
Division of Economic Studies
Division of Reports and Statistical Analysis
OFFICE OF THE ADVISOR ON ENVIRONMENTAL QUALITY
OFFICE OF ADMINISTRATIVE OPERATIONS
OFFICE OF THE COMPTROLLER
OFFICE OF PERSONNEL PROGRAMS
OFFICE OF PUBLIC INFORMATION
REVISED SEPTEMBER 1972

FEDERAL POWER COMMISSION
1975 BUDGET ESTIMATE
KEY POSITIONS AND TOTAL POSITIONS BY ORGANIZATIONS

SUMMARY

1974		1975
5	Commissioners	5
6	GS-18	6
7	GS-17	7
37	GS-16	37
1242	All Other	1282
1297	Total	1337

COMMISSIONERS

1974		1975
5	Commissioners	5
1	GS-18 Executive Director	1
1	GS-17 Assistant to the Chairman	1
31	All Other Positions	35
38	Total	42

OFFICE OF SPECIAL ASSISTANTS

1974		1975
1	GS-16 Chief	1
9	All Other Positions	9
10	Total	10

OFFICE OF THE CHIEF ENGINEER

1974		1975
1	GS-17 Chief Engineer	1
1	All Other Positions	4
2	Total	5

OFFICE OF THE SECRETARY

1974		1975
1	GS-15 Secretary	1
11	All Other Positions	12
12	Total	13

OFFICE OF ADMINISTRATIVE LAW JUDGES

1974		1975
1	GS-17 Chief Administrative Law Judge	1
17	GS-16 Administrative Law Judges	17
14	All Other Positions	14
32	Total	32

BUREAU OF NATURAL GAS

1974		1975
1	GS-18 Chief	1
1	GS-17 Deputy Chief	1
1	GS-16 Chief, Systems Operations Division	1
1	GS-16 Chief, Pipeline & Producer Rates Division	1
1	GS-16 Chief, Planning & Development Division	1
1	GS-16 Chief, Analysis and Compliance Division	1
324	All Other Positions	333
330	Total	339

BUREAU OF POWER

1974		1975
1	GS-18 Chief	1
1	GS-17 Deputy Chief	1
1	GS-16 Assistant Chief	1
1	GS-16 Chief, Division of River Basins	1
1	GS-16 Chief, Division of Rates and Corporate Regulation	1
1	GS-16 Chief, Division of Licensed Projects	1
1	GS-16 Chief, Division of Power Surveys & Analyses	1
1	GS-15 Chief, Division of Power Supply and Reliability	1
5	GS-15 Regional Engineers	5
316	All Other Positions	328
329	Total	341

OFFICE OF THE GENERAL COUNSEL

1974		1975
1	GS-18 General Counsel	1
1	GS-17 Deputy	1
1	GS-17 Solicitor	1
5	GS-16 Assistant Gen. Counsel	5
147	All Other Positions	147
155	Total	155

OFFICE OF ACCOUNTING AND FINANCE

1974		1975
1	GS-18 Chief	1
1	GS-16 Deputy Chief	1
1	GS-16 Chief, Division of Audits	1
1	GS-16 Chief, Division of Systems	1
1	GS-15 Chief, Division of Finance and Statistics	1
104	All Other Positions	106
109	Total	111

OFFICE OF ECONOMICS

1974		1975
1	GS-18 Chief	1
1	GS-16 Assistant Chief	1
1	GS-15 Chief, Division of Econometric Analysis	1
1	GS-15 Chief, Division of Economic Studies	1
1	GS-15 Chief, Division of Reports & Statistical Analysis	1
21	All Other Positions	21
26	Total	26

OFFICE OF THE ADVISOR ON ENVIRONMENTAL QUALITY

1974		1975
1	GS-16 Chief	1
11	All Other Positions	15
12	Total	16

OFFICE OF ADMINISTRATIVE OPERATIONS

1974		1975
1	GS-15 Director	1
114	All Other Positions	116
115	Total	117

OFFICE OF THE COMPTROLLER

1974		1975
1	GS-16 Comptroller	1
91	All Other Positions	92
92	Total	93

OFFICE OF PERSONNEL PROGRAMS

1974		1975
1	GS-15 Director	1
23	All Other Positions	24
24	Total	25

OFFICE OF PUBLIC INFORMATION

1974		1975
1	GS-15 Director	1
10	All Other Positions	11
11	Total	12

FEDERAL POWER COMMISSION
RELATION OF POSITION REQUIREMENTS TO ACTIVITIES
FY 1975 BUDGET TO CONGRESS

BUREAUS AND OFFICES

Bureau or Office	Hydro. Regul.			Elec. Pow. Ind. Syst. Eval.			Elec. Power Util. Reg.			Natural Gas P/L Reg.			Natural Gas Prod. Regul.			Nat. Gas Ind. Syst. Eval.			Serv. to Other Agencies & Pub.			Conservation Research			Administration			Total		
	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75	1973	74	75
Power	136	139	144	102	102	104	37	39	43	-	-	-	-	-	-	-	-	-	49	49	50	-	-	-	-	-	-	324	329	341
Natural Gas	-	-	-	-	-	-	-	-	-	192	208	215	106	114	116	25	8	8	-	-	-	-	-	-	-	-	-	323	330	339
General Counsel	38	39	39	6	6	6	24	24	24	58	59	59	23	23	23	-	-	-	4	4	4	-	-	-	-	-	-	153	155	155
Acctg. & Finance	9	9	9	-	-	-	56	57	58	30	31	32	-	-	-	-	-	-	12	12	12	-	-	-	-	-	-	107	109	111
Admin. Law Judges	1	1	1	-	-	-	9	12	12	18	16	16	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	31	32	32
Economics	-	-	1	2	2	2	4	4	4	4	4	6	10	10	8	2	2	2	4	4	3	-	-	-	-	-	-	26	26	26
Environmental Quality	3	3	3	3	3	5	-	-	-	6	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	12	16
Comptroller	3	4	4	9	12	12	2	2	2	9	13	13	15	17	17	-	1	1	18	13	13	-	-	-	27	30	31	83	92	93
Commissioners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	38	42	36	38	42
Chief Engineer	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	2	2	1	2	3
Secretary	2	3	3	-	-	-	2	2	3	4	5	5	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	10	12	13
Special Assistants	2	2	2	-	-	-	2	2	2	5	5	5	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	10	10	10
Personnel Programs	1	1	1	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	23	22	23	25	24	25
Public Information	3	3	3	2	2	2	-	-	-	3	3	3	1	1	2	-	-	-	2	2	2	-	-	-	-	-	-	11	11	12
Admin. Operations	5	5	5	7	7	7	11	12	12	36	39	39	31	32	33	4	2	2	4	4	4	-	-	-	13	14	15	111	115	117
Total	203	209	215	132	134	138	147	154	160	366	390	402	192	203	205	31	13	13	93	88	88	-	-	3	99	106	113	1263	1297	1337
Reimbursable Program	- 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 3	-	-
Net Salaries & Expenses	200	209	215	132	134	138	147	154	160	366	390	402	192	203	205	31	13	13	93	88	88	-	-	3	99	106	113	1260	1297	1337

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ELECTRIC POWER PROGRAMS SUMMARY

Program	FY 1973 Positions	FY 1973 Amount	FY 1974 Positions	FY 1974 Amount	FY 1975 Positions	FY 1975 Amount	Change 1974-1975 Positions	Change 1974-1975 Amount
Hydroelectric Power Regulation	200	$ 3,073,137	209	$4,789,000	215	$5,367,000	+ 6	+$ 578,000
Electric Power Industry Systems Evaluation	132	2,375,897	134	3,093,000	138	3,438,000	+ 4	+ 345,000
Electric Power Utilities Regulation	147	3,005,679	154	3,533,000	160	3,991,000	+ 6	+ 458,000
Services to Other Agencies and to the Public 1/	86	1,578,159	82	1,736,000	81	1,899,000	- 1	+ 163,000
Total Electric Power Programs	565	$10,032,872	579	$13,151,000	594	$14,695,000	+15	+$1,544,000

1/ This category includes the following programs: Review of Federal Hydroelectric Projects, Rates, and Cost Allocations; Headwater Benefits Determinations; Joint Water Resources Studies; and Hydroelectric and Electric Utilities Recurring Data Reports.

I. HYDROELECTRIC POWER REGULATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. River Basin Appraisals				
Positions	14	16	16	-
Costs	$ 244,331	$ 333,000	$ 368,000	+$ 35,000
B. Power Site Lands Applications				
Positions	6	6	6	-
Costs	78,628	129,000	143,000	+ 14,000
C. Projects Licensing				
Positions	120	125	129	+ 4
Costs	1,747,277	2,837,000	3,196,000	+ 359,000
D. Accounting Surveillance				
Positions	8	8	8	-
Costs	137,122	223,000	242,000	+ 19,000
E. Project Inspection and Supervision				
Positions	30	30	31	+ 1
Costs	632,356	733,000	805,000	+ 72,000
F. Formal Proceedings, Rulemaking and Litigation				
Positions	22	24	25	+ 1
Costs	233,423	534,000	613,000	+ 79,000
G. Reimbursable Programs*				
Positions	(3)	-	-	-
Costs	(109,606)	-	-	-
*Not included in program total				
TOTAL HYDROELECTRIC POWER REGULATION				
Positions	200	209	215	+ 6
Costs	$3,073,137	$4,789,000	$5,367,000	+$578,000

I. HYDROELECTRIC POWER REGULATION

	1973	1974	1975	Change from 1974
Positions	200	209	215	+ 6

The conventional hydroelectric generating capacity potential of the United States is estimated to be about 180 million kilowatts. With total electric power requirements expected to double during the next ten years, the optimum utilization of this potential must be fully tapped.

As of today, conventional and pumped storage hydroelectric facilities constitute approximately 15 percent, or 60 million kilowatts, of the Nation's electric power generating capacity. About half of this, or some 31 million kilowatts is operated under licenses issued by the Federal Power Commission.

Licenses have been issued since the enactment of the Federal Water Power Act of 1920. In 1935 the provisions of that act, as amended, were made a part of the Federal Power Act of 1935. As of September 1, 1973, 627 licenses were in effect, covering more than 700 hydroelectric developments. The 372 projects under major license represent an ultimate generating capacity of 42.5 million kilowatts.

Through its hydroelectric power regulation program, the Commission oversees the development and operation of non-Federal hydroelectric facilities. The Commission is responsible for the optimum utilization of the Nation's potential waterpower resources within the guidelines established by the Congress.

These responsibilities are carried on through the following program activities:

A. RIVER BASIN APPRAISALS

	1973	1974	1975	Change from 1974
Positions	14	16	16	0

The optimum utilization of the Nation's water power potential requires that proposed developments be consistent with comprehensive basin plans for all beneficial purposes. Section 10(a) of the Federal Power Act requires the Commission to follow such plans in its licensing decisions.

Where the basin plans are not complete or require updating, the Commission undertakes river basin appraisal studies, first determining whether the data required are not available, or will not be available through other Federal or State agencies. Priority is given to those appraisals which are required for outstanding or upcoming cases involving licensing, relicensing or possible Federal takeover.

In all studies, however, the Commission staff obtains all available information from other agencies. The Commission staff then reviews and analyzes these data, collects economic data pertaining to the area, including projections of future development, collects and summarizes data on existing water and related land resources developments in the basin, and analyzes the impact of pending licenses on the overall basin plans.

The Commission maintains an inventory of the Nation's developed and undeveloped hydroelectric power resources. Approximately 3500 hydroelectric projects are included in this inventory. These data are used for licensing work, power site land evaluations and other program purposes. In addition, they are used by Federal, State, local and international bodies, and industry, concerned with water resources development.

WORKLOAD-River Basin Appraisals	1973	1974	1975
On hand July 1	9	11	8
Received	4	2	4
Total Workload	13	13	12
Completed	2	5	5
On hand June 30	11	8	7

B. POWER SITE LAND APPLICATIONS

	1973	1974	1975	Change from 1974
Positions	6	6	6	0

The United States, as of June 30, 1973, had approximately 15 million acres of land reserved for purposes of power development.

These lands cannot be used for purposes other than power development unless the Commission determines that such use will not injure or destroy the land for the purpose of power development.

The following workload includes only determinations under Section 24 of the Federal Power Act. Additional workload generated under the provisions of the Mineral Leasing Act of 1920 and the Mining Claims Restoration Act of 1955, are not included. About 250 inquiries relative to the provisions of these two acts are processed annually.

WORKLOAD	1973	1974	1975
On hand July 1	66	34	31
Received	98	86	86
Total Workload	164	120	117
Completed	130	89	89
On hand June 30	34	31	28

C. PROJECT LICENSING

	1973	1974	1975	Change from 1974
Positions	120	125	129	+ 4

Since the passage of the Federal Water Power Act in 1920, the Federal Power Commission has been licensing hydroelectric facilities on navigable waterways, on any streams over which the Congress has jurisdiction under its authority to regulate interstate and foreign commerce, or on public lands or reservations of the United States.

The licensing activity includes the issuance of preliminary permits, the licensing of new facilities and facilities already constructed but not under license, and the relicensing of hydroelectric facilities having licenses which are expiring.

The workload of this activity not only remains at a high level, but is increasing qualitatively as the number of economically viable sites decrease, as the demands for alternative uses increase, and as the regulative and judicial constraints, conditions and limitations multiply. The National Environmental Policy Act of 1969, as a single example, has placed upon the Commission increased staff workload, and has delayed the processing of a large backlog of applications.

Preliminary Permits

Extensive investigation and engineering and economic studies are required to support the filing of a license application. To preserve an applicant's priority rights over other potential applicants while this information is being developed, the Commission may issue a preliminary permit for a period not exceeding three years.

WORKLOAD

Preliminary Permit Applications	1973	1974	1975
On hand July 1	5	5	4
Received	3	3	3
Total Workload	8	8	7
Completed	3	4	4
On hand June 30	5	4	3

Licensing

Licensing is a primary function of the Commission's hydroelectric regulatory program. The licensing process is the vehicle by which the Commission determines that the project fits into a comprehensive plan of basin development, that its structures are safe, and that it is otherwise in the public interest.

License applications fall into four major categories: New Construction, Constructed Projects, Relicense, and Others.

WORKLOAD

Hydroelectric Project Licensing	1973	1974	1975
On hand July 1			
New Construction	19	19	17
Constructed Projects	134	135	125
Relicense Applications	62	71	63
Other Applications	275	288	278
Total	490	513	483
Received			
New Construction	1	4	4
Constructed Projects	4	5	5
Relicense Applications	9	2	2
Other Applications	96	110	110
Total	110	121	121
Total Workload			
New Construction	20	23	21
Constructed Projects	138	140	130
Relicense Applications	71	73	65
Other Applications	371	398	388
Total	600	634	604
Completed			
New Construction	1	6	6
Constructed Projects	3	15	20
Relicense Applications	0	10	10
Other Applications	83	120	124
Total	87	151	160
On hand June 30			
New Construction	19	17	15
Constructed Projects	135	125	110
Relicense Applications	71	63	55
Other Applications	288	278	264
Total	513	483	444

The number of applications for new projects has been increasing, primarily for pumped-storage hydroelectric facilities. Many of these complex developments are contested and require a hearing. Since licenses may be granted for up to 50 years, the terms and conditions to be imposed require thorough background preparation. The effect of the design, construction, and operation of the project on public safety, on fish and wildlife resources, on scenic and recreational values, and the extent of minimum flows necessary for the protection of water quality and fishery resources must be examined. In addition, the effect of proposed steam-electric generating plants and other industrial uses of hydroelectric project reservoirs upon the thermal and chemical properties of project waters must be determined.

There are many projects that are not yet licensed by the Commission. To provide for their continued operation in a manner best utilizing the water and land resources, and to require their contribution to the costs of administering Part I of the Act, is in the public interest. There continues to exist a sizable backlog of applications for these unlicensed projects. Most of the steps required in processing these applications are the same as those for new project proposals.

Relicense applications, like initial applications for license, require similar processing from filing to final action by the Commission. The Commission must determine whether the project is to be relicensed or a recommendation is to be presented to the Congress for takeover of the project by the United States. If the latter alternative is chosen, the severance damages must be computed and the net reimbursement to the owners must be determined.

In addition to the above, the Commission must act upon a large number of other applications involving amendments, transfer and surrender of licenses and changes in land and water rights of existing projects. Many of these applications include proposed new construction, addition of new capacity, or other major change in project operation. Such applications must, consequently, receive the same reviews, analyses and environmental consideration as would an application for license.

The above constitutes a major workload in terms of assuring conformance with the basic plans for optimum utilization of the water resources, the review of engineering and economic detail, safety determinations, and impacts at the local, state, and Federal levels.

In addition, environmental considerations and measures to protect and enhance natural resources have assumed increased importance in recent years.

Project Environment and Conservation

Licensed project lands and waters provide a tremendous potential for recreational use and development, including fishing and hunting. This is illustrated by the Commission's 1969 inventory of these resources (Form 80) which showed that 555 project-developments under license had a combined water surface area of 1,934,650 acres with a total shoreline of 22,100 miles. Recreation facilities included: 5,830 access areas; 2,264 boat ramps; 1,134 bathing areas; 1,349 picnic areas; and 971 camping areas. Commission regulations provide for evaluation of each applicant's and licensee's plans for development of recreation (Exhibit R); for fish and wildlife preservation and development (Exhibit S); and for the protection and enhancement of the natural, historic and scenic values and resources of the project (Exhibit V); consistent with the public interest and the requirements of the Federal Power Act. Commission regulations issued pursuant to the National Environmental Policy Act of 1969 require the filing of a detailed environmental report (Exhibit W) with most applications for license or amendment of license.

WORKLOAD

Project Environment and Conservation	1973	1974	1975
On hand July 1	341	483	447
Received	530	458	458
Total Workload	871	941	905
Completed	388	494	435
On hand June 30	483	447	470

We are attempting to reduce the existing backlog of pending applications, while keeping up with the augmented workload occasioned by regulations pertaining to environmental matters at licensed projects, which includes requirements for preparing staff draft and final environmental impact statements. The Greene County Decision (455 F. 2d 412) and the Commission's subsequent adoption of Order No. 415-C is estimated to have more than doubled the amount of staff work required to process an application for license. In addition, an increasing number of requests are being received for Commission approval of the use of licensed project reservoirs and lands for non-project purposes. Each of these requests, if considered in isolation, might not cause significant effects on the human environment. The cumulative effects of many requests involving the same reservoir could, however, cause significant environmental effects. It is necessary, therefore, in order to comply with the requirements of the National Environmental Policy Act of 1969, for staff to make in-depth analyses of not only the immediate action proposed but of all probable future actions of similar nature that could have cumulative effects. Large reservoirs, such as many of those under FPC licenses, attract housing developments, motels, and other commercial developments around their perimeters. The cumulative effects of such developments on the reservoir and adjoining project lands including discharges of sewage effluents into the reservoir, must be evaluated, and necessary controls must be imposed to ensure that public use of project lands and waters will not be seriously impaired.

D. ACCOUNTING SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	8	8	8	0

Detailed accounting analysis of the original plant cost (including depreciation) is made of licensed projects from the licensee's statement of "Actual Legitimate Original Cost." Subsequent detailed accounting reviews are made of additions, retirements, and depreciation over the license period. Field work is necessary to comply with Section 4(b), Part 1 of the Federal Power Act and to help determine the basic figures for relicensing or recapture.

WORKLOAD

Audits Completed	1973	1974	1975
	17	17	17

The Division of Audits' goal is the completion of audits of 17 licensees in 1974 and 1975. The above level of audits is necessary to maintain an audit cycle of approximately 5 years.

E. PROJECT INSPECTION AND SUPERVISION

	1973	1974	1975	Change from 1974
Positions	30	30	31	+ 1

Inspection and supervision of licensed projects by technically trained personnel are required to ensure that projects are constructed, maintained, and operated in accordance with approved plans, license conditions, and sound engineering practice. Project safety is a paramount consideration. Many projects have large reservoirs and failure could cause loss of life and widespread destruction of property. Inspections are also made to ensure that adequate provisions are made for the safety and comfort of the recreational users of the project.

Monthly inspections are made of projects under construction, while operating projects are inspected annually. Also, pre-licensing inspections are made of constructed developments for which licensed applications are pending.

The number of inspections required will increase steadily as new plants are constructed and as licenses are issued for existing projects.

Most of the new projects are pumped-storage developments with the upper of two reservoirs constructed at high elevations. The complex technical problems associated with these facilities require more staff surveillance and attention. For example, the $500 million Cornwall Project on the Hudson River is scheduled to be under construction in 1975. Projects of this magnitude require the attention of a full-time inspector, and we are requesting one additional position for this purpose.

WORKLOAD

Inspections	1973	1974	1975
	866	975	1,030

F. FORMAL PROCEEDINGS. RULEMAKING AND LITIGATION

	1973	1974	1975	Change from 1974
Positions	22	24	25	+ 1

License applications for proposed and constructed projects often proceed to formal hearings and court litigation. The probability that hearings and litigation will follow the initial processing is increasing. The Commission's responsibility to "assure an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper

utilization and conservation of natural resources" has been additionally expanded by Congressional action and increased public interest to require litigated inquiry into ecology, water quality and esthetics as well as recreation, fish and wildlife resources, and coordinated planning and operation of hydroelectric projects. Many proceedings involve direct participation by other Federal agencies, State agencies, independent private parties, and consumer and wildlife groups.

In these proceedings, the staff is required to prepare technical exhibits, prepare written testimony and to assist staff counsel in his examination and cross-examination of witnesses. The Commission's regulations require that staff's final environmental impact statement be placed in evidence at the hearing, and staff is subject to cross examination on the statement. Staff counsel works closely with technical advisors, and prepares briefs in support of staff position. Where a decision is issued by a presiding Administrative Law Judge, the staff prepares exceptions or opposes exceptions of other parties thereto, presents oral argument before the judge or the Commission when required, and in the event review is sought in the courts, represents the Commission in those proceedings. The augmented interest in these licensing proceedings has resulted in greater participation of parties and hence in greater complexity of issues to be considered and resolved.

An important hearing that is underway in Fiscal Year 1974 involves the location of a transmission line from the Blenheim Gilboa pumped storage project in New York. Also underway are two hearings involving applications for relicensing projects wherein portions of the projects occupy Indian lands and recommendations for Federal takeover have been made. Two other important hearings that will get underway in Fiscal Year 1974 involve an application for license for the proposed Davis pumped storage project in West Virginia, projected to have an installed capacity of one million kilowatts and the proposed enlargement of Ross dam of the Skagit River Project in Washington.

Hearings are anticipated beginning in Fiscal year 1974 and continuing through Fiscal Year 1975 with regard to other proposed projects and projects subject to relicensing or Federal takeover. Hearings are also anticipated because of alleged violation of license conditions or complaints relating to conservation of fish and wildlife, minimum flows, and other requirements. Commission decisions must consider all social and economic effects and be supported by documented staff analyses.

In several current proceedings, use is being made of the expertise, laboratories, and other facilities of other agencies to develop ecological and environmental effects studies. Such studies can require appreciable effort and expense.

WORKLOAD

Formal Proceedings	1973	1974	1975
On hand July 1	9	11	20
Initiated	3	13	11
Total Caseload	12	24	31
Completed	1	4	7
On hand June 30	11	20	24

II. ELECTRIC POWER INDUSTRY SYSTEMS EVALUATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. System Analysis and Evaluation				
Positions	41	41	41	-
Costs	$ 698,867	$ 887,000	$ 981,000	+$ 94,000
B. Reliability Analysis				
Positions	54	55	57	+ 2
Costs	960,243	1,277,000	1,388,000	+ 111,000
C. Environmental and Fuel Analysis				
Positions	20	21	23	+ 2
Costs	462,823	549,000	620,000	+ 71,000
D. National Power Surveys				
Positions	17	17	17	-
Costs	253,964	380,000	449,000	+ 69,000
TOTAL ELECTRIC POWER INDUSTRY SYSTEMS EVALUATION				
Positions	132	134	138	+ 4
Costs	$2,375,897	$3,093,000	$3,438,000	+$345,000

II. ELECTRIC POWER INDUSTRY SYSTEMS EVALUATION

	1973	1974	1975	Change from 1974
Positions	132	134	138	+ 4

The Federal Power Act directs the Federal Power Commission to gather information on all aspects of the electric power industry and on the relation of such facts to the dev elopment of navigation, industry, commerce, and the national defense. The results of investigations are to be reported to the Congress, including recommendations for legislation. A key consideration in such investigations and recommendations is the concern expressed in the Act for "assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources."

Through the Electric Power Industry Systems Evaluation Program, the Commission monitors the performance, problems and trends of the industry as they relate to national goals, both in the short term and the longer term. Detailed analyses are made of regional electric power supply adequacy, considering projected loads, available capacity, anticipated schedules for completion of new facilities, system interconnections and other factors. Factors involved in regional electric power reliability are analyzed with the help of industry reports on service interruptions, plans for coordination, emergency plans, regional

facility additions, and delays in construction. Problems of fuel supply and air and water environmental impacts are examined to identify potential conflicts between energy needs and environmental regulations and to develop plans for their resolution. Broad power surveys are conducted to maintain a balanced overview of the patterns of industry development and changes which can serve as a valid basis for Commission policies and actions and its recommendations to the Congress.

A. SYSTEMS ANALYSIS AND EVALUATION

	1973	1974	1975	Change from 1974
Positions	41	41	41	0

This activity includes short-term predictions of power system loads and associated analyses of bulk power system capabilities; semi-annual analysis of the Nation's power system load-supply conditions; analyses of utility fuel reports including special studies of fuel problems involved in mining and transportation stoppages, studies of industry structure, analyses of price elasticity of electricity demand, and merger guidelines for electric utilities; investigations to determine the adequacy of markets for and the value of power from hydroelectric projects; and analysis of reports and preparation of analytical data for annual or other periodic supplements to Commission publications; the analysis of historical data and current industry information, development of trends, projection of future development patterns and cost information; and preparation of reports used to support other programs of the Commission.

B. RELIABILITY ANALYSIS

	1973	1974	1975	Change from 1974
Positions	54	55	57	+ 2

The Federal Power Commission's Power Supply and Reliability functions have been of increasing importance over the past fiscal year, and it is expected that these functions will continue to grow in importance as the energy shortage becomes more acute. Recently the Commission has undertaken the task of evaluating the effect of State and Federal environmental control regulation on system reliability. This program is being carried forward in conjunction with the National Electric Reliability Council, other Federal agencies, and officials of the State governments who are responsible for air quality and utility regulation.

The Commission staff also is supplying witnesses to testify in other Federal agency hearings (particularly, the Atomic Energy Commission) as to the effect on system reliability of the failure to bring into timely operation various nuclear facilities.

The Commission staff has actively participated in the work of Committees and Boards in pursuing specific problems of fuel shortages during the past year in addition to their longer-range activities related to future energy needs and the development of recommendations concerning national energy policy considerations. The increasing shortages of fuel oil and natural gas will require that this work be carried forward in fiscal years 1974 and 1975.

The contiguous 48 states are now covered by nine regional councils and the National Electric Reliability Council, which includes representatives from the nine organizations. The Federal Power Commission and State regulatory commissions participate on a non-voting basis in the work of the councils which requires a significant amount of staff time. A tenth Regional Reliability Council has been established in Alaska.

The Commission periodically confers with groups of State utility commissioners from each reliability council region; as a result, seven regional Federal-State regulatory agency staff coordi-

nating groups have been established to work with the reliability councils to assess the reasonableness and validity of the load-facility objectives and to assist in their implementation.

The Commission envisions a significant expansion in cooperative efforts with the various State utility commissions on matters concerning certification of generating plants and transmission facilities. Public concern about esthetics, pollution, infringement on individual rights, etc., has produced many more problems than were experienced prior to the last several years. The Commission is concerned with stimulating effective programs of cooperation and participation to deal with these problems as they affect the electric power industry.

Power pools and similar but less formal coordinating groups are instruments by which individual utilities seek to achieve the reliability, economies and other advantages of much larger systems while retaining their separate corporate identities. Many medium and small systems as well as larger systems, are members of power pools and thereby participate in area coordination.

Studies will be carried forward during fiscal years 1974 and 1975 to show, by detailed comparison of benefits and costs, the gains that can be realized by interconnection and coordination of power facilities. Each of the proposals to do so will require staff analysis of the effects of coordination on each of the systems involved.

The Commission has undertaken a comprehensive study of power system design and operation from the standpoint of bulk power supply reliability. It has encouraged the adoption of programs of improved cooperation and coordination between interconnected utilities and procedures and standards by individual utilities which would lessen the likelihood of widespread power failures. Efforts are being made to coordinate the actions of the Commission with the State utility commissions to develop load relief and load curtailment programs by electric utility systems for mutual assistance in times of emergency. Considerable amounts of staff time are required in efforts directed to problems of this type and in field investigations of significant power failures and system reliability problems.

The Commission has undertaken an investigation of conditions involving the availability and distribution of petroleum and natural gas to the electric power industry. The Commission is also participating with other general agencies in the allocation of petroleum supplies.

C. ENVIRONMENTAL AND FUEL ANALYSIS

	1973	1974	1975	Change from 1974
Positions	20	21	23	+ 2

The environmental and fuel analyses activity involves studies, reports, and associated activities related to the Commission's policies and practices having to do with power plant fuels and fuel problems and the impact of generating plants and other electric facilities on the environment. The fuel matters involve sources of supply, transport, stockpiles, quality and cost aspects and similar considerations. The environmental programs are concerned principally with air and water quality effects of steam-electric plants, but also involve environmental impacts of other electric system facilities such as esthetic effects of transmission line installations, investigations of environmental control regulations on electric utility fuel supplies and other aspects of generating plant operation.

Beginning in FY 1971, the Commission utilized and will continue to utilize FPC Form 67 to obtain industry information on fuels used by about 800 electric utility generating plants. The information serves needs of both the Commission and the Environmental Protection Agency as to the disclosure of sulfur, ash and moisture

content of fuels, technical and cost data on flue gas cleaning equipment, sources of cooling water, types of cooling equipment, temperature changes in cooling water, water pollution control operations, and other information useful in the development of rational pollution abatement programs. Additional data on fuel quality and cost are obtained through reports utilizing FPC Form 423. These data are of interest not only to the FPC but to the Environmental Protection Agency and offices concerned with emergency planning and energy policy.

The water quality studies involve various types of cooling systems and water requirements; projections of cooling water requirements and plant siting problems related to cooling water requirements; costs of different types of cooling systems; research and development programs related to dissipation of waste heat from thermal power plants; analysis of water quality monitoring systems; and the evaluation of technical methods for determining the effects of power facilities on freshwater, ocean, estuarine and marshland ecosystems.

Studies are conducted to define and correlate the interrelationships of regional electric power requirements and various environmental factors. The results are intended to lead to guidelines and policies for siting power facilities such that energy and environmental values will be acceptably balanced.

D. NATIONAL AND ALASKA POWER SURVEYS

	1973	1974	1975	Change from 1974
Positions	17	17	17	0

The major power survey activity of the Commission is the National Power Survey, a continuing Commission effort to provide projections of the possible patterns of industry development over the next twenty years. The Survey considers the present characteristics of the industry, the various forces for change acting upon it, the technical options available or likely to be available in equipment, operations, fuel and other factors, and the effect of the options on cost, reliability, environmental impacts, use of energy resources and other qualities of national significance in the use of electric energy. Information developed by the National Power Survey contributes to the effective discharge of Commission responsibilities to promote and encourage the economy, adequacy and reliability of electric power, to effect efficient utilization and conservation of natural resources, to encourage the voluntary interconnection and coordination of electric utilities throughout the United States, and to inform the Congress, industry and the public of these matters.

The Commission believes that the studies requisite to the continuing survey will be of special value in assessing the major tasks of the power industry and how they should be met now and in the future. In addition to the end product reports, much benefit is expected to accrue, as it already has, from the cooperative association among the members of Advisory Committees and others in the industry assisting them, and with the Commission and members of its staff.

The continuing National Power Survey will be directed to the major issues of the national power situation as identified in the report published in April 1972 and to other timely problems as they develop and affect the utility and public interests.

The current National Power Survey effort is composed of two major phases: (a) the work of the Technical Advisory Committees (all of whose meetings are open to the public) culminating in reports to the Commission with identification of key issues and recommendations for dealing with them, and (b) the work of the Commission's Power

Survey staff in separate analyses of problem areas, in evaluating the reports submitted by the Technical Advisory Committees and in preparing the Commission's own reports and recommendations.

The following Technical Advisory Committees will address the major policy issues relative to the electric utility industry and its regulation:

Technical Advisory Committee on Power Supply

Technical Advisory Committee on Fuels

Technical Advisory Committee on Finance

Technical Advisory Committee on Research and Development

Technical Advisory Committee on Conservation of Energy

Technical Advisory Committee on the Impact of Inadequate Electric Power Supply

During FY 1973 a large part of the staff effort has been in support of the five current Technical Advisory Committees and their 15 subordinate Task Forces. A considerable staff effort in support of the existing Technical Advisory Committees will continue through the first half of FY 1974, as the committees develop their final reports. Simultaneously, staff effort will be increasing on the Commission's own analyses, with reports scheduled for the first half of FY 1975. It is expected that new Technical Advisory Committees may be appointed from time to time to deal with additional topics the Commission finds to be significant to the Nation's future electric power supply.

Power Survey work also involves other projects of a less comprehensive scope and nature such as the Alaska Power Survey. Work is under way and a major updating of the Alaska Survey is scheduled for completion during FY 1974. The discoveries of major gas and oil deposits in the Prudhoe Bay area and the plans to develop these resources will have pronounced effects on electric power system developments in Alaska. The updating of the Alaska Survey will analyze the impact of such developments and suggest possible patterns for electric system development in that area. Most of the updating work is expected to be done by the Commission's staff in cooperation with advisory groups.

The advisory groups currently established for the Alaska Power Survey are the following:

Executive Advisory Committee

Technical Advisory Committee on Economic Analysis and Load Projections

Technical Advisory Committee on Resources and Electric Power Generation

Technical Advisory Committee on Coordinated System Development and Interconnection

Technical Advisory Committee on Environmental Considerations and Consumer Affairs

The membership of these advisory groups includes representatives of privately owned (1 person), publicly owned (3 persons), and cooperatively owned (9 persons) utilities, state and federal government (6 and 10 persons respectively), the University of Alaska (2 persons), and other citizen interest groups (3 persons).

III. ELECTRIC POWER UTILITIES REGULATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. Electric Power Utility Rate Surveillance				
Positions	9	9	9	-
Costs	$ 169,611	$ 200,000	$ 222,000	+$ 22,000
B. Accounting Surveillance				
Positions	55	55	55	-
Costs	1,269,373	1,451,000	1,585,000	+ 134,000
C. Rate Filing and Corporate Application Analysis				
Positions	44	43	44	+ 1
Costs	966,468	1,114,000	1,234,000	+ 120,000
D. Formal Proceedings, Rulemaking and Litigation				
Positions	39	47	52	+ 5
Costs	600,227	768,000	950,000	+ 182,000
TOTAL ELECTRIC POWER UTILITIES REGULATION				
Positions	147	154	160	+ 6
Costs	$3,005,679	$3,533,000	$3,991,000	+$458,000

	1973	1974	1975	Change from 1974
Positions	147	154	160	+ 6

Each year consumers use more and more electricity and each year the electric industry must expand its facilities to meet the growing demand. This expansion - an average annual rate of about seven percent - is transpiring in an industry which, in terms of investment in physical facilities, is already the Nation's largest. The fact that the expansion is taking place in a period of rising prices and increased public concern with environmental and service reliability considerations puts considerable upward pressure on rate levels.

In order to meet the growing demand for electricity, the industry has accelerated a trend toward more extensive interconnection and coordination of facilities. This not only enhances reliability of service but it also enables the industry to realize, and pass on to consumers, the benefits and economies of diversity and large-scale production. System planning and operation has changed from an

individual company orientation to a coordinated inter-utility and inter-pool framework. The volume and complexity of agreements and rate schedules reflecting these changes are in turn increasing the Commission's regulatory burden.

The Commission has the sensitive and difficult task of assuring that the interstate wholesale electric energy provided by the industry is offered at rates and under conditions that are fair and equitable to both buyers and sellers. Over the past several years, the Commission has carried out this task through three basic procedures: (1) surveillance of industry practices and services; (2) analysis of industry rate filings and other regulated corporate transactions; and (3) legal proceedings where necessary to ensure that all factors in disputed matters are thoroughly investigated before a Commission decision is made.

A. ELECTRIC POWER UTILITY RATE SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	9	9	9	0

The Federal Power Act requires that all interstate wholesale transactions and related contracts be just, reasonable, fair and nondiscriminatory. The Commission conducts a rate investigation program based on continual surveillance of the wholesale rate structure of electric utilities. Investigations are of several types: cost of service studies, post-filing investigations, and utility performance and inter-system planning and operation studies.

The factors which determine a utility's cost of providing service are complex and the components thereof are subject to constant change. The Commission staff analyzes those factors, reviews their cost, and relates the cost to the revenues produced by the utility's rate structure to determine if changes in rate level or rate structure are warranted. The cost of providing electricity varies significantly from utility to utility. To assure that individual utility rates are just and reasonable, it is necessary to examine the utilities' costs on an individual basis rather than collectively. Many of the forthcoming investigations will be detailed and complex cost of service studies to ascertain the effects of the rising cost of money, and other inflationary pressures, on the overall cost of providing service. The present trend toward an increasing number of interconnection and coordination arrangements will also dictate that more staff time be devoted to analyses of coordinated operations.

There are a variety of terms and conditions in rate schedules in addition to the specific rates for kilowatts and kilowatt-hours. An example of such a provision is fuel adjustment clause which increases or decreases the charge for electricity to reflect changes in the price of fuel. Unless such clauses reflect current prices and current operating conditions, they may result in improper charges to consumers. Provisions of this nature are the subject of post-filing investigations.

In addition to inflationary pressures and escalating fuel costs, a utility's high rates may result from excessive earnings or from abnormally high capital or operating costs. Through an analysis of system operation and planning, the Commission may suggest specific remedial measures for reducing such costs including the possibility of further coordination with adjoining systems.

Our goal is to continue the several types of rate surveillance activities to the extent permitted by an increasingly heavy influx of wholesale electric rate increase filings. Each of these requires the staff to prepare a preliminary cost of service analysis so that the Commission can be advised whether the proposed increase is reasonable and should be accepted, or whether it appears to be excessive and should be suspended and a formal hearing initiated.

B. ACCOUNTING SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	55	55	55	0

This program involves the maintenance and surveillance of uniform accounting and reporting requirements. The main objective of the program is to assure that reliable, up-to-date financial and operating data are available for the regulatory functions of the Commission by ensuring that the books and records are in conformance with the Uniform System of Accounts. Special subject reviews are also done. The purpose of these reviews is to develop across-the-board information of pertinence to the Commission in its decision making processes and to determine the effectiveness of the implementation of Commission policies and regulations.

Site audits of company records are made to determine compliance with the Uniform System of Accounts and to assure that financial reports filed with the Commission are supported by these records. During 1974 and 1975 we plan to perform about 37 and 39 audits, respectively.

There is a continuous program of updating and interpreting the Commission's Uniform System of Accounts for Public Utilities and Licensees which has been prescribed for electric utilities and licensed projects. Work is also generated by specific requests from industry, the Commission and others. In addition, the reporting requirements of the Commission are constantly undergoing analysis for possible revision and modernization for better and more efficient reporting and better usage of data by the Commission. Extensive analysis and research work is necessary.

Selective reviews are made of accounting, financial and statistical data in annual reports filed by 213 electric utilities. If system-wide deficiencies are uncovered, remedial action is taken on an industry-wide basis.

In addition, financial reviews are planned so that the Commission can maintain a continuing surveillance of the company's working capital position and its source and use of funds. The purpose of these reviews is to alert the Commission to potential financial problems.

The implementation of the Regulatory Information System will permit us to carry out our accounting surveillance responsibilities with greater efficiency and dispatch.

To perform our surveillance responsibilities effectively, we must keep abreast with the thinking in the ever-changing accounting world. The recent inauguration of a full-time Financial Accounting Standards Board to replace the part-time board is expected to result in many more accounting pronouncements for the accounting profession than in the past. Pronouncements of the new Board must be considered in detail for applicability to our regulatory accounting requirements. The constantly increasing number of changes creates a situation whereby to convert and implement new generally accepted accounting principles into proper accounting instructions for the regulated industry, more and more man hours must be spent on coordination, administrative requirements of rulemaking and final preparation of Commission Orders.

With the ever-changing climate in the socio-political-tax legislation area it is essential that we remain abreast of current tax legislation, maintain liaison with the Internal Revenue Service, prepare tax impact studies, and assist in preparation of tax rulemaking and related implementing orders.

Even with the increasing complexities of our work, the heavy demands on staff time for training purposes during the implementation

stages of the Regulatory Information System, the many inevitable difficulties and tribulations inherent in the conversion process, and the need for careful audit of input data to the system, we believe that with careful planning and maximum utilization of manpower, we can carry out our accounting surveillance activities without an increase in accounting positions.

WORKLOADS	1973	1974	1975
Audit of Company Records	36	37	39
Uniform Accounting Projects	259	280	280
Financial Review of Reports	213	213	213
Systems Review Reports	213	213	213

C. RATE FILING AND CORPORATE APPLICATIONS ANALYSIS

	1973	1974	1975	Change from 1974
Positions	44	43	44	+ 1

Public utilities are required by the Federal Power Act to file all rates and charges for any transmission or sale of electric energy subject to Commission jurisdiction. The control of electric rates, through the filing procedure, is the Commission's most direct means of regulating the sale for resale of interstate electric power. In addition to action resulting from analyses of filed rate schedules, the knowledge that rate schedules and service agreements are subject to Commission review acts as a stimulus to maintenance of appropriate rate levels and the elimination of unjust or unreasonable terms and conditions.

Although most rate schedule filings relate to sales of electric energy at wholesale by large electric utility companies to all-requirements distribution systems, an increasing number of rate filings consist of agreements covering coordinated operations among large utilities. The increasing number of interconnection and coordination arrangements reflects realization by the utilities that maximum engineering and economic benefits result from such operations. Pool operations facilitate the planning and installation of generating units and transmission capacity on a one-system basis. Interconnection agreements that are somewhat less broad in scope provide for mutual obligations and responsibilities of the parties for the purpose of obtaining maximum operating benefits. In connection with both kinds of agreements, the staff reviews and analyzes the agreements to determine whether they are sufficiently definite to provide sound working arrangements, yet sufficiently flexible to meet changing conditions, and that there is sound and equitable sharing of the costs and benefits of such services.

The Commission anticipates a continuing increase in complex, coordination arrangements among large utilities and more of the Commission staff's time is expected to be devoted to such filings. For the five year period ending with Fiscal Year 1970, rate schedule reductions aggregating nearly $28 million were accepted for filing - a period in which the cost-of-living index increased by approximately 25 percent. Beginning in the latter part of FY 1970, however, and continuing through FY 1973, the rising cost of money, fuel, labor, and equipment for system expansion as well as other cost increases have halted what was a declining overall unit cost of electricity. Unit costs are on the increase. Rate reductions accepted for filing in FY 1973 totaled about $270,000 while rate increases suspended amounted to about $63 million with another $16 million in rate increases accepted for filing.

In FY 1973 we received nearly 3,200 electric rate filings, a substantial increase over the 2,000 electric rate filings received in FY 1972. Work was completed on about 3,100 of the filings thereby increasing our backlog by approximately 100 filings. It is anticipated that we will receive approximately 3,100 filings in FY 1974 and 3,200 in FY 1975. The workload for this program is not subject to control by the Commission; by statute, filings of changes in most rate schedules must be reviewed, analyzed, and processed within 30 days.

The number of proposed rate increases continues to rise. Rate increase filings take considerably more time to process than do other rate schedule filings. When proposed rate increases are submitted for filing, the staff must analyze the filings with a view towards recommending acceptance, rejection, or suspension of the rate increase with possible initiation of full scale formal proceedings. When the proposed increase is for an amount of $50,000 or more, the utility is required to submit testimony and exhibits which would serve as its case-in-chief in the event the matter is set for hearing. The filing utility must also submit a cost-of-service study involving fifteen supporting statements. All such data must be thoroughly analyzed by staff. In addition, rate increase proposals usually result in interventions and protests submitted by wholesale customers of the filing utilities.

WORKLOAD - Rate Filings	1973	1974	1975
On hand July 1	598	704	704
Received	3184	3100	3200
Total Workload	3782	3804	3904
Completed	3078	3100	3100
On hand June 30	704	704	804

Analysis of corporate applications ensures that certain industry transactions which may influence rates, reliability, and adequacy of service are in the public interest. The program consists of reviewing, analyzing, and evaluating certain proposed security issues; leases, mergers, and consolidations; acquisitions and dispositions of property; permits for construction of border facilities; emergency interconnections; and applications to export power from the United States. Each of the elements within this subprogram is specifically required by the Federal Power Act and reflects Congress' intent that precautions be taken against corporate abuses.

The Commission has had occasion to consider a number of merger proposals in the past, and it is anticipated that such proposals will continue to be made in the future at about the same rate. Approval of a merger application is contingent upon an affirmative showing that the merger, in the particular circumstances of the applicant, is consistent with the public interest. It is not a problem that is easily resolved since a great number of factors must be taken into consideration, such as the effect on the applicant's operation costs and rate levels, the contemplated accounting treatment, reasonableness of the purchase price, whether there was coercion into acceptance of the merger, and whether the consolidation will impair effective regulation at the Federal and State levels.

High interest rates have caused many companies to postpone issuing permanent securities and, in lieu thereof, to turn to the device of issuing short-term notes and commercial paper. Since many of the states which regulate the issuance of permanent securities are not authorized to regulate the issuance of short-term notes, utilities whose financing transactions have been previously exempted from Commission regulation are now finding it necessary to apply for FPC approval of their short-term note issuances.

WORKLOAD - Corporate Application Analysis

	1973	1974	1975
On hand July 1	35	33	28
Received	93	100	100
Total Workload	128	133	128
Completed	95	105	105
On hand June 30	33	28	23

D. FORMAL PROCEEDINGS, RULEMAKING AND LITIGATION

	1973	1974	1975	Change from 1974
Positions	39	47	52	+ 5

Because of inflationary conditions, the most pressing proceedings, some of which may be expected to develop into formal proceedings, involve proposed rate increases by utilities. Also, as they have in the past, additional formal proceedings are expected to continue involving restrictive contract provisions, inter-connections, power pools, mergers, accounting requirements and other matters affecting the regulation of privately owned electric utilities. Formal proceedings may be the result of complaints, petitions or applications or they may be initiated by the Commission. Not all electric utility cases pass through the hearing and briefing stages. Frequently the parties are able to resolve the issues by way of settlement to the satisfaction of the Commission in the public interest. When this fails, however, full scale hearings become imperative. When such hearings occur, it generally is necessary for the staff to develop a case and present its position before an administrative law judge. Direct testimony must be prepared and submitted for cross examination. Other witnesses must be cross examined, staff briefs must be prepared, briefs of other parties must be analyzed and oral arguments prepared and presented.

During the 1960's, the number of formal cases initiated had averaged about eight per year. However, beginning in FY 1971, the number of proposed electric rate increases submitted to the Commission began to increase at an unprecedented rate. During FY 1971, 53 formal cases were initiated, nearly seven times the earlier average. By increasing the staff through a supplemental budget request, we were able to complete 31 cases, but the backlog nearly doubled leaving 50 formal cases pending at the beginning of FY 1972. The trend which began in the latter part of FY 1970 continued through FY 1973. Forty-five cases were initiated in FY 72 and 56 in FY 1973. These 56 new cases added to the 60 pending at the beginning of the year results in a record workload of over 100 cases for the

current fiscal year. We were able to complete work on 20 cases in FY 1973, but this still leaves a balance of 96 cases on hand at the beginning of FY 1974. This compares with 50 cases on hand at the beginning of FY 1972 and 60 at the beginning of FY 1973. The 96 pending cases include 58 cases proposing rate increases totaling nearly $121 million. As of the end of FY 1973, there were an additional 10 cases involving proposed increases of more than $65 million that had been filed, but were still under staff analysis and not yet reported to the Commission. Current trends in the electric power industry indicate that the presently expanded workload level can be expected to continue for several more years.

Antitrust issues are being raised in more and more cases in light of the U.S. Supreme Court's decision in Otter Tail Power Company v. United States and Gulf States Utilities Company v. Federal Commission, et al. It can be anticipated that this issue will continue to be raised so that additional staff effort will have to be devoted to consideration of this matter. The Commission has issued an order concerning future test year data for all rate filings involving increases of more than a million dollars. Companies will be required to file unadjusted cost-of-service data for the most recent twelve consecutive months of actual experience plus estimated cost data for the twelve-month period beginning on the proposed effective date of the rate increase. A proposed rulemaking has been issued in Docket No. R-479 governing fuel cost adjustment clauses. We anticipate that implementation of this rulemaking will involve a large number of filings of new fuel cost adjustment clauses by utilities subject to the Commission's jurisdiction. The initial stages of processing rate applications under these new regulations will put an additional burden on the staff.

WORKLOAD - Electric Utility Cases

	1973	1974	1975
On hand July 1	60	96	106
Initiated	56	45	45
Total Caseload	116	141	151
Completed	20	35	45
On hand June 30	96	106	106

NATURAL GAS PROGRAMS SUMMARY

Program	FY 1973 Positions	FY 1973 Amount	FY 1974 Positions	FY 1974 Amount	FY 1975 Positions	FY 1975 Amount	Change 1974-1975 Positions	Change 1974-1975 Amount
Natural Gas Pipeline Regulation	366	$ 6,575,190	390	$ 8,747,000	402	$ 9,839,000	+12	+$1,092,000
Natural Gas Producers Regulation	192	3,527,214	203	4,164,000	205	4,732,000	+ 2	+ 568,000
Natural Gas Industry Systems Evaluation	31	903,167	13	384,000	13	420,000	-	+ 36,000
Services to Other Agencies and to the Public 1/	7	105,152	6	120,000	7	132,000	+ 1	+ 12,000
Total Natural Gas Programs	596	$11,110,723	612	$13,415,000	627	$15,123,000	+15	+$1,708,000

1/ Includes the Natural Gas Recurring Data Reports program.

IV. NATURAL GAS PIPELINE REGULATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. Rate Investigations and Surveillance				
Positions	9	7	6	- 1
Costs	$ 184,500	$ 170,000	$ 167,000	-$ 3,000
B. Accounting Surveillance				
Positions	25	25	25	-
Costs	564,003	632,000	698,000	+ 66,000
C. Gas Reserves Analysis				
Positions	16	21	25	+ 4
Costs	257,503	441,000	534,000	+ 93,000
D. Certificate Investigation, Surveillance & Application Analysis				
Positions	122	128	136	+ 8
Costs	1,892,549	2,748,000	3,180,000	+ 432,000
E. Rate Filing Analysis				
Positions	47	47	47	-
Costs	791,999	927,000	1,027,000	+ 100,000
F. Formal Proceedings, Rulemaking and Litigation				
Positions	147	162	163	+ 1
Costs	2,884,636	3,829,000	4,233,000	+ 404,000
TOTAL NATURAL GAS PIPELINE REGULATION				
Positions	366	390	402	+ 12
Costs	$6,575,190	$8,747,000	$9,839,000	+$1,092,000

IV. NATURAL GAS PIPELINE REGULATION

	1973	1974	1975	Change from 1974
Positions	366	390	402	+12

The deterioration of the gas supply situation continues. During 1970 reserves of interstate pipeline companies declined by about 14 trillion cubic feet of natural gas. In 1971 the decline was just over 12 trillion cubic feet. Preliminary analysis of 1972 data indicates a further decline of approximately 12.6 trillion cubic feet by year's end.

These companies are finding it increasingly difficult to meet their normal market requirements. At the same time, demand for clean burning natural gas increases as the concentrated effort to clean up environmental pollution continues to intensify. Natural gas, because of its minimal pollution characteristics, is the premium fuel in the world's battle to clean the environment.

The natural gas situation has increased the Commission's workload. There are more than 43 million natural gas customers in the United States. They are supplied by distributors, many of which receive gas from companies regulated by the Federal Power Commission. New and expanded transmission facilities, certificated by the Commission, are required. Many certificates can only be issued after the preparation of a comprehensive environmental impact statement by the Commission staff. This new requirement is expensive in terms of staff and time.

The premium placed on gas as a pollution-free fuel has resulted in a flood of pipeline rate increase applications. The dollar value of backlogged rate increases has risen steadily and as of the end of FY 1973 amounted to $271,347,297.

The steady decline in interstate supply has manifested itself in firm service curtailments by interstate pipeline companies to their customers during the past several winter heating seasons. These curtailments have increased from 62 billion cubic feet during the 1970-71 winter season (November-March), to 236 billion cubic feet during the 1971-1972 winter, 419 billion cubic feet during the 1972-1973 winter and an estimated 584 billion cubic feet for the 1973-1974 winter. The projected firm service curtailment during summer is 995 billion cubic feet. Pipeline companies curtail summer deliveries in part in order to fill storage for the following winter season. Pipelines serving primarily the West and Midwest markets have projected curtailments for the 1974 heating season from about 2 to 34 percent. One pipeline serving the Eastern states has projected both summer and winter curtailments of over one-third of requirements.

Major interstate pipeline companies reporting curtailments for the coming year serve almost every region of the country. They are Algonquin Gas Transmission Company, Arkansas Louisiana Gas Company, Cities Service Gas Company, Columbia Gas Transmission Corporation, Consolidated Gas Supply Corporation, Eastern Shore Natural Gas Company, El Paso Natural Gas Company, Mississippi River Transmission Company, Natural Gas Pipeline Company of America, Northern Natural Gas Company, Panhandle Eastern Pipeline Company, Texas Eastern Transmission Corporation, Texas Gas Transmission Corporation, Transcontinental Gas Pipeline Corporation, Transwestern Pipeline Company, Trunkline Gas Company, and United Gas Pipeline Company.

As a result of the curtailments, the Commission has instituted various rulemakings and policies as well as adjudicated cases establishing priorities for the use of natural gas. These priorities are generally described by Commission Rulemaking 467-B, issued March 2, 1973.

On April 15, 1971, the Commission issued Order No. 431 in Docket No. R-418. Among other things, this order required that all pipeline companies faced with a curtailment of firm requirements submit for Commission approval plans for meeting this contingency. As of December 31, 1973, thirty six curtailment filings have been

made. In conjunction with the curtailment cases, approximately sixty petitions for extraordinary relief from curtailment have been filed.

The Natural Gas Pipeline Regulation Program focuses on the above problems through the following activities.

A. RATE INVESTIGATION AND SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	9	7	6	- 1

The Commission has the statutory responsibility to investigate any potential or actual violation of the Natural Gas Act.

Because of the tight gas supply situation and its ramifications, these investigations are becoming more comprehensive in scope and in detail, particularly those involving gas curtailments and priority of service.

Annual investigations and surveillance are made of pipeline companies' prepayments and advance payments to producers, penalties charged for unauthorized overrun takes of natural gas and average city gate rates of major metropolitan areas.

WORKLOAD

Investigations	1973	1974	1975
On hand July 1	4	3	3
Initiated	7	6	6
Total Workload	11	9	9
Completed	8	6	6
On Hand June 30	3	3	3

B. ACCOUNTING SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	25	25	25	0

Reliable and consistent financial data from the companies regulated are required for regulatory purposes. Through this activity the financial transactions and records of the companies are reviewed, both through data reported by the companies to the Commission, and on-site audits.

These reviews of financial data, in addition to determining compliance with the Uniform System of Accounts, are used also as a basis for refining, improving and clarifying the System of Accounts under which these regulated companies maintain their books and records.

WORKLOAD

Type	1973	1974	1975
Audits	13	15	17
Uniform Accounting Projects	163	180	180
Financial Reviews-Reports	108	108	108
Systems Reviews-Reports	216	216	216

C. GAS RESERVE AND DEMAND ANALYSIS

	1973	1974	1975	Change from 1974
Positions	16	21	25	+ 4

Natural gas supplies through 1990 will not be sufficient to meet demand. Current projections indicate that the rate of development of our natural gas supplies, both conventional and supplemental, will not provide for the forecasted needs.

Through this program the Commission keeps track of gas reserves and future demand. Basic data for these analyses are obtained from the records of the Commission and from reports filed by natural gas companies, and checked against other estimates, including those of the American Gas Association.

National reserve data published by the Association closely correlate with the trends developed independently by the Commission for reserves dedicated to interstate pipelines.

COMPARISON OF AGA AND FORM 15 DATA
(Contiguous 48 States)
(Volumes in Trillions of Cubic Feet)

	End of Year Reserves		Reserve to Production Ratio		Finding to Production Ratio	
	AGA	Form 15	AGA	Form 15	AGA	Form 15
1963	274.5	188.5	18.9	20.2	1.2	NA
1964	279.4	189.2	18.3	18.9	1.3	1.1
1965	284.5	192.1	17.5	18.5	1.3	1.3
1966	286.4	195.1	16.4	17.5	1.1	1.3
1967	289.3	198.1	15.7	16.8	1.1	1.2
1968	282.1	195.0	14.6	15.5	0.6	0.8
1969	269.9	187.6	13.1	14.0	0.4	0.5
1970	259.6	173.6	11.9	12.3	0.5	0.0
1971	247.4	161.3	11.3	11.4	0.4	0.1
1972	234.6	148.6 P/	10.5	10.5 P/	0.4	0.1 P/

P/Preliminary

The persistent decline in reserves and new findings exacerbates the national energy emergency and affirms the conclusion that we have expressed for over four years that major national actions are required to reverse these trends of diminishing supply.

The monitoring and analysis of the Nation's supply-demand situation is vital to the performance of the Commission's regulatory functions. The Commission's decisions are dependent upon comprehensive, reliable, and up-to-date data on the availability of and the demand for gas.

In addition, data developed by the Commission are provided to other energy agencies such as the Council on Environmental Quality, the Joint Board on Fuel Supply and Fuel Transport, the Environmental Protection Agency, the Atomic Energy Commission, and the Department of the Interior.

WORKLOAD

Studies	1973	1974	1975
On hand July 1	11	11	10
Initiated	13	15	15
Total Workload	24	26	25
Completed	13	16	15
On hand June 30	11	10	10

D. CERTIFICATE INVESTIGATIONS, SURVEILLANCE AND APPLICATION ANALYSIS

	1973	1974	1975	Change from 1974
Positions	122	128	136	+ 8

Certificate Investigations and Surveillance

The analysis of proved gas reserves committed to service proposed in interstate pipeline applications for certificates of public convenience and necessity is a major function of this activity.

In addition, in-depth gas supply investigations of about six major pipeline companies are scheduled annually, depending on available staff. Through these investigations the proved gas reserves of each of the 24 major companies which collectively own 97 percent of the reserves dedicated for interstate delivery, are thoroughly scrutinized. If the proposed staffing level is achieved, investigations covering all major pipeline companies can be completed every four years.

Compliance with the Commission's certificate orders, filing fee regulations, reports of imports and exports of gas, underground storage of gas, construction costs of facilities and gas supply reports constitute an essential part of this program.

Although information about gas supplies of interstate pipelines has been gathered under current staff programs as indicated above, knowledge about the remaining intrastate and total gas supply has depended almost entirely on outside and industry sources. In addition, the information that was obtained was in summary form and lacking in important details. A new program initiated under the National Gas Survey is a combined field and office study of the individual field and reservoir reserves. A continuation of this project is proposed and will allow the Commission to gain first-hand knowledge at the source of all gas reserve data which will be extremely useful for many Commission and national programs. Implementation of this program on a continuing basis as well as the in-depth investigations will be directly affected by availability of staff.

WORKLOAD

Investigations	1973	1974	1975
On hand July 1	13	13	14
Initiated	12	16	17
Total Workload	25	29	31
Completed	12	15	17
On hand June 30	13	14	14

Analysis of Certificate Applications

Commission approval must be obtained to build and operate new facilities or to acquire existing facilities, or to make connections, import and export gas or to abandon facilities.

Some 500 to 600 applications are received each year and the funds involved total in the hundreds of millions of dollars. In FY 1973, for example, the 757 certificates in process during the year represented $2,834 million, 6140 miles of pipeline, and 595,731 compressor horsepower.

Each application must be analyzed from a financial, engineering, economic and environmental standpoint. Engineering evaluations are made of the application's technical consistency, design, and compliance with the Natural Gas Pipeline Safety Act. Gas supply and market data are reviewed carefully to determine that the supply of gas is adequate and the market demand is sufficient to justify the new facilities. Each project is weighed against its impact on system operations and the rates paid by the pipeline companies' existing customers. As a part of the public convenience and necessity we are reviewing the safety of various LNG and storage and transportation facilities.

WORKLOAD

Applications	1973	1974	1975
On hand July 1	251	310	391
Received	506	551	586
Total Workload	757	861	977
Completed	447	470	494
On hand June 30	310	391	483

Environmental Impact

The Federal Power Commission is required by the National Environmental Policy Act of 1969 to prepare an environmental impact statement for each application which constitutes a major Federal action significantly affecting the quality of the human environment. This statement must be prepared and accompany the application through each step of the decision making process.

Prior to the Greene County decision, in which the United States Court of Appeals for the Second Circuit held that the FPC staff must prepare an independent detailed environmental statement, the applicant's environmental statement was circulated by the Commission. The change in procedure has resulted in a major increase in manpower requirements. The circulation of the applicant's statement required the expenditure of only part of a man-year. Preparation of a statement by the Commission staff requires the independent development of data so as to reach independent conclusions. This may require as much as four man-years of effort on major projects.

Approximately 2 percent of the applications for certificates require the preparation of an environmental statement by the Commission staff. Such applications constitute the major projects for natural gas energy systems and the substantial majority of new increments to energy supply.

WORKLOAD

Draft Environmental Impact Statements	1973	1974	1975
On Hand July 1	5	13	14
Received	10	14	14
Total Workload	15	27	28
Completed	2	13	14
On hand June 30	13	14	14

On December 18, 1972, the Commission issued Order No. 415-C which set out detailed guidelines for the preparation of environmental reports by the applicant.

E. RATE FILING ANALYSIS

	1973	1974	1975	Change from 1974
Positions	47	47	47	0

The 1115 rate matters filed with the Commission last year involved a total of $867,479,508 annually in rate increases. The rate increase filings must be acted on within 30 days to prevent rates from becoming effective which may not be in the public interest. The balance of the filings were for new service agreements or filings made in compliance with Commission orders directing refunds or rate reductions. While the 30 day deadline is not in effect for these filings, they must be processed promptly so as not to impose a burden on the company and to expedite relief to the consumer.

The analysis of the rate filings is a complex procedure. Rules and regulations governing these filings are extensive. Further, the economic and financial factors involved in each filing differ considerably.

WORKLOAD

Filings	1973	1974	1975
On hand July 1	255	244	244
Received	1115	1200	1250
Total Workload	1370	1444	1494
Completed	1126	1200	1250
On hand June 30	244	244	244

F. FORMAL PROCEEDINGS, RULEMAKING AND LITIGATION

	1973	1974	1975	Change from 1974
Positions	147	162	163	+ 1

Increasingly, the applications filed with the Commission for certificates of public convenience and necessity or rate changes, or other Commission determinations, are being contested. And because of the energy shortage, the economic factors and the environmental factors are becoming more vital to Commission decision while multiplying the complexity and difficulty of each case. As a result, and despite staff increases, our case workload in recent years has been increasing at a rate faster than they can be disposed of.

The rulemaking activities of the Commission are an important part of an increasingly heavy workload on the Commission. Here, too, the energy shortage, sensitive economic factors, and environmental concerns combine to amplify the detail work, procedures, and investigations required. Many Commission decisions of significance to the energy situation or the environmental problem are challenged by appeal to the courts.

Certificate Matters

During FY 1973 the Commission had a total workload of 87 certificate cases in process. During the year, 43 new cases were started, a 16 percent increase over those started the previous year and a threefold increase over the new cases started in FY 1970.

Environmental protection, anti-trust issues, pipeline sitings, the adequacy of proposed financing, economic feasibility, the adequacy of gas reserves, the end use of natural gas, are some of the issues involved in certificate cases. The shortage of available land is making it more difficult to locate proposed pipeline facilities and air quality standards are increasing the demand for the short supply of presently available gas.

Projects authorized and proposals filed to import liquefied natural gas from Africa, and possibly other continents by cryogenic ships, and to manufacture synthetic gas from coal and other hydrocarbons raise other difficult questions concerning jurisdiction, price, reliability, safety, environmental impact and economic feasibility.

Despite the growing complexity of pipeline certificate matters, the Commission disposed of 30 cases last year.

WORKLOAD

Certificate Cases	1973	1974	1975
On hand July 1	44	57	75
Initiated	43	50	50
Total Workload	87	107	125
Completed	30	32	35
On hand June 30	57	75	90

Rate Matters

Concurrently with the increase in certificate workload, our rate case workload is also increasing. The conditions which impact upon the certificate matters are important also to the rate matters. In addition, there are other factors.

Cost of service issues, for example, are complex, particularly those associated with rate increase filings. The appropriate test period volumes based upon curtailments, the realistic net investment rate base, the treatment of advance payments, interest allocation, changes in depreciation rates, cost classification, cost allocation and rate design are all important elements in the Commission's determinations.

In FY 1973 pipelines filed 307 rate increases totaling $867,479,508. Of these, 42 rate increases totaling $419,246,158 were suspended. The Commission also initiated several investigations of rate matters on its own motion or on complaint.

At the end of FY 1973, 92 formal rate cases were pending with the Commission involving a total of $697,215,766. Curtailment cases, petitions for extraordinary relief, abandonments and rulemakings related to supply deficiencies are expected to form an increasing and substantial portion of our workload. As the natural gas shortage deepens, curtailments of essential supply increase. The overall shortage of alternate fuels deliverable to market to displace the unfulfilled demand for natural gas causes the problem of allocating the shortage among various end-users of natural gas according to descending priorities of use values. Despite conservation policies for both production and consumption of natural gas as well as electricity, initiated by the Commission and others, conservation measures by the Departments of Interior and Commerce and the Federal Energy Office, there is a shortage of fuels to meet the energy needs of our society. Allocations must distribute the shortfall evenly so that the burden will be distributed equitably among various classes of consumers and so that our reserves will be efficiently and productively utilized. There were 17 major pipelines with curtailment cases before the Commission for hearing as of June 30, 1973.

WORKLOAD

Rate Matters	1973	1974	1975
On hand July 1	106	92	92
Initiated	49	60	65
Total Caseload	155	152	157
Completed	63	60	60
On hand June 30	92	92	97

V. NATURAL GAS PRODUCERS REGULATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. Rate Investigations and Surveillance				
Positions	30	30	29	- 1
Costs	$ 564,345	$ 641,000	$ 709,000	+$ 68,000
B. Certificate Application Analysis				
Positions	46	52	52	-
Costs	770,398	950,000	1,113,000	+ 163,000
C. Rate Filing Application Analysis				
Positions	53	54	55	+ 1
Costs	945,027	1,095,000	1,233,000	+ 138,000
D. Formal Proceedings, Rulemaking and Litigation				
Positions	63	67	69	+ 2
Costs	1,247,444	1,478,000	1,677,000	+ 199,000
TOTAL NATURAL GAS PRODUCERS REGULATION				
Positions	192	203	205	+ 2
Costs	$3,527,214	$4,164,000	$4,732,000	+$568,000

	1973	1974	1975	Change from 1974
Positions	192	203	205	+ 2

The Commission has about 11,500 producer rate schedules on file. Most of these, some 10,000, were filed by the 85 large producers having annual sales in excess of 10,000,000 Mcf. About 37,000 additional parties are involved in these rate schedules as co-owners whose gas is sold under certificates and rate schedules of others.

During calendar year 1972, about 14.1 trillion cubic feet of natural gas was supplied to interstate pipeline companies by domestic producers. The cost of gas purchased by major pipelines from domestic producers in the 12 month period ending November 1973 averaged 22.27 cents per Mcf compared with 20.54 cents per Mcf in the like period ending November 1972. This is an increase of 1.73 cents per Mcf or 8.4 percent.

The complexities associated with the regulation of natural gas producers had prompted innovative approaches over the years. The setting of prices on an area basis rather than a case-by-case basis, the exemption of small producers, optional pricing procedures, and procedures to prescribe uniform national rates by rulemaking are major Commission regulatory responses to the supply shortfall.

These new approaches, established to cut through a massive backlog of cases, or to ameliorate the current energy crisis, are being tested in the courts.

While the Commission has been generally confirmed in its area rate decisions, there is a conflict of circuit courts which will precipitate U.S. Supreme Court review of its area rates. In Texaco, Inc. v. FPC, D.C. Cor., No. 71-1560, et al., the Commission's Orders Nos. 428 and 428-B, exempting small producers from area price ceilings, were set aside. A petition for certiorari was filed with the U.S. Supreme Court on May 3, 1973. Optional pricing is also subject to appellate review. We have an average of about 80 cases pending an appeal in the circuit or supreme courts.

A. RATE INVESTIGATIONS AND SURVEILLANCE

	1973	1974	1975	Change from 1974
Positions	30	30	29	- 1

Basic producer data such as expenditures for exploration, development and production, geological and geophysical data, leasing and drilling information, changes in reserves inventory, drilling costs, footage drilled, sales information, and associated data are collected and evaluated in this activity.

During FY 1974 and continuing through FY 1975, much of this data will be collected and monitored with the help of ADP techniques. When fully developed, this automated system will provide the Commission with consistent and current data for use in its regulatory decisions.

In addition to monitoring the industry through this system, the Commission also carries out specific studies or investigations in response to various matters in process within the Commission.

B. CERTIFICATE APPLICATION ANALYSIS

	1973	1974	1975	Change from 1974
Positions	46	52	52	0

Natural gas producers are required to obtain authorization for the sale or abandonment of a sale of natural gas in interstate commerce for resale.

Each application is examined for availability of pipeline facilities for transport, conformance to ceiling rates, reasonableness of terms and conditions, corporate relationship between seller and buyer and relationship to other sales from same or adjoining acreage, and other factors.

Under specified conditions certain producers may file under the optional certification procedure which was designed to encourage the drilling for and production of new supplies of gas for use in interstate commerce.

Although workload in this activity remains fairly constant, the substance involved, like other Commission workload, has increased in complexity due to the energy and environmental situation.

WORKLOAD

Applications	1973	1974	1975
On hand July 1	1818	2224	2574
Received	2345	2350	2400
Total Workload	4163	4574	4974
Completed	1939	2000	2200
On hand June 30	2224	2574	2774

C. RATE FILING APPLICATIONS

	1973	1974	1975	Change from 1974
Positions	53	54	55	+ 1

With the exception of those with small producer certificates, all producers are required to file rate schedules with the Commission detailing the terms, conditions and rates for each of their jurisdictional gas sales. Changes in such schedules cannot be made without prior notice to the Commission and the public.

Rate changes must be acted upon by the Commission within 30 days of the filing.

WORKLOAD

Filings	1973	1974	1975
On hand July 1	6114	3233	3233
Received	9765	12000	12000
Total Workload	15879	15233	15233
Completed	12646	12000	12000
On hand June 30	3233	3233	3233

D. FORMAL PROCEEDINGS, RULEMAKING AND LITIGATION

	1973	1974	1975	Change from 1974
Positions	63	67	69	+ 2

Despite the crisis in the availability of proven gas reserves and spot shortages of supplies in some sections of the country, the total gas produced approximate 22.5 trillion cubic feet for the year ending 1972. About 14.1 trillion cubic feet was produced and/or purchased from proved and contracted reserves by interstate pipeline companies for sale in interstate commerce and is thus subject to the jurisdiction of the Commission.

Hearings are expected on certain certificate applications filed pursuant to the optional pricing procedure under which approved rates will be firm for the term of the contract and not subject to refund. Commission provisions for special relief from area ceiling rates will generate some proceedings also. These two procedures were established to stimulate domestic exploration for and development of gas reserves, and to encourage the recovery of gas that would otherwise be flared or vented.

A substantial number of hearings are expected under the provision for limited term certificates designed to meet current shortages of gas supply by allowing pipeline companies to purchase gas at above ceiling rates.

At the same time the Commission has several rulemaking proceedings in process. One of these, Docket No. R-389B, involves a just and reasonable national rate for sales of gas from wells commenced on or after January 1, 1973. A companion rulemaking, Docket No. R-478, is concerned with a national rate for sales from wells commenced before January 1, 1973.

Processing of numerous refund reports resulting from the producer rate proceedings continue to comprise an important part of this program.

The intricate relationships involved in the production and sale of natural gas in interstate commerce continue to result in a high number of cases referred to the courts.

VI. NATURAL GAS INDUSTRY SYSTEMS EVALUATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. National Gas Survey				
Positions	31	13	13	-
Costs	$903,167	$384,000	$420,000	+$36,000
TOTAL NATURAL GAS INDUSTRY SYSTEMS EVALUATION				
Positions	31	13	13	-
Costs	$903,167	$384,000	$420,000	+$36,000

3993

VI. NATURAL GAS INDUSTRY SYSTEMS EVALUATION

A. NATIONAL GAS SURVEY

	1973	1974	1975	Change From 1974
Positions	31	13	13	0

The complex regulatory problems faced by the Commission compel it to look beyond the confines of individual natural gas cases and obtain an overview of the gas industry, including various principal elements such as: Prospective growth of markets; the gas supplies necessary to meet this growth; industry financing, rates and service conditions; imports and exports; means of conserving gas and general operations. Recognizing this need, the Congress in FY 1971 authorized the establishment of the National Gas Survey to meet this requirement.

Today, there are complex relationships among gas and other sources of energy--oil, coal, electricity, and nuclear power. To resolve regulatory issues most effectively requires a meaningful understanding of the position of natural gas in an interrelated energy economy.

Obviously, a detailed knowledge of the natural gas industry, beginning with supply and demand data, is essential if problems of increased energy demands are to be resolved. Questions relating to economies of scale and perplexing problems of supply-price relationships are involved as are the impact of inter-fuel relationships, the effect of import-export policies upon supply, the possible future role of synthetic gases, and a variety of related questions.

Only a few years ago, it was not considered necessary to import substantial quantities of liquefied natural gas or manufactured gas from coal and oil to meet growing demands. Yet, this definitely is the prospect today. At present, we necessarily rely upon existing gas technology and conservation practices as the basis for meeting gas demand in the near term because the supply of liquefied natural gas and substitute natural gas in substantial quantities will not be a reality for at least several years. In the meantime, we rely on liquefied natural gas for some peak-shaving and as a minor supply supplement and synthetic gas plants are being rushed to completion. These sources will not be available in sufficient volumes in the immediate future either to meet incremental demand or even current or contract demand on a national basis and conservation practices also unthought of a few years ago, are given a prominent place in industry planning.

In essence, the Survey's purpose is to obtain an overview of the prospective growth of the gas industry, its markets, gas supplies, facilities, its relation to other fuels and regulatory aspects. The Survey is intended to enhance the Commission's ability to regulate effectively and assist the industry in providing a continuing reliable supply of gas to meet consumer needs. A primary goal is to improve analytical and forecasting techniques so that there can be meaningful regulation, wise management, and prudent resource planning by both industry and government.

The National Gas Survey consists of two parts:

(1) For Fiscal Year 1975. The major undertaking requiring the majority of the requested positions will be the independent continuing analysis of the Nation's natural gas reserves;

(2) In-depth examination of policy issues relating to conservation, rate design, Research and Development, financing, import-export policy, supply-demand equilibrium, intercompetitive relationship of substitutable fuels, environmental impact of resource development and utilization, and the evaluation of alternate methods of attainment of capacity for self-sufficiency.

An extensive independent reserves analysis program of natural gas reserves for the year ending 1970 has been completed by the Federal Power Commission staff to provide estimates of proved reserves based on geological and engineering data for a broad sample of the gas fields in the United States. The sample was chosen by means of valid statistical techniques in order to provide the basis for estimates of reserves and to permit sound conclusions to be drawn about the gas reserves of the total population of gas producing fields in the United States. This analysis, conducted through the combined efforts of the Federal Power Commission staff, the United States Geological Survey of the Department of the Interior, the Office of Naval Petroleum and Oil Shale Reserves of the United States Navy, the Office of Management and Budget, the Bureau of the Census, and the regulatory and conservation agencies of the major gas producing states is the first independent government-conducted appraisal of the proved gas reserves in the United States. The United States Geological Survey teams took the responsibility for preparing the estimates of the fields included in the sample which were located on the Outer Continental Shelf.

This reserve evaluation program for the study and analysis of gas supply information has several important features, namely:

(1) The gas reserves of the fields constituting the sample represented over 50 percent of the Nation's estimated gas reserves.

(2) The gas reserve estimates for the fields in the sample were made on a reservoir-by-reservoir basis.

(3) Significant results were obtained for use by the Government and the public.

The gas reserves study indicated a 10 percent lower level of proved reserves than that reported by the American Gas Association at the end of 1970. While this difference is considered to be within the range of reasonableness, the natural gas available in the future from presently proved reserves may be even more limited than has been previously projected. As an essential part of our regulatory responsibilities, we intend to continue our in-depth, independent analyses of natural gas reserves consistent with the demands of public policy for systematic reporting of reserves controlled by jurisdictional natural gas companies. The FPC's analysis of gas reserves will be independent of the National Gas Survey structure to address policy issues relating to the future regulation of the national gas industry.

The National Gas Survey is directed by the FPC. Federal and State agencies, representatives from the gas industry, members from academia, technical societies and associations, public interest parties, (including environmentalists and consumer representatives) and other qualified individuals have participated in preparing reports for use in the Survey. To accomplish the broad objectives of the Survey, various advisory committees were established. An Executive Advisory Committee gave an overall review and a Coordinating Committee helped balance the work of the three Technical Advisory Committees which provided advice and assistance in their respective fields of Supply,

Transmission and Distribution. Under the direction of the Technical Advisory Committees, fourteen Task Forces participated in developing information. Eight consultants also contributed special analyses for the Commission's use in the Survey.

All final reports of the Advisory Committees and Task Forces were completed and made available to the public by July 1, 1973. Most of the consultant reports were also available by the end of the fiscal year. Publication of all of these reports is being undertaken by the Government Printing Office.

The Commission will issue its report in fiscal year 1974; this report will be based on the information and data contained in the Technical Advisory Committee Task Force reports and will make public the Commission's analyses, interpretations, conclusions and recommendations for future courses of action. It is planned that this report will be published after advisory committee, Task Force and consultant reports.

Continuing studies of technological developments affecting the industry, the role of natural gas in the changing energy market place, and the evaluation of the gas industry to meet the needs of gas consumers and the general public will continue to be primary areas of concern and further analysis.

As the basic work objectives of the Survey are carried out, a parrallel effort to develop a comprehensive statistics and information program will be conducted. This will be accomplished by designing and developing system analysis tools that will facilitate the Federal Power Commission's analysis of existing situations and the evaluation of possible solutions to problems as they are identified.

The survey will give the Commission, the Congress, Federal and state agencies, the public, and the industry an assessment of the natural gas industry that cannot be obtained from the mass of unevaluated statistics now available. The study will concentrate on these major policy issues relating to the national objective to attain a capacity for self-sufficiency during the decade of 1980's:

(1) Natural gas supply-demand equilibrium in relation to a competitive inter-fuel economy;

(2) Conservation in production, transmission and conservation of natural gas and substitutable fuels;

(3) Priorities of allocation by end-use in relation to impact upon our national and regional economy, environmental objectives and social goals;

(4) Assessment of national security and international relations in relation to magnitude of projected imports;

(5) Research and development strategy by Government and private industry for natural gas, substitutable fuels, and new energy forms; and

(6) Financial requirements.

The impact of future technological changes will be carefully weighed. The Survey should provide a rational overview of the natural gas industry and its probable future course as a basis for effective energy policy action and decision making.

VII. SERVICES TO OTHER AGENCIES AND PUBLIC

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. Review of Proposed Federal Hydro Projects, Rates & Cost Allocation				
Positions	19	19	19	-
Costs	$ 312,019	$ 407,000	$ 450,000	+$ 43,000
B. Headwater Benefits Determinations				
Positions	10	10	10	-
Costs	200,535	220,000	243,000	+ 23,000
C. Joint Water Resources Studies				
Positions	14	14	14	-
Costs	313,564	341,000	376,000	+ 35,000
D. Hydro and Electric Utilities Recurring Data Reports				
Positions	43	39	38	- 1
Costs	752,041	768,000	830,000	+ 62,000
E. Natural Gas Recurring Data Reports				
Positions	7	6	7	+ 1
Costs	105,152	120,000	132,000	+ 12,000
TOTAL SERVICES TO OTHER AGENCIES AND PUBLIC				
Positions	93	88	88	-
Costs	$1,683,311	$1,856,000	$2,031,000	+$175,000

	1973	1974	1975	Change from 1974
Positions	93	88	88	0

The Commission provides advice, assistance, and information on electric power and natural gas matters through a number of different programs. For many years, it has served as a repository for industry data. It serves as consultant to other agencies which plan and construct water resources projects, comments upon project plans, approves rate schedules established by certain Federal marketing agencies, and performs cost allocations for a number of Federal multiple-purpose projects.

The Commission determines the payments due for benefits from Federal or licensed headwater improvements. The Commission plays another major role in national water resources planning through its membership in the Water Resources Council and representation on river basin commissions and Federal-State coordinating committees.

A. REVIEW OF PROPOSED FEDERAL HYDROELECTRIC PROJECTS, RATES AND COST ALLOCATIONS

	1973	1974	1975	Change from 1974
Positions	19	19	19	0

The Federal Power Act, the various Flood Control and River and Harbor Acts, and other statutes authorize or direct the Commission (1) to provide advice and assistance on electric power matters to other Federal agencies which are planning or constructing water resources projects; (2) to confirm and approve rate schedules proposed by the Department of the Interior for electric power produced at certain Federally owned projects; and (3) to perform or verify the allocation of costs of a number of Federal multiple-purpose water resource projects.

The Commission has expertise in electric power matters which enables it to provide assistance to the Federal construction agencies so as to assure that the power potential of projects is developed or safeguarded. As current Federal-State comprehensive planning programs are completed, the Federal construction agencies prepare detailed feasibility, implementation, and environmental impact studies and reports for those projects proposed for Federal construction in the next 10 to 15 years. These studies require increasing participation by the Commission staff and a large number of cooperative studies are expected to be required each year. Formal comments to other Federal agencies on survey reports, design memoranda, proposed wilderness areas, proposed additions to the national wild and scenic rivers system, comprehensive river basin planning studies, and environmental impact statements, are expected to be made on 70 reports in each of fiscal years 1974 and 1975.

As marketing agent for Federally generated electric power, the Department of the Interior is expected to submit 4 requests for approval of rate schedules in each of fiscal year 1974 and 1975. Rate proposals for the Bonneville Power Administration system and for the Southwestern Power Administration system will be included in the fiscal year 1974 requests. The Commission's principal concern is that proposed rates satisfy the financial provisions of the statutes. For this purpose the Commission reviews and approves or disapproves various rate schedules of the marketing agents with primary reference to pay out. If the Commission does not approve particular schedules it then becomes the responsibility of the federal marketing agent to submit alternate schedules for approval so as to meet the principles of the Commission's action disapproving prior schedules. Thus, an objective of this regulatory function of the Commission is to provide assurance to the Congress that the large sums of money appropriated for construction of Federal hydroelectric projects are recovered through power revenues in accordance with Congressional intent.

In fiscal year 1974, the Commission staff will undertake cost allocation studies for two Corps of Engineers' projects for which the allocation responsibility has been assigned by law to the Commission. These projects, located on the lower Snake River, have been placed in operation. The allocation studies are needed to determine the financial requirements of reimbursable functions of the projects. For most Corps of Engineers' projects, the allocation responsibility has not been assigned by law to any agency and, in those cases, the Commission staff cooperates with the Departments of the Army and Interior in the allocation studies. For such cooperative cost allocation studies, it is expected that the staff will complete two studies on Corps of Engineers' projects in each of fiscal years 1974 and 1975.

WORKLOAD*	1973	1974	1975
On hand July 1	9	6	7
Received	79	78	77
Total Workload	88	84	84
Completed	82	77	77
On hand June 30	6	7	7

*Formal reports, rate filings, and cost allocations.

B. HEADWATER BENEFITS DETERMINATIONS

	1973	1974	1975	Change from 1974
Positions	10	10	10	0

Section 10(f) of the Federal Power Act makes the Commission responsible for determining the equitable amount an owner of a downstream non-Federal hydroelectric development shall pay to the United States, or to a licensee, for benefits provided by the headwater improvement.

There are 54 river basins in the country in which non-Federal hydroelectric developments are situated downstream from headwater improvements of the United States or of licensees. In these 54 river basins there are 287 headwater improvements and 437 downstream hydroelectric developments. Of the downstream developments, 369 are owned by non-Federal parties.

In 34 of the 54 river basins there are Federally owned headwater improvements. Benefits provided by the Federal projects in these basins may result in payments to the Treasury of the United States. Investigations of situations which appear to involve the largest payments to the United States are given precedence.

Pursuant to orders of the Federal Power Commission, about $26.5 million have been paid thus far to the United States for headwater benefits provided by Federally owned reservoirs to downstream non-Federal hydroelectric developments. In addition, nearly $352,000 have been paid to the United States for Commission costs for making the headwater benefits determinations.

The Commission has adopted regulations which provide for establishing average annual payments where conditions permit. In most cases, however, detailed studies must be made by the Commission's staff. A backlog of headwater benefits work still remains although it is gradually being reduced. Investigations become more complex as additional projects are constructed, and it is increasingly difficult to arrive at proposed payments which are not objected to by the parties involved. As a result, in a number of cases, ultimate determinations require extensive proceedings and litigation.

In 28 river basins there are non-Federal headwater improvements operating under Federal Power Commission licenses. Eight of these are basins in which there are also Federally owned headwater improvements. In each of these 28 situations, the Commission may either approve settlement agreements among non-Federal parties, or determine the amount of payments to be made.

WORKLOAD (Basin Investigations)	1973	1974	1975
On hand July 1	27	30	23
Initiated	10	11	13
Total Workload	37	41	36
Completed	7	18	18
On hand June 30	30	23	18

C. JOINT WATER RESOURCES STUDIES

	1973	1974	1975	Change from 1974
Positions	14	14	14	0

The Commission's knowledge and expertise in power planning and water resources development are utilized in joint comprehensive water resources planning. Under authority of the Federal Power Act and the Water Resources Planning Act, the Commission staff participates in activities of the Water Resources Council. The staff takes an active part in all comprehensive river basin planning studies and normally takes the lead in the power planning aspects which include: estimating future power needs; tentatively selecting the types of generating plants - hydroelectric, fossil-fuel or nuclear steam-electric, and others - to meet the needs; analyzing power plant site locations; estimating condenser cooling water requirements for steam-electric plants; and making feasibility studies of pumped storage and conventional hydroelectric plants to serve peaking requirements. These planning studies are useful to the Commission in licensing non-Federal hydroelectric projects.

The Commission is represented on eight administrative and technical committees of the Water Resources Council and its staff participates in ad hoc task forces which are assigned such tasks as reviewing the report of the National Water Commission, proposing a unified national program for flood plain management, and establishing procedures for evaluation of water and related land resources projects. The staff also joins in the interagency review of the provisions of interstate compacts.

Staff members in the Commission's regional offices serve on and participate in the work of the six* river basin commissions established by the President under Title II of the 1965 Water Resources Planning Act, the three Federal-State Interagency river basin committees, and the one ad hoc survey coordinating committee, which were in operation at the beginning of fiscal year 1974. These commissions and committees coordinate the water and related land resources planning activities of the State and Federal agencies in their respective areas. They had 9 comprehensive river basin planning studies under way or nearing completion at the beginning of fiscal year 1974. Completion of 3 studies is expected in fiscal year 1974.

An important investigation in which the Commission staff is cooperating is the Department of the Interior's Western U.S. Water Plan - the Westwide Study. Planning activities are scheduled for completion in fiscal year 1974.

*Excludes the Souris-Red-Rainy River Basin Commission, established in 1967, which terminated on June 30, 1973.

WORKLOAD*	1973	1974	1975
On hand July 1	84	79	76
Initiated	23	10	10
Total Workload	107	89	86
Completed	28	13	15
On hand June 30	79	76	71

*Studies, Commissions, Committees, and Task Forces.

D. HYDRO AND ELECTRIC RECURRING DATA REPORTS

	1973	1974	1975	Change from 1974
Positions	43	39	38	- 1

Section 311 of the Federal Power Act authorizes and directs the Commission to collect, compile, keep current, and disseminate information relative to the generation, transmission, distribution,

and sale of electric energy and related matters from all segments of the industry throughout United States and its possessions. These data are the basis of Federal Power Commission authoritative publications and statistics that are regularly used by the Congress, industry, Federal, state, and local agencies, the general and technical press, foreign governments and United Nations' organizations, academic and research organizations, and the general public.

Publications provided by the activity include Power Statistics (monthly), Typical Electric Bills (annual), All Electric Homes (annual), Statistics of Privately Owned Electric Utilities, Statistics of Publicly Owned Electric Utilities, and the comprehensive National Electric Rate Books (State revisions issued periodically). Currently, data for the Power Statistics report are collected on a monthly basis from 3,600 electric utility generating plants and 900 industrial electric generating plants, covering installed capacity, energy generated, and fuel consumed, by type, in the production of electric energy. These data are a basic source for the Commission's analyses and forecasts and are widely used by other organizations as the authoritative data source. The current annual growth rate of the number of utility plants reporting is approximately two percent, which is expected to remain at this level, at least, in the future.

For the Typical Electric Bills report, annual responses are solicited from approximately 2,300 utilities, for the National Electric Rate Books, from approximately 1,400 utilities, and for All Electric Homes, from approxiamtely 200 utilities. To furnish data to the Bureau of Labor Statistics for its use in the preparation of the Cost of Living Index, 129 utilities in 1974 communities are canvassed monthly. The expanding data requirements of the Bureau of Labor Statistics, together with additional rate data requested by the Commission's Office of Economics, are the contributory factors in the FY 1975 personnel additions requested.

The rapidly accelerating worldwide interest in electric data and related energy matters has increased the number of statistical reports furnished State Department authorized agencies, including seven detailed reports per year to the Statistical Division of the Economic Commission for Europe (United Nations) and one to the Organization for Economic Cooperation and Development (OECD).

E. NATURAL GAS RECURRING DATA REPORTS

	1973	1974	1975	Change from 1974
Positions	7	6	7	+1

This program involves the review and analysis, assembly and publication of two major publications of the Commission, "Statistics of Interstate Natural Gas Companies," "Sales by Producers of Natural Gas to Interstate Pipeline Companies" and monthly press releases on financial and operating data on jurisdictional gas companies.

Electronic data processing is used to accumulate data for these annual and monthly publications. At present, 105 natural gas companies are solicited annually and 30 monthly. Even though additional refinements would be possible if data were submitted by companies on card or tape form, the same amount of effort would be required by our professional accounting staff to do the analysis and review work.

Note: for a complete listing of FPC publications see pages 11-9 and 11-10.

VIII. CONSERVATION RESEARCH

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
Conservation Research				
Positions	-	-	3	+3
Costs	-	-	$100,000	+$100,000

	1973	1974	1975	Change from 1974
Positions	--	--	3	+ 3

Energy Conservation - FY 1975

Under the Federal Power Act and the Natural Gas Act, the Commission has established energy conservation programs with respect to natural gas and electric power. Commission Orders 495, 496, 497 and 498, issued between November 13 and December 21, 1973, established an ongoing energy conservation program for electric utilities, instituted emergency actions for conservation of fuel resources by electric utilities, and initiated a nationwide conservation program for natural gas.

Energy conservation in the form of more efficient use of fuels at the point of consumption has the potential of releasing 20-30 percent of our existing fuel supplies for other uses, thereby contributing significantly to the relief of the energy shortage. Conservation measures of this sort rely on technology that is now available, and in use in a very limited number of large factories, in a few small job shops, in a few commercial buildings, and in some homes. Nationwide enjoyment of these benefits requires that the specific sample experiences be evaluated in terms of the degree to which they can be adapted to all other important places, that these conclusions be evaluated and transmitted to the public utilities in the form of "model energy conservation programs," and disseminated in a manner that will accelerate their adoption.

All of these improvements have a technical base, and range from methods for adjusting and maintaining equipment, improved energy control systems, heat transfer technologies, improved processes, and some relatively new process equipment. In many of the basic industries of the U.S. economy, particularly in large-scale materials processing industries, the structure of the industry and the economic incentives that guide them have tended to retard the spread of energy conservation technologies. Industries such as metal heat treaters, foundries, cement makers, polymer forming industries, paper makers, and textile factories are among the largest potential energy savers. Energy controls, insulation, and heat exchange apparatus could produce large benefits in commercial buildings; the same is true of housing units.

The energy conservation program in the Federal Power Commission will be devoted to identifying and evaluating those technologies that have demonstrated their fuel-saving potential, and in providing that evaluated information to the public utilities and others that can serve as the most efficient agents in disseminating the advice and bringing the potential nationwide fuel saving to actual achievement.

Three senior positions are requested in order to carry out this program. Their activities will include the following:

(a) Set up and maintain an active search for all energy conservation programs being tested by using industries, public utilities, government agencies, in order to find those that have the greatest promise for large fuel savings and broadest application;

(b) Monitor such efforts in order to obtain data concerning realized improvements in fuel use, and technical estimates of probable results under circumstances that might be found elsewhere in the nation;

(c) Evaluate that set of results to determine the expected gains if the experience were replicated more widely;

(d) Analyze the technical results in order to find the best manner of incorporating those results into the FPC regulatory process--especially as they relate to Commission Orders 495, 496, 497, and 498 on Energy Conservation;

(e) Develop the necessary technical reports, guidelines, advisory bulletins; or training and reference materials that could be widely disseminated;

(f) Work cooperatively with public utilities, State Public Utilities Commissions, trade and professional associations, and end users of fuel to adapt the materials to their energy conservation programs;

(g) Provide technical advice and assistance in interpreting or using that technical information to the FPC, to the State Public Utilities Commissions, trade and professional associations, and end users as appropriate;

(h) Assemble all technical information on energy conservation technologies and experience with it in a central location, and disseminate that information or provide access to it all who might benefit; and

(i) Evaluate the benefits and costs that would be associated with use of a number of those options simultaneously in one location when the combined effects are significantly different from a simple summation of independent technical improvements.

The collection of information involves a number of visits to industrial plants and building experiments, in addition to participation in professional working groups for dissemination purposes.

IX. ADMINISTRATION

Comparative Summary of Activity

	1973 Actual	1974 Estimate	1975 Estimate	Change from 1974
A. Commissioners				
Positions	36	40	44	+ 4
Costs	$ 710,123	$1,034,000	$1,263,000	+$229,000
B. Program, Budget and Finance				
Positions	26	28	29	+ 1
Costs	364,048	472,000	500,000	+ 28,000
C. Personnel				
Positions	23	22	23	+ 1
Costs	384,915	405,000	470,000	+ 65,000
D. Service Support				
Positions	14	16	17	+ 1
Costs	157,731	219,000	242,000	+ 23,000
TOTAL ADMINISTRATION				
Positions	99	106	113	+ 7
Costs	$1,616,817	$2,130,000	$2,475,000	+$345,000

	1973	1974	1975	Change from 1974
Positions	99	106	113	+ 7

Administration includes executive, managerial, and support personnel whose functions are applicable to the Commission as a whole.

These positions include the Chairman, the Commissioners, their assistants (32), the Chief Engineer (2), the Office of the Executive Director (10), the Office of Personnel Programs (23), and those positions of the Office of the Comptroller (31) pertaining to general program, management, budget and financial control which are included in the administrative activity. A part of the Office of Administrative Operations (15) which includes mail distribution, printing, record files, procurement and drafting is prorated as overhead costs to this activity. The increase of 7 positions is for: 2 staff assistants each for the Chairman and Executive Director, 1 position in the Office of Personnel Programs, 1 position in the Office of the Comptroller for financial and management work, and 1 additional position for administrative support activities in the Office of Administrative Operations.

SALARIES AND EXPENSES

JUSTIFICATION BY OBJECT CLASS REQUIREMENTS
Summary of Request by Object Class

Number		1973 Actual	1974 Estimate	1975 Estimate	Difference
11.0	Personnel compensation	$18,828,607	$22,019,000	$22,900,000	+$ 881,000
12.0	Personnel benefits	1,558,126	1,859,000	1,900,000	+ 41,000
21.0	Travel and transportation of persons	568,467	710,000	760,000	+ 50,000
22.0	Transportation of things	18,703	40,000	40,000	-
23.0	Rents, communications and utilities	538,955	629,000	2,905,000	+ 2,276,000
24.0	Printing and reproduction	406,621	430,000	513,000	+ 83,000
25.0	Other services	524,481	2,561,000	2,747,000	+ 186,000
26.0	Supplies and materials	189,819	216,000	310,000	+ 94,000
31.0	Equipment	126,633	232,000	318,000	+ 86,000
	Total costs funded	$22,760,412	$28,696,000	$32,393,000	+$3,697,000
94.0	Change in selected resources	+ 359,483	-	-	-
99.0	Total obligations	$23,119,895	$28,696,000	$32,393,000	+$3,697,000
	Reimbursable funds	+ 109,606			
	Appropriated funds unobligated	+ 847,499			
	OMB Reserve	-			
	Total Appropriation or Estimate	$24,077,000	$28,696,000	$32,393,000	+$3,697,000

11.0 - Personnel Compensation

Summary of Estimate

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Positions	1,263	1,297	1,337	+ 40
Average Number of Employees	1,151.9	1,261	1,295	+ 34
Total Permanent Positions Costs	$20,555,052	$22,496,694	$23,538,322	+$1,041,628
Extra day(s)	-	-	+ 89,794	+ 89,794
Lapse savings	-1,774,697	- 942,694	-1,213,116	- 270,422
Terminal leave	+ 181,476	+ 190,000	+ 200,000	+ 10,000
Net savings due to lower pay scales	- 475,843	-	-	-
Net Permanent Position cost	$18,485,988	$21,744,000	$22,615,000	+$ 871,000
Temporary positions and Y.O.C.	+ 235,816	+215,000	+ 215,000	-
Consultants	+ 26,693	+ 60,000	+ 70,000	+ 10,000
Overtime	+ 80,110	/80,000/	/80,000/	-
Total personnel compensation cost	$18,828,607	$22,019,000	$22,900,000	+$ 881,000

Estimates of personnel compensation are based on a straight 40-hour workweek for 52 work-weeks at rates currently in effect, including pay increase costs due to Executive Order 11739, issued October 3, 1973. Temporary positions and overtime have been estimated at $215,000 and $80,000, respectively. Overtime will be absorbed in the total funds available. Funds are provided for use of outside consultants to secure specialized services not available from the staff.

The increase in total compensation includes estimated costs of within-grade promotions for existing positions.

Terminal leave payments are estimated on the basis of experience

COMPARISON OF NORMAL TURNOVER RATES BY MAJOR ORGANIZATIONS
(PERMANENT POSITIONS ONLY)

FISCAL YEAR 1973

Office	Average Filled Positions	Accessions Number	Accessions Rate	Separations Number	Separations Rate
Office of Accounting and Finance	101	10	9.9	20	19.8
Office of the General Counsel	128	65	50.8	55	43.0
Bureau of Natural Gas	288	28	9.7	24	8.3
Bureau of Power	307	72	23.5	51	16.6
Others	323	47	14.6	64	19.8
Total	1147	222	19.4	214	18.7

The above table reflects the accession and separation rate for each of the four largest bureaus and offices of the Commission and for all of the other offices combined.

Consultants

1973 Actual	1974 Estimate	1975 Estimate
$26,693	$60,000	$70,000

Consultants are employed by the Commission in the engineering, economics, and finance and accounting fields. They prepare or recommend solutions to technical problems which require highly specialized skills not within the range of Commission personnel.

The increasingly complex economic and environmental considerations will require extensive use of consultants in FY 1975. We particularly anticipate the use of consultants in the following special areas: computerized plant mortality programs related to utility depreciation practices; cost analysis programs of utilities and their implementation; economic and financial surveillance programs for utilities; specialized geologic and engineering analyses related to natural gas regulation and the use of advanced technology techniques; and studies to assess the effect of current environmental regulations, their demands on technology and resources, and their impact on the electric power and natural gas industries.

The estimate provides for the services of consultants at rates up to $138.46 per day (daily rate for top level of GS-15).

12.0 - Personnel Benefits

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Health benefits	$ 186,517	$ 225,000	$ 225,000	-
Employees' life insurance	70,074	85,000	85,000	-
Civil service retirement	1,273,319	1,510,000	1,548,000	+ 38,000
F.I.C.A. tax	14,400	17,000	17,000	-
Employee awards	6,610	10,000	10,000	-
Employee compensation fund	3,752	2,000	5,000	+ 3,000
Moving expenses	3,454	10,000	10,000	-
Total costs	$1,558,126	$1,859,000	$1,900,000	+$ 41,000

Funds requirements for this object class include the Commission's share of contributions to all employees' health benefits costs, life insurance, retirement and F.I.C.A. tax. The increase for personnel benefits in FY 1975 totals $41,000. The amount estimated for

employees' civil service retirement is based upon the estimated personnel compensation for FY 1975. Awards for employee suggestions and moving expenses for employees are estimated on the the basis of experience and anticipated costs.

21.0 - Travel and Transportation of Persons

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Hydroelectric Regulation	$ 75,943	$150,000	$150,000	--
Electric Power Industry Systems Evaluation	51,854	73,000	86,000	+$13,000
Electric Power Utilities Regulation	177,741	204,000	204,000	--
Natural Gas Pipeline Regulation	98,245	196,000	220,000	+ 24,000
Natural Gas Producers Regulation	7,275	16,000	16,000	--
Natural Gas Industry Systems Evaluation	96,305	2,000	2,000	--
Services to Other Agencies and Public	27,829	32,000	32,000	--
Conservation Research	--	--	10,000	+ 10,000
Administration	33,275	37,000	40,000	+ 3,000
Total	$568,467	$710,000	$760,000	+$50,000

General

In fiscal year 1975 estimated travel costs for all functions of the Commission total $760,000, or $50,000 more than programmed for FY 1974.

This request includes travel funds necessary to cope with the Commission's responsibilities in the following areas: travel essential to developing increased reliability of the Nation's electric power systems and the investigation of electric power interruptions; travel required in conducting electric power and the natural gas pipeline investigations related to certificate and rate cases, including travel incident to the litigation of cases; travel incident to monitoring and investigating the status of natural gas reserves; travel incident to providing the expertise and consideration relating to environmental work; travel required to stay current with the safety inspection, operational supervision, and the audit work required under the procedures for relicensing; travel to perform on a continuing basis the financial audits of electric utilities and natural gas pipeline companies; travel relating to licensing matters in hydroelectric regulation, including inspection of facilities and formal hearing activities; travel required for participation in activities of the Water Resources Council, of which the Chairman of FPC is a member; and other necessary travel of the Commissioners.

21.0 - Travel and Transportation of Persons (Continued)

Following are the estimated travel requirements distributed among the several Commission programs:

Hydroelectric Regulation

We are requesting travel expenses of $150,000 for this program in FY 1975. The request reflects a continuing heavy audit and growing inspection program of hydroelectric projects under license, and investigations of projects for which license applications are in process. The Commission has under license 451 hydroelectric projects comprised of about 700 developments requiring periodic inspection. Pending are 215 applications for proposed projects, applications for license of previously constructed projects, and applications for relicensing. Projects under construction require monthly inspections, and projects in operation require annual inspections. The emphasis in this program is the safety of the project and the public. In FY 1975 we estimate 1030 inspections will be conducted. Travel is required in relicensing or takeover activities to perform the detailed audits necessary to determine net investment and excess earning during the license period. Travel also will be required in the preparation of environmental impact statements and river basin appraisal reports which are used in both recapture-relicensing work and pending license applications. In addition, travel will be required in connection with hearings on applications for license and amendments thereof, both in preparation for the participation in hearings held in the field.

Electric Power Industry Systems Evaluation

A total of $86,000 is requested for this program, an increase of $13,000 over last year. This request reflects travel requirements for work related to electric power reliability, power surveys, analyses of electric power systems, and travel related to the resolution of environmental problems and development and analysis of environmental data related to land use and plant siting, air pollution, water quality standards, problems of fuel shortages, long and short range activities related to future energy needs, and matters concerning national energy policies. Staff is also required to travel to investigate power interruptions and assist electric power utilities in solving such problems. It is essential that there be staff attendance and participation at meetings of the ten regional councils and their committees on planning and reliability, and travel related to the Commission's Policy Statement on Reliability and Adequacy of Service which instituted a comprehensive reporting system on operating data and advance planning from all segments of the electric industry (private, public, cooperative and Federal). As an adjunct to the meeting with the State-Federal Staff Groups and senior staff members of the various state regulatory commissions to devise coordinated programs to enhance reliability.

Electric Power Utilities Regulation

In FY 1975, travel expenses totalling $204,000 are requested for this program, the same as in FY 1974. These funds are used for a broad area of activities requiring travel: field investigations related to proposed rate increases and rate cases; analyses of the operations of electric utilities; investigations in connection with proposed mergers and acquisitions; auditing of electric utilities subject to the Commission's jurisdiction, and travel incident to the preparation for the conduct of formal hearings.

21.0 - Travel and Transportation of Persons (Continued)

Natural Gas Pipeline Regulation

The $220,000 requested for this program in FY 1975 is an increase of $24,000 over FY 1974. This request is in anticipation of travel incident to processing a continued high number of certificate applications and rate increase filings in FY 1975, for travel associated with: auditing natural gas pipeline companies; investigating pipeline gas supply; investigating environmental impact of proposed construction of natural gas facilities; conducting formal hearing cases; and travel incident to the increase in supplemental supply projects which include the importation, terminalling and pipeline transportation of liquefied natural gas and the delivery and storage of hydrocarbon feedstocks such as naphtha.

Natural Gas Producers Regulation

The $16,000 for travel requested for this program in FY 1975 is the same amount as last year, and will provide travel funds for investigation of certificate applications and rate filings expected to be filed by natural gas producers.

Natural Gas Industry Systems Evaluation

The request for $2,000 in FY 1975 is the same amount programmed for FY 1974. The continuing travel to monitor and investigate natural gas supplies is included in the Natural Gas Pipeline Program.

Services to Other Agencies and Public

The $32,000 requested for travel in this program is the same as in FY 1974. Included in this program is the review of proposed Federal projects, rate schedules and cost allocations, headwater benefits determinations, joint water resources studies, and recurring data reports for natural gas companies, licensed hydroelectric projects and electric utilities. This request will permit us to maintain a stable level of effort in this program, providing travel particularly for work in connection with joint water resources studies. The Commission is represented on six river basin commissions, a number of Federal-State water resources planning entities located throughout the country, and two boards of the International Joint Commission. Commission representatives must travel to the meetings of these entities.

Conservation Research

An amount of $10,000 is requested for this program, related to the development of energy conservation activities. Travel will be required to participate in discussions on energy conservation activities.

Administration

Administrative travel requirements total $40,000 for FY 1975. This includes travel by the Commissioners and the staff for purposes not directly chargeable to specific program areas. Included is travel to national and international energy meetings, as well as conferences and meetings of industry, state and regional agencies related to the regulation of the natural gas and electric power industries, for personnel recruiting and renting Commission motor vehicles.

22.0 - Transportation of Things

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Freight and Express	$ 1,462	$10,000	$10,000	-
Household Effects	17,241	30,000	30,000	-
Total Costs	$18,703	$40,000	$40,000	-

The transportation of household effects reflects anticipated costs associated with the increase and relocation of personnel. Freight and express expenses for the transportation of office furniture, equipment and other items are estimated to be the same in FY 1975.

23.0 - Rents, Communications and Utilities

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Telephone, TWX Telegraph	$186,611	$211,000	$225,000	+$ 14,000
Postage	89,279	110,000	130,000	+ 20,000
Rent, ADP Equipment	116,455	125,000	305,000	+ 180,000
Rent, Copying Equipment	64,355	93,000	93,000	-
Rent, Other Equipment	40,867	43,000	52,000	+ 9,000
Space Rental	41,388	47,000	2,100,000	+ 2,053,000
Total Costs	$538,955	$629,000	$2,905,000	+$2,276,000

The increase of $14,000 for telephone, TWX and telegraph in FY 1975 reflects the anticipated increase in usage and the costs associated with the installation of telephones for additional personnel.

The increase of $20,000 in postal costs reflects increase in costs and in volume of mail.

Rental of ADP equipment in 1975 is increased by $180,000 to provide for computer rental during the last 3 months for the Regulatory Information System. An increase of $9,000 is requested for 3 IBM magnetic card typewriters under the rental of other equipment.

A total of $2,100,000 is requested to cover the cost of space to house FPC in 1975. This includes an estimated $2,050,000 in rental payments to GSA for presently occupied space and $50,000 for new space in 1975 to house new employees.

29-353 O - 74 - pt. 5 - 27

24.0 - Printing and Reproduction

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Public use forms	$ 3,374	$ 12,000	$ 12,000	-
Publications (53,550)*	436,078	335,000	410,000	$+ 75,000
Maps	4,720	34,000	38,000	+ 4,000
Binding	4,086	3,000	4,000	+ 1,000
Legal briefs	730	4,000	4,000	-
Printing of forms, cards, paper, envelopes	11,183	42,000	45,000	+ 3,000
Total obligations	$460,171	$430,000	$513,000	$+ 83,000
*Change in resources	-53,550	-	-	-
Total costs	$406,621	$430,000	$513,000	+$ 83,000

Estimates for printing and reproduction requirements in 1975 cover the following items:

	1975
1. Public Use Forms	$ 12,000
2. Publications	
(a) Administrative Series	
FPC Reports, Opinions and Decisions	44,000
Preliminary Prints of FPC Reports	98,000
List of Units of Property	800
Uniform System of Accounts-Natural Gas Companies	4,500
Uniform System of Accounts-Public Utilities and Licensees	1,200
Annual Report of FPC	12,000
FPC News	80,000
Federal and State Commission Jurisdiction - Electric, Gas and Telephone Utilities	8,000
(b) Statistical Series	
Electric Power Statistics	2,000
Depreciation Practices of Electric Utilities	7,000
Statistics of Privately Owned Elec. Utilities	5,500
Statistics for Interstate Nat. Gas PL Cos	5,000
Statistics of Publicly Owned Electric Utils.	3,000
Steam-Electric Plant Construction Cost	2,500
Sales by Producers of Natural Gas to Pipeline Companies	4,000

24.0 - Printing and Reproduction (Cont'd)

Sales of Firm Electric Power for Resale	$ 3,000
Hydroelectric Plant Construction Cost	2,000
(c) Power Series	
Hydroelectric Power Evaluation	7,000
Alaska Power Survey	9,000
World Power Data	1,500
Recreational Opportunities at Hydroelectric Projects	18,000
National Power Survey	35,000
(d) Rate Series	
National Electric Rate Book	7,000
All Electric Homes	1,000
Typical Electric Bills	3,000
(e) Gas Series	
National Gas Survey	40,000
Gas Supplies of Interstate Natural Gas Cos.	3,000
National Gas Supply and Demand	3,000
	$410,000
3. Maps	
Principal Electric Facilities	$ 30,000
Major Natural Gas Pipelines-Small-2 issues	2,000
Principal Electric Facilities - 8 Regions	6,000
	$ 38,000
4. Binding - Library	$ 4,000
5. Legal Briefs	4,000
6. Forms, Cards, Paper, Envelopes	45,000
Printing and Reproduction Grand Total	$513,000

The total funds for printing in FY 1975 are $ 83,000 more than in FY 1974. The Commission is required to fully publicize its actions and to disseminate statistical information concerning the regulated industries found necessary to the public interest. The industries, interested parties, and the general public as well as the Commission staff and other government agencies use the publications in their day-to-day operations. The increase of $83,000 reflects the increase in costs for printing the Commission's standard publications.

25.0 - Other Services

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Storage of household effects	$ 90	$ 1,000	$ 1,000	-
Advertising	13,256	13,000	25,000	+$ 12,000
Maintenance and repair of equipment	40,667	42,000	42,000	-
Space construction and alteration	34,604	20,000	40,000	+ 20,000
Microfilm services	6,855	15,000	15,000	-
Personnel investigations	10,600	20,000	30,000	+ 10,000
Health services	30,810	42,000	45,000	+ 3,000
Employee training	37,708	57,000	75,000	+ 18,000
Reception and representation	241	1,000	1,000	-
Security guard	4,000	28,000	71,000	+ 43,000
Building services	-	-	20,000	+ 20,000
Other contractual services	156,737	124,000	142,000	+ 18,000
Environmental studies	-	30,000	350,000	+ 320,000
ADP contractual services	84,056	238,000	250,000	+ 12,000
Regulatory Information system (302,716)*	407,573	1,930,000	1,640,000	- 290,000
Total obligations	$827,197	$2,561,000	$2,747,000	+$ 186,000
*Change in resources	-302,716	-	-	-
Total Costs	$524,481	$2,561,000	$2,747,000	+$ 186,000

The amount of funds requested under this object classification is $186,000 more than programmed for FY 1974.

25.0 - Other Services (Continued)

By item the increases are as follows: Advertising - funds are increased by $12,000 to meet the requirements of public notice under the Federal Power Act of applications for licensing hydroelectric power projects; construction and space alteration - funds requested are increased by $20,000 to provide for building modifications; personnel investigations - funds are increased by $10,000 to cover increased investigation costs and the number of investigations; health services - funds are increased by $3,000 to meet increased costs for professional medical services; training - funds are increased $18,000 to provide training to keep abreast of technical advances and to implement the FPC executive development program pursuant to OMB Bulletin 74-1; security guard - funds are requested to maintain the current third guard on 24-hour duty at the present FPC location at 825 North Capitol Street at a cost of $71,000 (GSA guard) or $43,000 more than in FY 1974; building services - funds are included in the amount of $20,000 as needed for overtime charges to keep building air-conditioning and heating systems in operation; other contractual services - the increase of $18,000 provides additional funds to meet costs of analyzing data on fuel supply submitted by utilities; environmental studies - an increase of $320,000 is requested to provide outside expertise not available in the staff in preparing environmental impact statements, particularly generic impact statements and analyses of the safety aspects of a project, particularly natural gas storage projects; ADP contractual services - the increase of $12,000 is for increased ADP time-sharing. The increases are offset in part by the smaller amount requested for the Regulatory Information System in FY 1975.

26.0 - Supplies and Materials

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Office supplies (16,300)*	$ 43,833	$ 55,000	$ 75,000	+$20,000
Printing and reproduction supplies	85,737	95,000	150,000	+ 55,000
Library supplies	25,168	16,000	30,000	+ 14,000
ADP supplies	18,781	50,000	55,000	+ 5,000
Total obligations	$173,519	$216,000	$310,000	+$94,000
*Change in resources	+16,300	-	-	-
Total Costs	$189,819	$216,000	$310,000	+$94,000

26.0 - Supplies and Materials (Cont'd)

The cost of office supplies for FY 1975 is estimated to be $20,000 above FY 1974. The increase of $55,000 for printing and reproduction supplies provides for printing of Commission notices, orders, opinions, and reports. Funds for library material are estimated at $30,000 in 1975 to maintain information coverage of the highly technical fields in which the Commission must function and to provide for maintenance of various government manuals and regulations and pamphlets. The $5,000 increase in ADP supplies reflects the increasing utilization of ADP in FPC operations, and the needs of the Regulatory Information System.

31.0 - Equipment

Summary of Estimates

	1973 Actual	1974 Estimate	1975 Estimate	Difference
Emergency electric power generators	-	-	$ 86,000	+$86,000
Office machines	$ 53,252	$ 95,000	90,000	- 5,000
Office furniture (19,517)*	66,331	86,000	82,000	- 4,000
Printing equipment	14,962	25,000	40,000	+ 15,000
Library publications	11,259	26,000	20,000	- 6,000
ADP equipment	346	-	-	-
Total obligations	$146,150	$232,000	$318,000	+$86,000
*Change in resources	- 19,517			
Total costs	$126,633	$232,000	$318,000	+$86,000

Funds are requested to purchase 2 electric generators for use under emergency conditions to provide electric power to operate the ADP facilities and the air-conditioning system to provide a constant temperature. No increase in funds is requested for office furniture or office machines. The funds requested will be used for furniture for new personnel, the replacement of worn-out furniture, and furnishings needed for hearing, conference and meeting rooms at the new location and for office machines such as typewriters, calculators and adding machines for new employees and to replace worn-out equipment.

$40,000 will be required to purchase one large press ($16,500), one small press ($10,000) and replace an obsolete paper cutter ($13,500).

The funds requested for library publications are for the maintenance of reference books covering the professional disciplines of the Commission including legal, economic, accounting, engineering, environmental, geological, managerial and other publications.

CHANGE IN SELECTED RESOURCES FROM FY 1972 TO FY 1973

	Object Classification	Unpaid Undelivered Orders 1972	Unpaid Undelivered Orders 1973	Changes
24	Printing and Reproduction	$312,854	$ 366,404	+$ 53,550
25	Other Services	334,470	637,186	+ 302,716
26	Supplies and Materials	13,862	12,280	- 1,582
31	Equipment	51,856	71,373	+ 19,517
	Subtotal	$713,042	$1,087,243	+$374,201
	Stores	37,450	22,732	- 14,718
	TOTAL	$750,492	$1,109,975	+$359,483

The increase in selected resources resulted primarily from other contractual services in processing Regulatory Information System data, and printing of the National Gas Survey Report programmed during the last half of fiscal year 1973.

FEDERAL POWER COMMISSION

Regulatory Information System

The Federal Power Commission budget for Fiscal Year 1975 provides for full scale development of the Regulatory Information System (RIS) with agencywide computer capability installed to deal effectively with three major national issues: 1) the critical natural gas shortage, 2) electric power supply and 3) environmental impact on Commission regulated industries.

Background:

A computer service contract was awarded in June 1973 for the initial development of the Regulatory Information System (RIS). The first developmental operational stage will begin about February 1974 and continue until the beginning of fiscal year 1975. During the second half of fiscal year 1974, a second major ADP contract will be issued to provide a comprehensive design for the Commission's data base and the installation of terminals in various offices as well as the establishment of terminal centers. Initial staffing for these activities will be provided by the RIS computer service contractors. It is expected that this full scale development and implementation will continue throughout FY 74 and FY 75. By the middle of FY 75, the point will be reached when it will be economical to acquire computer equipment at the Commission.

The Data Bank:

During Fiscal Years 1974 and 1975, the Commission will be building its data bank. The first major phase will incorporate public use form data; this will be followed by data concerning daily and periodic regulatory actions, such as licenses and applications. The magnitude of the data bank will initially consist of millions of data bytes; by fiscal year 1975, more than one billion bytes will be added. Simultaneously, as instruction concerning the inquiry language is extended among staff members of all bureaus and offices, the number of computer terminals, CRT's and communications devices will be increased. By the end of fiscal year 1975 about sixty such devices will be in use throughout the Commission's headquarters. Almost each floor of the nine story headquarters will have a data center for high speed input/output.

This large scale data bank will require continuous "control" to maintain its accuracy, reliability and completeness. It will be changing dynamically each day -- to meet new regulatory needs. To control the situation, the Commission will institute a program of data management.

Data Management:

A principal component of the new Regulatory Information System (RIS) will be data management. An organizational unit within the ADP staff assisted by contractors will be responsible for the key computer software components, the operation of the data management system and its interaction with the operating system, the query language subsystem and other software components. Within this framework computer experts

will prepare instructions to the system which will control file structures, accesses, hardware responses and the effectiveness of the overall system. The head of this operation is known as the Data Manager.

The Data Manager will be assisted by ADP specialists. This unit will be responsible for the entire inventory of data in the Regulatory Information System (RIS) (over one billion bytes) and work in close liasion with service contractors.

Contract Services:

By the end of fiscal year 1975, the development and operation of the Commission's Regulatory Information System will include all thirty-seven public use form documents; the next major phase, will be the introduction of all data related to certificates, licenses and other authorizations of the Commission. This step will permit greater efficiency in staff processing of applications and bring the data "up-to-date" with the most recent information changes. The availability of all these data in one central data bank will allow much more complete and sophisticated analyses of the facts affecting the regulated industries; the Commission's staff will be able for the first time to apply maximum computer resources to resolving questions related to the major national issues: the critical natural gas shortage, electric power supply and environmental impact on Commission regulated industries. This increased computer activity will create the environment and factual basis to encourage the regulated companies to exercise maximum effort toward solving these national issues. The Commission's staff will develop an array of analytical computer programs to deal with these problems. To stimulate these activities, the Commission will establish a unit of mathematical and statistical programmers who will act as a focal point and a resource for consultation on designing computer simulation models related to the national issues. It is expected that the greatest benefit of this program will be the development of policies in the public interest; for example, one simulation model may relate the Commission's natural gas pricing actions to the rate of increased findings of natural gas and well drilling activity. Another subsystem will include the cost of transporting natural gas. The key to success of this program will be design of the Regulatory Information System. It will encompass participation by all professional employees of the Commission.

In order to carry out this phase of the RIS program, the Commission will rely mostly on contractor personnel to review each of our "processes" for handling certificates, applications and cases. These systems and subsystems will be redesigned to improve timeliness and reduce manual handling of documents. Images of the documents will reside in the central data bank.

The FPC contractor will also install computer terminals and instruct FPC personnel in the bureaus and offices how to operate these devices. Computer programs will be written to access the data bank and retrieve information as it is needed. In addition, the contractor will be required to review all information changes which may affect the Regulatory Information System data bank.

Service Contract Costs:

It is estimated that FY 1975 contract services for the data bank of the Regulatory Information System will total $1.64 million. Funds will be required to obtain computer time, personnel, equipment and maintenance for the daily operation of the data bank and for the program developmental activities of the contractor(s). These will consist of: systems analysis, computer programming, data conversion operations and training of FPC personnel. The computer service contractor is expected to operate the system.

COSTS SUMMARY
REGULATORY INFORMATION SYSTEM

FISCAL YEAR 1975

Outside Contracts	$1,640,000
Computer Rental @ $60,000 per mo. for 3 months	180,000
TOTAL	$1,820,000

BUDGET REQUEST

Senator BELLMON. We will also try to keep our questions brief.

Mr. NASSIKAS. On the first page, I pointed out right at the beginning our budget estimate total is $32,393,000 and 1,337 positions. That is an increase of $3,697,000 and 40 positions over our 1974 budget.

The $3,697,000 increase breaks down to $2,230,000 for office space and related requirements. This is the first time that our agency will be called on in the new budget to pay the rent for our new building.

Incidentally, if I had this kind of an appropriation, $2,230,000 to pay rent annually for about 15 to 20 years, I think I could build a far superior building to the one that we are in. We did not design it, and we are confined to it.

Senator BELLMON. Is it a Government building?

Mr. NASSIKAS. No; it is rented by GSA, and it is rented by entrepreneurs for profit.

This is Commissioner Springer, Senator Bellmon.

So anyway, that is a $2,230,000 increase. The rest of the increase, which amounts to $1,467,000 is largely increased pay costs and the cost of 40 additional personnel, amounting to $922,000 of that; and then travel, supplies, materials and contractual services accounting for the remaining $545,000.

The following summary on page 2 of my statement shows the breakdown in positions by program. I will not go into the history of the Commission beginning in 1920, which starts on page 3.

GAS SHORTAGE

But we might get to page 4 where I make reference to the natural gas shortage in the country. I have been testifying to this shortage beginning with my first appropriation hearing in 1969.

The shortage has deepened. We have extensive curtailments. The major interstate pipelines predict a 10-percent deficiency in meeting total firm requirements, including sales and curtailments to other reporting pipelines, for the 12 months ending August 1974. The finding: production ratio—that is, how much gas we find in relation to how much we produce—is less than 0.5. Thus, we have produced twice as much gas, or a little over that, as we have found in the course of the past 6 years.

The only heartening sign, I must say, is that our drilling statistics are up; exploration and development reached a peak this last year for gas, not only for gas, in comparison to the last previous peak in 1961. Also, the lease sales that the Government has finally embarked on should produce considerable additional quantities of both gas and oil over the course of the next 5 years.

Currently, we have a deep shortage of natural gas, and it is not going to get much better, from the standpoint of our meeting demand. One more statistic that I do not have in here, Prudhoe Bay, Senator Stevens, as you know, has about 26 trillion cubic feet in associated gas.

REQUIREMENTS FOR GAS

Now, our staff estimates that we must find at least 30 trillion cubic feet of additional reserves annually between now and 1985 in order simply to stay even with the growth in demand. That means a little

more than one Prudhoe Bay each year between now and 1985, and this is the problem we are confronted with.

Senator STEVENS. You can probably do that if you come up our way and look hard.

Let me ask you one question, and maybe when we get back we can take a look at it, Mr. Chairman. The Department of the Interior just came in and asked for a special supplemental to deal with the application pertaining to the transportation of Alaska gas. I would like to know from your people if you need additional money in that supplemental, too.

Mr. NASSIKAS. As soon as you come back, I will be glad to answer that.

Senator BELLMON. There is a vote on. It will be necesary to recess the committee for a few minutes while we go vote.

[A brief recess was taken.]

Senator BELLMON. All right, gentlemen.

Mr. NASSIKAS. Mr. Chairman and gentlemen, I am on page 6, and I am just summarizing.

CURTAILMENTS, NEED FOR STAFF

We need additional personnel to handle our curtailment proceedings. It is much easier to regulate if you have an abundant supply of the fuel or commodity than it is in times of shortage, and we are in a time of shortage as to natural gas.

ELECTRIC POWER, FUEL SUPPLY, AND REQUIREMENTS

Also, the fuel situation for electric power supply is very disturbing. We have identified that shortage 4 to 5 years ago as probably the single most important problem confronting the electric utility industry. It is really not insufficient capacity that is the problem, but rather an inadequate supply of fuel.

Since we have the responsibilities related to electric power, we work extensively with the Federal Energy Office, to whom Congress has delegated the primary responsibility for the mandatory allocation program. But we estimate the requirements, and the Federal Energy Office allocates to the utilities throughout the United States based upon our estimate of utility requirements.

ACTION TAKEN TO INCREASE GAS SUPPLY

On page 7, I detail a few actions that we have taken to elicit additional supplies of gas. We have increased wellhead prices; we have an advanced payment program; we have released small producers from rate ceilings and adopted emergency measures for short-term sales. And we have tried to induce exploration and development not by words but with actions. We have been only partially successful.

As you know, we regulate about two-thirds of the natural gas, and one-third is in the unregulated intrastate market. We do have extensive responsibilities for pipeline imports from Canada, also for liquefied gas imports from foreign countries. These projects require several man-years in each instance to analyze.

PRUDHOE BAY PIPELINE

Getting back to your question, Senator Stevens, I understand the supplemental requested by Interior is approximately $5 million. We are trying to work out a program with the Interior Department, and we have been working on this for about 6 months now, to prepare one environmental-impact statement for the two competing applications—one for transporting liquefied gas from Prudhoe to Valdez, a tidewater port in western Alaska, generally following the route of the TAPS oil pipeline, and so forth; the second proposal would either skirt the arctic wildlife refuge or possibly go through it, in any event, to Canada, about 195 miles southeast of Prudhoe Bay, then down across the Yukon northwest territories, through the Mackenzie River Valley down to, well, through Calgary and that section, and then branching out to a point in Montana, thence to the Midwest; with a branch connecting to the northwest pipeline system some place around a point in Idaho.

ENVIRONMENTAL-IMPACT STATEMENT FOR PRUDHOE BAY

Now, if we can prepare one impact statement, as we are trying to do, I do not believe we will need any supplementary appropriation. The man-years involved for this impact statement in Alaska, at least the way Interior wants to do it, I would estimate are at least 50 man-years, and perhaps close to 100.

The Interior Department believes that under the National Environmental Policy Act, the impact of that project on Canada must be evaluated as part of the overall environmental evaluation. I do not know what portion of the man-years will be devoted to that, but that alone is some undertaking.

FPC JURISDICTION

We, of course, have jurisdiction over the import to the United States across Canada, if that is the line that is taken. We have to evaluate it anyway—and also over the facilities at the border, so that, in a word, the construction of the energy system from its inception to point of delivery in the United States, the U.S. pipeline purchaser is our responsibility.

Interior, of course, because most of the line goes from State lands at Prudhoe Bay, then through Federal lands, whichever direction it takes, has the primary responsibility on the right-of-way over Federal lands. When we get into the United States, our responsibilities become the lead on any pipelines that are constructed. I do not think we will need a supplemental appropriation if we can work out our program with Interior the way we are trying to do it.

COMPREHENSIVE ENVIRONMENTAL-IMPACT STATEMENT

Senator STEVENS. I am concerned that what is done ought to be a comprehensive environmental-impact statement that would cover the alternatives that are involved, and not only the alternatives but the extensions of the proposed main line.

Mr. NASSIKAS. Yes, I agree, Senator Stevens.

Senator STEVENS. I am fearful we may get to the point where we may want to take our royalty gas and find that the lines of extension to the main line, wherever it might go may cause procedural problems. I am sure you know Alaska is in favor of the trans-Alaska branch line—but wherever our lines come up, they ought to be covered by this environmental statement, too, so we do not face a delay if and when we have the ability to utilize our royalty gas. That would be exorbitant in terms of the time frames involved at that time.

So that is why I asked whether you and—I understand Interior has the right-of-way problem, but it seems that you have the total distribution of the availability of the gas and where it should go. That ought to be your problem.

If they need almost $5 million, my question is, how are you going to absorb your portion under your existing budget?

Mr. NASSIKAS. We have to utilize some of the environmental evaluation, largely, of Interior's personnel. We will have to utilize it, and that is what we are going to try to do.

Senator STEVENS. I understand.

Thank you.

NATURAL GAS SURVEY FINDINGS ON GAS SUPPLY

Mr. NASSIKAS. We initiated a National Gas Survey early in 1971. At the conclusion of that survey, at a cost of about $1.5 million—using petroleum engineers, geologists, and others, a very sophisticated study—we concluded that the overall national gas reserves were less than 10-percent lower, that is about 258.6 trillion cubic feet, as of the end of 1970, compared to the American Gas Association estimate of 286.7 trillion cubic feet.

You may recall that even now there are skeptics regarding the extent of the natural gas shortage. There are differences of fuel judgments as to the extent of the natural gas shortage. At the same time, it is quite irresponsible, in my opinion, to adhere to a view that, while there may be some differences in reserves forecast, we have plenty of natural gas to meet the demands of our economy. We do not. We may have it in the ground; we may have it far out to sea, but we do not have it in the form of reserves that can be readily delivered to market in a short period of time to meet the demands.

CONTINUING STUDIES OF GAS RESERVES

We are conducting continuing studies of our gas reserves. In fact, we are about to issue a national rulemaking which covers, on a comprehensive basis, various reporting procedures for gas reserves. We have conducted uncommitted gas reserve studies—that is, what available gas reserves are there that have not been committed to contract—on a national basis four times, and each time determined that the level of reserves that are uncommitted does not seem to be out of line with the total amount of gas that you have available for delivery; in other words 3 to 4 trillion cubic feet, in round figures, of uncommitted reserves, compared to an order of magnitude of 250 to 275 trillion cubic feet of proven reserves.

NET GAS RESERVE POTENTIAL

Senator HATFIELD. Mr. Chairman, could I interrupt at this point?

Senator BELLMON. Yes, you are recognized.

Senator HATFIELD. Mr. Chairman, it seems like whenever any committee I have sat on gets into the idea of projecting fuels or energy supplies or reserves, we never get to the net question; we are always talking about gross figures.

Just to cite an example, in 1965 on the average we could get 100,000 Btu's for $1. And in that constant $1, in 1970 we only got 80,000 Btu's for that same $1. And it is projected by 1975, we will only get 50,000 Btu's for that same constant $1, so obviously it is taking more energy to produce energy—drilling deeper, more geologists, all of the other things that go with energy development.

Now, when you are talking about this study and the number of trillion cubic feet that you use, are we talking only in gross terms, or does this study incorporate netting out a figure as to what our real potential is?

Mr. NASSIKAS. This is the proved reserves which are economically recoverable reserves that can be produced for market under existing economic conditions and assumptions.

Senator HATFIELD. And technology?

POTENTIAL GAS RESERVES

Mr. NASSIKAS. And technology.

Now, the potential so far is not included in these figures. We do have some analyses of probable, possible, and speculative, those three additional factors that are basically determined by the Potential Gas Committee, which is an industry committee under the auspices of the Colorado School of Mines. The U.S. Geological Survey also has an independent analysis using a different approach.

Senator HATFIELD. But it is still only in gross terms, is it not?

Mr. NASSIKAS. Well, their estimate is potential as compared to proven. In other words, it is 1,100 to 2,400 trillion cubic feet of potential that could be reduced to a proved category if the technology is available, and if the economic resources are available, and, let us say. that if these resources are physically accessible within the limits of that technology.

ENERGY UTILIZATION

Senator HATFIELD. Well, let me approach it another way.

In 25 years of nuclear fission, we have talked about x number of kilowatts that have been produced, in gross terms. If we want a net value of the amount of kilowatts, there are studies I have seen that say we have only had 50 percent production, net. Now, there are others who would say, if we want to go back to the uranium mine and start there for the energy requirement to get the uranium, and then go through all the energy-requiring steps that culminate in the generation of a kilowatt of electrical power, the net production of energy from employing this technology has been zero.

Do you see what I mean?

ENERGY CONSERVATION

Mr. NASSIKAS. I understand exactly. From the standpoint of the usable energy from the proved reserve figure that I gave you of 258.6 trillion cubic feet in the ground, the volume losses have to be in the area of about 10 to 15 percent, delivered to the consumer. The efficiency which the consumer realizes from the gas he burns varies widely depending on the appliances he uses.

You are referring to conservation. Certainly, in that area, much can be done not only in transmission and use at the point of consumption, but also at the point of production, whether such pertain to secondary or tertiary recoveries of gas. We have promulgated one or two rule-makings that have been of some modest assistance in this respect.

We have authorized the installation of additional compression, for instance, on a well that otherwise you would abandon. Additional compression might involve costs of $100,000, $200,000, whatever it might be. An applicant files for additional compression he wishes to install and states the estimated cost. We then determine on the basis of his filing and staff analysis whether we will allow an increase in the price for gas. This, in a way is conservation, as I see it. It is modest, however.

Our Chief Engineer—and this is in my statement, but I will depart from it—our Chief Engineer spends 100 percent of his time concentrating on a conservation program. He is an expert in his own right. His name is Charles Berg. We have asked for three people in our budget, in addition to Dr. Charles Berg, to carry out a pretty extensive conservation program.

You may say, well, how can you do that with only four people, and the question would be well taken. It is difficult, but we feel that we can use regulated industry's resources by pointing out the areas in which we would like to have demonstration projects conducted by industry, that is, regulated industry, and by them, with their customers.

Right now, we are working on a program with Dow Chemical, for instance. There is another program that is being worked on in Maine with the paper industry on the use of processed heat to reclaim it in the form of electric power, which may insure the efficient use of that particular program.

CONTINUING GAS RESERVES STUDY

The Gas Survey—I just want to get back just 1 minute—the major undertaking of the Gas Survey, of the funds that I have asked for here, for our Commission, would be for an independent continuing analysis of the Nation's natural gas reserves.

The rest of the survey is really policy considerations, as you can see, which will be done with advisory committees, as well as our staff and other Federal Government agencies. But the continuing study of the Nation's reserves is an absolutely indispensable priority, in my opinion, to enable us to stay on top of the reserves available in the United States and, therefore, determine regulatory policies to induce the necessary level of exploration and development, unless the Congress sees fit, as I would recommend, to deregulate new supplies of natural gas and new commitments to the interstate market.

ENERGY USED TO PRODUCE ELECTRICITY

Turning to electric power for a minute, right now most studies would not dispute the fact that about 25 percent of our energy resources, primary energy resources, coal and oil, natural gas, uranium, are consumed in the production of electricity. There is very little dispute, even by the no-growth advocates, or the Club of Rome zero-growth advocates, or shall we say even by those who think we can maintain 7 percent compound growth rate between now and the year 2000, no matter how you analyze it, the percentage of our energy resources, whatever resource consumption may be, we'll still hover around 50 percent in the year 2000 to generate electric power.

Accordingly, it is extremely important that we develop the resources, that we conduct studies that are necessary for a reliable supply of power throughout the United States, and work, as I said earlier, with the Federal Energy Office or anybody else that you want us to work with, or anything that you assign or delegate to us, independently of anybody else.

GREENE COUNTY DECISION

Greene County is a favorite case. This case last year caused an increase of 72 positions, which the Congress granted, as a result of additional environmental responsibilities imposed on us. The simplest way to explain this is that before *Greene County* we circulated what we believed to be a draft environmental impact statement consistent with the requirements of the National Environmental Policy Act. Each applicant's impact statement was amplified by deficiency analysis by our staff, and the revised statement was then circulated among agencies for the review required by NEPA. The court said "No" that is not an independent environmental impact statement; you are just circulating the applicant's statement; you must make an independent evaluation.

We appealed to the U.S. Supreme Court. The Supreme Court denied certiorari. Therefore, we had to ask for additional people to prepare and circulate the statements the way the court said we should. Whether the Congress intended it that way, I do not know. The court said you did, so I have to abide by their ruling.

NEED FOR EXPERT PERSONNEL

In any event, Greene County is still with us. NEPA is still with us. We take our environmental responsibilities very seriously. At the same time, we also believe that we ought to have an adequate supply of energy in the country. To carry out both responsibilities, we need people, experts, not simply clerical personnel. We need biologists; we need engineers; we need ecologists, those kinds of disciplines to analyze applications and, of course, to always examine the energy alternatives to any project.

ENERGY SYSTEMS

We assist the Atomic Energy Commission, the Corps of Engineers, the Department of Interior, and others, and they assist us, to the extent of our respective abilities, in analyzing various power projects—but I prefer the term energy projects—within the country. We are dealing with energy systems and not simply a piece of hardware some place,

29-353 O - 74 - pt. 5 - 28

stuck out in the country. It is highly integrated. It requires highly skilled personnel.

BARE-BONES BUDGET

I will say this: While we could use, probably, 100 or 200 more people than I have on this project, I consider this a bare-bones budget. It is extremely difficult to hire, to employ, the kind of competence that you need. It is better not to hire, as far as I am concerned, until we can get the right persons. So I say it is a bare-bones budget. You probably hear that from every Commission that comes before you. I do not know what you hear. All I can tell you is that this one is pared down considerably. I think within these resources, though, we can carry on, and, hopefully, we can hire the personnel.

Last year we were unable, actually, to fill the positions that you had authorized for us, even though we made an in-depth effort by all personnel. So this year I hope we are more successful.

I think I have said enough for the time being, and I will respond to questions.

My whole statement will be in the record, will it not?

Senator BELLMON. Yes, your complete statement has already been incorporated in the record.

BLUE RIDGE CASE

Senator BELLMON. Senator Hatfield, do you have a question?

Senator HATFIELD. Mr. Chairman, I have one more question.

Getting to this personnel workload, last week in our Interior Committee we were holding a hearing relating to the wild and scenic rivers designation for the New River in the Carolinas and Virginia. And in the testimony, it came up that there had been a case pending before your Commission for 9 years.

Mr. NASSIKAS. That is right. *Blue Ridge.*

Senator HATFIELD. And the Interior Committee expressed amazement as to why, in the span of 9 years, the Federal Power Commission had not rendered some kind of a decision.

Now, could you give us a little explanation of that, because the Interior Committee designated me to bring the message back.

Mr. NASSIKAS. Well, I might respond to that, by asking how much of the time consumed was as a result of their participation in this case.

Senator HATFIELD. In legislation?

Mr. NASSIKAS. And the studies which they presented on this which succeeded in delaying the project, also.

Of course, it is difficult to apologize for regulatory lags that I do not endorse and my colleagues do not endorse. This case perhaps started in 1965 or 1966. I have been Chairman of the Commission since 1969.

ENVIRONMENTAL DELAYS

We were ready to decide that case about a year and a half ago. Environmental interveners came in, as well as State attorneys general. We felt that we should reopen the proceedings. Also, the *Greene County* decision came down, and we felt that because of *Greene County* and NEPA and the interventions, that it would be better to go through

the due process which is necessary to decide the case, rather than to decide it, then go up on appeal to the courts and get reversed.

Senator HATFIELD. That was a year and a half ago.

Now, what about the first 7½ years?

Mr. NASSIKAS. The first 7½ years, there were all kinds of evidence presented. It was a moribund case for quite a while, but Interior's participation in the case consumed several years.

Senator HATFIELD. In other words, it was not necessarily the quality of personnel or the inability to hire the personnel you just referred to?

Mr. NASSIKAS. I do not think so. I think that——

Senator HATFIELD. When are you going to get a decision?

Do you know?

Mr. NASSIKAS. Let me answer this very seriously, Senator. If the Congress will let us go ahead here and decides not to pass a bill to stop the project, or to study it another 5 years, which is the nature of the bill, as I understand it——

Senator HATFIELD. No; we are ready to propose a wild and scenic river and remove the issue.

Mr. NASSIKAS. Well, whatever it is, if you remove the issue, we of course will not be privileged to decide this.

Senator HATFIELD. If you are so privileged, how much longer will it take you?

BLUE RIDGE DECISION

Mr. NASSIKAS. If we were privileged to decide the case, I will give you an estimate on that. Barring any other interference in this proceeding, I will say in 3 to 6 months.

Senator HATFIELD. Thank you very much. I will take that back to the committee.

Mr. NASSIKAS. Is my estimate about in the ballpark?

Mr. BROOKE. Chairman Nassikas, your estimate is certainly in the ballpark.

I might add this in responding to the question of Senator Hatfield. We arrive at Commission decisions with oft-time lengthy deliberations. But beyond that, Senator, you have to recognize that there is an appellant remedy that intervenors may pursue in the courts which might take many more years.

SCENIC HUDSON

The *Scenic Hudson* case, the celebrated *Storm King* case in New York, was in the courts for many, many years after the Commission initially issued a license for its construction long before I came to the Commission back in 1968, and that project is just now being constructed—while still subject to court attack.

Senator HATFIELD. I appreciate the fact the courts can cause further delay, but we were interested in just the Federal Power Commission's 9-year stint on this case.

Thank you.

Mr. NASSIKAS. We are ready now.

Senator HATFIELD. Three to 6 months?

Mr. NASSIKAS. Three to 6 months.

Senator HATFIELD. I have no other questions, Mr. Chairman.

Senator BELLMON. Senator Young, do you have any questions?

Senator YOUNG. I have no questions.

Senator BELLMON. Senator Schweiker?

Senator SCHWEIKER. I have no questions.

Senator BELLMON. Mr. Chairman, I have a couple of points I would like to raise with you.

FPC AND THE ENERGY CRISIS

I notice on page 3 of your statement that you stated the Federal Power Commission—it is the last sentence in the first paragraph—"the principal governmental reliance in meeting U.S. energy problems."

Mr. NASSIKAS. A principal governmental reliance. It should say one of the principal reliances.

Senator BELLMON. Which is "the"?

Mr. NASSIKAS. There is no "the."

Senator BELLMON. Do we need "the principal"?

Mr. NASSIKAS. I would like to see it the principal Government agency. Of course, the Federal Energy Administration eventually, once it is authorized to go ahead, I suppose will become the principal Federal agency responsible for energy. But so long as we control natural gas, which is one-third of the U.S. energy supply, and then 15 percent of the electric power resources through our hydroelectric licensing responsibility, we still are responsible for a big sector of energy. And that is why I say we are "a principal reliance." Whether we should continue to be or not I do not know.

Senator BELLMON. Well, if you are a principal governmental reliance, do you take the responsibility for the present energy crisis?

Mr. NASSIKAS. I take responsibility for whatever phase of the energy crisis that we have the responsibility for; namely, on natural gas within the framework of a very narrowly structured statute which the Congress passed, not I.

NATURAL GAS DEMAND STIMULATED BY LOW PRICE

We, I believe, have succeeded in stimulating artificial demand for natural gas by underpricing it. We have succeeded in drying up sources of capital rather than having a vast exploration and development effort sufficient to produce the gas that is necessary at a price which will serve consumers' interests in continuing service, even though they have a higher price.

Now, then, we have a statute which court after court has interpreted since 1938 as being cost-based, and states in case after case that you can consider other factors, but that your point of departure and your primary reliance must be on cost. It is virtually impossible to regulate as the market would, because the market is not necessarily at all times a cost-based market. Markets do not work that perfectly except in Adam Smith's textbooks and in some economists' textbooks.

Second, as to responsibilities—and again I am not apologizing for anything, and I think I should tell you what the realistic facts are. After all, one-third of natural gas is unregulated. We regulate two-thirds. We do not regulate industrial sales, by the way, either, and that is about 1.5 trillion cubic feet, or 10 percent of the interstate market that we regulate. That is another problem with the regulatory statutes.

We do not have authority, such as that under sanctity of contract principles, to establish rates solely on noncost factors or economic and market factors that I include.

RESPONSIBILITY FOR RELIABLE ELECTRIC POWER

In electric power regulation, Congress has assigned to us the responsibility under section 202(a) of that act for a reliable, abundant, low-cost supply of power throughout the United States. That is virtually where we stop, except we do not have authority to really carry out that mandate. We are carrying it out through reliability councils, through working with power pools throughout the United States, and giving industry the primary role to develop electric power resources.

RATE DESIGN

Next, on rate design—and this is the final point—we have a Federal-State system in the United States which none of us wants to change. Through the Federal-State system, the State regulatory agencies are responsible for 93 percent by dollar value of the regulation of the private electric utility industry. We are responsible for 7 percent of electric power sales, bulk wholesale in interstate commerce, 15 percent by kilowatt-hours. The States have authority over 85 percent by kilowatt-hours.

NATURAL GAS RATE DESIGN

Regarding natural gas, whatever we may do in rate design, for instance, our jurisdiction may or may not stop quite at the city gate although so far we have adopted a policy of stopping at the city gate. If we impose incremental pricing, for instance, where we say that a consumer must buy natural gas at the incremental cost of delivering that gas, let us say $1.50 per Mcf from Algeria, which is a realistic figure in terms of applications that we have pending before us—and we say that that gas should be sold for resale by the pipeline at $1.50 per Mcf to a distributor, the distributor can then charge his customers for the gas on a rolled-in basis at a cost which might be at 50 cents rather than $1.50.

Thus, the effectiveness of rate design split responsibility is not good. I think the direction we should go is less regulation to try to fill up some of these gaps. I think less regulation is going to be much more successful, especially as to natural gas. Let us have an unregulated market, that is except by antitrust and other considerations.

Senator BELLMON. Well, representing, as I do, a gas-producing State, I agree with you. But I could not help but be at least partially persuaded by the arguments I heard Senator Pastore make on some Senate debate one day, in which he pointed out that once his constituents in the State of Rhode Island are connected to the natural gas lines, and once they have bought natural gas appliances and have made their investments in gas heating equipment and this sort of thing, that there needs to be some kind of regulatory body between his consumer, his customer, his constituent, and the gas supplier.

His objection was that we should not do away with the FPC's regulatory role, but rather that the FPC should become more realistic in

the price of gas that is established, so that there will be more realistic production.

COMPETITIVELY PRICED NATURAL GAS

Are you making an effort to price gas competitively with other sources of fuel?

Mr. NASSIKAS. We are making an effort. However, the statute, in my opinion—and this is subject to disagreement——

Senator BELLMON. You mentioned it is a cost-based——

Mr. NASSIKAS. It is a cost-based statute.

Senator BELLMON. Well, is this the hangup?

Do we need to change the statute?

Mr. NASSIKAS. Yes, sir. If we do not have deregulation of gas, we should change the statute to enable the Federal Power Commission to prescribe prices on the basis of commodity cost, cost of intercompetitive fuels, economic and market factors, in addition, and specifically state the FPC does not have to prescribe prices on the basis of cost or on the basis of public utility concepts.

This was essentially the sanctity of contract bill that was before the Senate last term. This is, however, not my first choice. My first choice is to deregulate new gas commitments under proper guidelines.

CONSUMER PROTECTION

Senator BELLMON. In the event of deregulation, what happens to Senator Pastore's constituents?

Mr. NASSIKAS. Under deregulation, his constituents are going to be very amply protected, at least if we have deregulation along the lines that I want, in the sense that we would still retain our jurisdiction.

My colleagues and I differ on this. I say that we should retain our jurisdiction to review in the pipeline companies' cost of service whether or not the purchase price that they have paid is reasonable, so we continue our regulation from that standpoint.

Second, even if we did not have that, Senator Pastore's constituents would be protected nicely by Archie Smith up there and his colleagues on the Rhode Island State Commission who control, not the price of gas that the pipeline is charging, but rather all of the other costs that the distributor is paying for.

Let me give you another example. I gave this to Senator Pastore, too; I gave it to him recently.

Let us say the price in Providence, R.I., is $2 for 1,000 cubic feet. That is a pretty good figure; it is fairly accurate. And they are paying up there, the wellhead price of gas on the average would be about 25 cents; the delivered price would be more, not the wellhead price.

WELLHEAD PRICE OF NATURAL GAS

Now, let us say in a freer market, the wellhead price on average doubled. Suppose it went to 50 cents. Still, on that homely example, the price to that constituent would be $2.25 or a little over a 10-percent increase, which would be a lot less increase than his increase in electricity costs, which are also influenced by the volatility of fuel prices. On average, about 40 percent of the increase in the electricity prices is a result of increases in fuel costs.

Senator BELLMON. Now, your statements make some sense. We may want to talk to you later about some legislative remedies to the problem.

Let me go on to another question here, to get back to your budget for just a moment.

FUNDS FOR PAY INCREASE

According to your testimony, you have not been able to hire the people that the committee authorized in the current fiscal year. This would mean, then, that you have some excess funds still in your budget that have not been expended.

The question is, can you use those funds to absorb the 1974 increase in pay costs that you have pointed out?

Mr. NASSIKAS. We do not think so, because, again, I do not want to be too optimistic, but we have a crash program to hire people. On the other hand, there may be some surplus funds, some surplus funds, which could be utilized. I would be less than candid if I said otherwise, but I cannot give you a quantified figure right now. Perhaps my staff could submit one. Would that be all right?

Senator BELLMON. We would appreciate it if you could submit that figure for the record.

[The information follows:]

The Commission has a current appropriation of $27,000,000 for FY 1974 and has requested a $1,696,000 supplemental to cover pay increase costs. The supplemental request has been reduced by the House by $96,000. If we are not required to pay from FY 1974 funds the back pay costs arising from the President's decision to delay the pay increase in FY 1973, we could absorb an additional reduction of $200,000.

NEW POSITIONS

Senator BELLMON. I notice also, Mr. Chairman, using the chart that you submitted on page 2 of your statement, that in 1973 the Commission had 1,263 positions; in 1974, 1,297; and 1975, 1,337.

Mr. NASSIKAS. Yes, sir.

Senator BELLMON. And you are projecting only 40 for the next year?

Mr. NASSIKAS. Yes, sir.

Senator BELLMON. It seems like the agency has been growing rather rapidly.

Mr. NASSIKAS. Yes.

Senator BELLMON. Is there some reason for the rapid past growth?

Mr. NASSIKAS. Yes. I think probably the largest two or three reasons are the shortage of natural gas and our curtailment programs, allocations programs, and fuel rate designs have required more personnel, both on the gas and electric side. Second, the increase in our environmental responsibilities, as a result of not only NEPA but air quality, water quality, and the proliferation of requests from other departmental agencies, as well as the Congress, that are justified, all of which are justified, I think have added to our resource demands.

We have pioneered in a number of projects which have required extensive personnel. We are setting rates now in a way that this agency has never done. We have a data processing system which I think is going to be a model for all regulatory agencies when we are completed with it. But it will place the Federal Power Commission on

a computerized basis where we can compete very effectively with all other regulated industry. And I think as regulators, I think we should have at our command the same kind of evaluation with computers as regulated industry has. We are almost there. We are about half to two-thirds of the way there.

FUTURE GROWTH

Senator BELLMON. Do you anticipate, then, that this growth in personnel will continue into the future?

Mr. NASSIKAS. I do. I cannot envision any cutdown in environmental responsibilities, but rather increases. The gas shortage is pervasive, and I cannot envisage anything except more work in the area of curtailments. I, therefore, believe it is going to continue.

ELECTRICAL INDUSTRY SYSTEMS EVALUATION

Senator BELLMON. I notice also in the same chart that you point out that you have quite a lot of people working with power, electric power industry systems evaluation. Is this an area where there is a conflict between the Federal Power Commission and the AEC?

Mr. NASSIKAS. No. Our systems evaluation is largely reliability of the systems to supply power to the consumers of the United States. AEC's responsibility is not reliability of the systems but rather only the nuclear aspect of the systems. In fact, while we know nuclear is going to become a very predominant source of electric power in the next 20 or 30 years, today less than 4 percent of our power is generated by nuclear energy. Whereas hydropower is far more important as of right now to our economy than nuclear power is.

We hope that the nuclear program will get back on track. We are 30,000 megawatts behind, Senator.

DUPLICATION BETWEEN FPC, AEC, FEO, AND INTERIOR

Senator BELLMON. Then, is there building potential for conflict under present law, and do we need to be concerned, as nuclear energy takes over more electric power generation, that the AEC's role will conflict with your traditional role?

Mr. NASSIKAS. I believe that we could eventually get into some possible conflict, depending upon who is cooperating with whom. I have advocated it, and now maybe is the time to say it. I think that if the research activities of the Atomic Energy Commission are spun off to ERDA or to some other agency, then AEC becomes a licensing agency for nuclear systems. And I think it would be very logical to establish a Federal Energy Commission that would consolidate the licensing and economic regulatory functions of the Federal Power Commission and AEC. This is not a new concept; I have said this before over the past 2 years.

Right now there is no conflict. We are working coordinately together, and we will continue to do so.

Senator BELLMON. Well, is there duplication or overlap?

Mr. NASSIKAS. I do not think there is. There has to be some where you have one licensing agency determining and examining energy alternatives; for example, as to NEPA, we examine energy alterna-

tives for AEC. They examine it also. To that exent, their licensing process for a nuclear plant is set up differently than is ours. There are some duplications, but they are minor at this stage.

I was going to say there are some duplications, too, between Interior and the Federal Power Commission, and the Federal Energy Office and the Federal Power Commission. That is why I would like to see some more centralization of responsibility and accountability in one or two agencies, rather than five or six, as it is now.

RESTRUCTURE FEDERAL REGULATIONS

Senator BELLMON. Well, would you agree that it is going to be difficult for this country to work its way out of the present energy shortage unless we do restructure the Federal regulatory and policy-making efforts?

Mr. NASSIKAS. Yes, I do. I think that one of the most fundamental undertakings that will give us great rewards would be to restructure the policy establishment, the energy policy establishment, so that we can have certain policies upon which private industry can depend. You have the Environmental Protection Agency, for example, establishing air quality requirements, in advance of technology, and insisting that these standards be enforced. And then you have another agency, the FPC, trying to establish a reliable supply of power through the United States. You have a square conflict which ought to be resolved by somebody, by a centralized agency, in my opinion. That is just by way of an example.

Senator BELLMON. Well, I agree with your statement here on page 5 that we have been outstripping our additions of natural gas for several years, and the other things you say about a deficiency growth in years to come. It is obvious to me that we have been doing things wrong in the past, and we need to take some approaches or we are really going to have ourselves a serious problem.

Now, Mr. Chairman, there is another vote, but I would like to just say one thing before I have to recess the committee briefly.

Your statement that gas building has now reached a peak may lead to some wrong conclusions, in that some may feel that the low price of interstate gas is not a deterrent to drilling. I think the record ought to show that most of the gas coming from these new wells is going intrastate where the prices will double, maybe triple, in some cases.

Mr. NASSIKAS. Certainly, a substantial part of the drilling is intrastate, and certainly part of the drilling is due to the lease program, not as result of our price. It is complex.

Senator BELLMON. We will recess the committee very briefly while we vote.

[A brief recess was taken.]

Senator BELLMON. The subcommittee will come to order.

Do any other members of the Commission have comments they would like to add to the record?

Mr. MOODY. Senator, I think not. The Chairman is always a very effective spokesman, as I think is evident.

I disagree essentially on natural gas pricing policies, but I do not think there is anything that I have to add at this point, unless you have specific questions.

VARIATIONS IN NATURAL GAS RESERVE ESTIMATES

Senator BELLMON. Well, I would ask one question of the Chairman. He makes reference on page 8 to the natural gas reserve study which shows a considerable difference between findings of that study and the American Gas Association's estimate.

Do you have some obvious explanation for the difference?

Mr. NASSIKAS. Not really. I think it is basically a difference—according to my staff report, it is attributable to differences in judgment. And the magnitude of the difference is within the realm of appropriate statistical forecasting, because you are dealing in such large numbers. About 49 percent of the total gas reserves in the United States, 258.6 trillion cubic feet, were examined by Government field teams. Two equally competent, let us say, geologists or petroleum engineers with experience in the field could look at the data, examine it, and arrive at a different conclusion.

I had hoped, of course, I wish that we had found more reserves, in the sense that I might breathe a little easier, that we do not have as bad a gas shortage as we thought. Actually it is somewhat worse.

I have my own ideas, too, as to what some reasons might be for the difference. I mean, companies may have various, shall we say, estimates for varying purposes, and it depends on the forecaster and what his motivation is. I do not believe—in fact I will say this—I do not believe that the difference is attributable to, shall we say, any sinister motives.

Senator BELLMON. So your conclusion is that the conclusion of your study was to substantially bear out the estimates that the American Gas Association had made?

Mr. NASSIKAS. As of that time. I suppose I should add here, Senator Bellmon, a recent study our staff conducted of 31 leases on the continental shelf south of Louisiana showed about 1.7 trillion cubic feet of reserves greater than was reported for the entire south Louisiana area by AGA for the years 1971 and 1972. In other words, this particular specialized study shows that our staff's forecast is higher for that area by 1.7 trillion cubic feet for those years.

We are asking for comments and we are trying to find out what the reasons are for that difference. Perhaps this is easily explainable; perhaps it is not. We will have to see after we complete our study.

Senator BELLMON. Mr. Chairman, that is the end of my questions.

Senator STENNIS. Well, I did not get to be with you in the beginning, but I wanted to be here in time to thank you for conducting this hearing and to greet these gentlemen, too. I have a few questions which I'd like to ask at this time.

SOLUTION OF OUR FUEL PROBLEMS

Senator STENNIS. What actions has the Commission taken to anticipate and solve continuing fuel problems?

Mr. NASSIKAS. Our activities in this area have taken a number of directions. For example, following enactment of the Emergency Petroleum Allocation Act of 1973, the Commission by its Order 497 of December 7, 1973, instituted a monthly reporting by all generating electric utilities of their projected electricity demands, and the specific primary energy resources such as oil, coal, natural gas, hydroelec-

tricity or nuclear energy which they planned to use to satisfy the demands. The data on oil requirements were supplied to the Federal Energy Office and have been the basis for that Office's monthly determination of heavy fuel oil allocations.

The FPC staff analyzed the utility responses and other information to identify opportunities for energy conservation and for substitution of primarily coal-based electricity for oil-fired generation, either on an individual system or by transfers of electric energy between systems, and supplied these evaluations to the Federal Energy Office.

Inevitably, there have been a number of special cases of utility needs for oil deliveries, occasioned by unexpected outages, transportation limitations or local area protection problems. The FPC staff has extensively advised the Federal Energy Office on the merits of such special cases, both at the Washington level and by coordination between the respective regional offices of the Federal Power Commission and the Federal Energy Office.

In parallel with its assistance to the FEO in establishing oil allocation for electric utilities, the FPC also took the lead in encouraging the greatest possible transfer of coal-based electricity from the Midwest and South into the Northeast, to minimize oil consumption and avoid possible electricity shortages.

I will also note that FEO's efforts to promote reconversion of oil-fired electric plants back to coal were based in large part on data gathered by the FPC last year in anticipation of a possible fuel emergency.

Another avenue of investigation that the FPC staff has pursued involves the potential impact of various Federal, State, and local air and water quality standards on the ability of electric utilities to produce needed electric power. Our staff report of February 25, 1974, indicated that if existing air quality standards are rigidly adhered to, many of the Nation's electric powerplants will be forced to shutdown due to the unavailability of environmentally acceptable fuels. This will probably result in a significant increase in the number and extent of interruptions to our electric energy supply.

We have also established a Technical Advisory Committee on Fuels in connection with our National Power Survey which is examining both the short- and long-term questions of utility fuels requirements, fuels availability, and the potential environmental impact of utility fuel usage. On January 16, 1974, this Committee reported that strict implementation of existing or proposed environmental criteria related to strip mining and air quality standards could result in electric energy shortages of almost 40 percent in 1975.

We believe that the long-term solution of our fuel problems involves an increased reliance on generation from nuclear and coal-fired generation plants. In the area of nuclear plants, a redoubled effort must be mounted to solve the environmental and safety issues which have developed in this area, so that present day lead-times of about 10 years can be shortened to a more reasonable period. With respect to coal generation, the Environmental Protection Agency believes that flue gas desulfurization facilities have been commercially proved. The FPC staff, however, has expressed the view that such facilities are neither available in the quantity needed nor do they have the reliability required for operating steam-electric plants. The FPC staff

believes that there are other methods, such as a Supplemental Control System, which will allow utilities to meet their requirements of adequate and reliable electric power supply while simultaneously conforming to the health and welfare principles of the Clean Air Act. To use such a system will require adjustments in emission regulations but will not jeopardize ambient air quality standards established for health and welfare. However, unless this viewpoint is accepted by the EPA there exists the real likelihood of extensive power shortages due to utilities being either unable to obtain environmentally acceptable fuels or unable to obtain the necessary desulfurization facilities.

NATURAL GAS REGULATORY POLICIES

The Federal Power Commission has since 1969 taken many actions consistent with its authority under the Natural Gas Act, as interpreted by the courts, to elicit needed additional supplies of natural gas. The regulatory policies we have developed in this period have tested the frontiers of our jurisdiction under the Natural Gas Act in our efforts to reverse the declining trend in natural gas exploration and development. These actions include the following:

1. Establishment of new just and reasonable ceiling rates for all major gas-producing areas.

2. Promulgation of an optional certification procedure for new commitments of gas to interstate pipelines.

3. Enactment of accounting rules encouraging pipelines to make advance payments to producers in return for drilling commitments and gas dedications, which policy has resulted in a total of approximately 10.3 Tcf of proven reserves in the lower 48 States.

4. Extension of prior 60-day emergency procedures to 180 days for the 1973–74 winter heating season, subject to further Commission review and analysis. As of February 11, 1974, about 200 Bcf were dedicated for delivery to the interstate market under the 180-day emergency procedures.

Under the previous emergency procedures, about 1.2 trillion cubic feet of gas was dedicated to interstate consumers through 1973: about 800 Bcf in limited-term certificates since 1971 and almost 400 Bcf in 60-day emergency purchases since 1970.

This Commission has also taken significant policy initiatives to stimulate competition in the exploration and development of natural gas including:

1. Exemption of over 4,000 small producers from area price ceilings in recognition of the relative greater degree of risk associated with their activities, the capital needs and accessibility of this group, and comparatively greater regulatory burdens.

2. Placing sales by pipeline producing affiliates on a parity with independent producers from new leases so as to provide incentives for new entrants.

3. Prescribing minimum rates in certain producing areas where the particular structural evidence so required.

In addition to the above actions and in order that the Commission may improve its capability in the measurement of supply and demand and thereby enhance its ability to effectively regulate and provide a continuing reliable supply of gas to meet consumer demands, the Con-

gress approved the Commission recommendation to undertake a National Gas Survey by providing funds for the Agency's fiscal year 1971 budget. Some of the more important questions to be examined in depth by the Survey are (*a*) the precise dimensions of the gas supply problems, (*b*) the extent to which pipeline expansion of facilities is threatened by inflation and uncertainty of new gas supplies, (*c*) the role of natural gas in air pollution control, (*d*) the supply-price-demand relationship, (*e*) the potential impact of interfuel competition, (*f*) import-export policies, (*g*) the role of synthetic fuels in the long-term supply of gas, and (*h*) the regulatory role in relation to these issues. All of the task forces which assisted the Commission and the staff in the Survey have completed their final reports and I anticipate the publication of all task force reports and the Commission's analysis of these data and information by midyear.

Despite our recognition of the gas shortage and the adoption of policies designed to improve gas supply, the shortage has nevertheless persisted and the Commission has taken a series of actions, including the establishment of curtailment priority categories, to assure that the most vital requirements of natural gas users can be met.

CONSERVATION RESEARCH PROGRAM OBJECTIVES

Senator STENNIS. Briefly discuss the objectives of the Conservation Research Program which is a new activity requested by FPC in fiscal year 1975.

Mr. NASSIKAS. The objectives of conservation research in the Federal Power Commission are related to the Commission's statutory responsibilities.

In the Federal Power Act, the Commission is required to regulate electric energy "with due regard to the proper utilization and conservation of natural resources." Conservation and efficient utilization of electric power, fuels and natural resources have been long standing concerns of the Commission. Both the National Power Survey and the National Gas Survey now incorporate considerations of conservation and efficient utilization of the natural resources required in the operation of the electric and gas utility systems. The Commission has recently issued several orders calling upon the electric utilities and gas pipelines to adopt programs to conserve fuels in their own operations and to assist their consumers in making more efficient use of energy. The overall objective of conservation research is to provide the Commission with the information it requires to regulate effectively, so as to promote conservation.

As the demand for energy grows, and the difficulty of obtaining new energy resources mounts, the need to promote efficient utilization of the natural resources upon which energy production depends becomes even more important than in the past. Regulation of the electric power and natural gas industries will play an increasingly important role in these efforts. To assist the Commission to regulate so as to meet its statutory obligations regarding conservation, and to provide the regulatory framework within which utility growth can take place, the Commission should be apprised of the technical and economic latitudes for conservation measures. Moreover, the Commission must be informed of the way in which regulatory actions or legal constraints

may influence the adoption of potential conservation measures. Dedicated staff efforts are required to meet the needs of the Commission in this area. The Commission expects that the staff efforts will also provide some technical leadership in indicating the ways in which utilities may apply their own resources to assist consumers to make efficient use of energy.

OUTLOOK FOR FUTURE ELECTRIC POWER SHORTAGES

Senator STENNIS. Now, on pages 3 and 4 of your statement you talk about potential crippling energy shortages and their potential disastrous effects. Could you be more specific on the outlook for future shortages?

Mr. NASSIKAS. Two primary factors which can result in electric power shortages are the unavailability of fuels and inadequate levels of generating reserves. The fuel supply problem has many facets. For example, in 1972 about 26 percent of all steam-electric power generation came from gas-fired plants. Since many major gas suppliers are already experiencing curtailments, and the situation is expected to worsen in the future, gas will become increasingly scarce for electric utility use. The only feasible alternative fuel for plants presently burning gas would be oil. But, since most of any increased oil consumption by electric utilities would come from foreign sources, such a shift from gas to oil would not only aggravate the Nation's balance of payments problem but would also subject the fuel supply of such plants to the possibility of curtailments, such as were experienced during the recent oil embargo.

There are other fuel supply problems on the domestic scene. During the last year and a half the FPC has been assessing the ability of powerplants to comply with existing Federal, State, and local clean air regulations. Our February 25, 1974, report of this assessment indicates that by 1975 the Nation's electric power supply reserves will be critically deficient in seven of the nine electric reliability areas if there is continued insistence on strict adherence to existing air quality standards. If these standards are rigidly enforced, many steam-electric powerplants could be ordered to shut down. If this occurs, reserves for the entire United States would decline from 24.9 to 7.4 percent in 1975 and from 23.1 to 13.8 percent in 1977. Since needed levels of installed reserves usually range from 15 to 25 percent, these lower levels are unacceptable from the standpoint of reliability of service and are indicative of a probable substantial increase in the number of power shortages.

In a similar vein, on January 16, 1974, the National Power Survey Technical Advisory Committee on Fuel reported on short-term electric fuel supplies. That report pointed out a potential inability of existing coal mines to supply adequate amounts of coal in the short term to meet our energy needs. This problem will be compounded by the possible reconversion of 46 oil-burning plants to coal. A key question concerned the amounts of low sulfur coals available to meet increased demands. A possible shortage of electric power generation in 1975 of 37.6 percent was foreseen by the Committee, if proposed restrictions on strip mining and rigid enforcement of air quality regulations are in

effect. Comprehensive studies by the EPA and the FPC's Office of Environmental Quality also indicate that there will not be adequate supplies of environmentally acceptable fuels to meet all the requirements of State air quality implementation plans.

The second factor which could possibly result in future electric power shortages is the continued pattern of delays in installing needed generating capacity. As an example of such delays, there are presently 35 generating units 300 megawatts or larger and totaling 30,363 megawatts, which were initially scheduled to be in service before this summer but which have been delayed. The impact of such delays, which amount to about 8 percent of the Nation's installed generating capacity includes in one extreme, curtailments of service such as scheduled rotating blackouts or unplanned interruptions. Other aspects of such delays include the hasty purchase of short lead time capacity such as combustion turbines. Since 26,120 megawatts of the capacity presently delayed consists of nuclear units, approximately 1 million barrels of oil equivalent per day will be required to replace the generation from these units. This not only aggravates an already critical fuel supply problem, but results in substantially higher power costs to the Nation's electric power consumers.

STAFF REPORT ON GAS CURTAILMENTS

Curtailments of natural gas deliveries by interstate pipeline companies have increased continuously since November 1970 and are occurring on a year-round basis on some pipeline systems. A recent staff report on gas curtailments "Requirements and Curtailments of Major Interstate Pipeline Companies, Staff Report, January 1974" shows that the anticipated deficiency in the firm contract requirements for the 12-month period ending August 1974, exceeds the actual deficiency for the preceding 12-month period by 53 percent. In absolute terms, for the 12-month period ending August 1973, curtailment of firm requirements was about 1 trillion cubic feet, and for the 12-month period ending August 1974, is projected to be about 1.6 trillion cubic feet, which represents an increase of more than a half trillion cubic feet. The report shows that for the winter period, November 1972 through March 1973, curtailment of firm natural gas requirements equaled about 0.4 trillion cubic feet, whereas the deficiency projected for the winter period 1973–74 amounts to nearly 0.6 trillion cubic feet, or an increase of almost 40 percent over the previous winter. Although curtailments fluctuate among particular pipeline companies, the imbalance on a nationwide basis between natural gas supply and demand has steadily widened at an alarming rate. I see no slowing or reversal of this trend within the next few years.

The longer-term future was discussed in a recent staff report on national gas supply and demand "National Gas Supply and Demand, 1971–90, Staff Report No. 2, February 1972." Based upon an analysis of current supply-and-demand data the major report findings included a projection of continuing and increasing disparity between the theoretical demand for gas and available supply; a projection that domestic production would peak in 1973 or 1974; the expectation of a continued heavy reliance on imports and other supplemental gas supplies

to 1990; and projections of a continued decline in the reserve inventory of the contiguous 48 States to 1990. Because of the timeframe embraced by this report, history must ultimately be the judge as to the propriety and shortcomings of these prognostications.

HYDROELECTRIC SITES

Senator STENNIS. Bring the Committee up to date on the Commission's efforts to identify additional hydroelectric sites. How many new sites do you foresee and what is the power potential?

Mr. NASSIKAS. The Commission staff maintains an up-to-date inventory of potential hydroelectric sites based on information available from industry and from various river basin surveys and project investigations. The basin studies encompass those by various Federal and State agencies including the water resource appraisal studies prepared by the Commission staff. Project investigations include those by Federal and State agencies, electric utilities, and others, including studies made in connection with applications for licenses and preliminary permits. The inventory contains information on over 1,400 undeveloped sites. The possibility of developing a particular site depends on engineering, economic, environmental, and other considerations which vary over time. The available information indicates that the sites have engineering feasibility. Some have been shown to be economically justified as well. Many, however, have not been analyzed sufficiently to evaluate their economic feasibility. In total, the undeveloped potential conventional hydroelectric capacity is approximately 120 million kilowatts, capable of producing some 427 billion kilowatt-hours annually.

POWER POTENTIAL OF UNDEVELOPED HYDROELECTRIC PROJECTS

Senator STENNIS. How many undeveloped hydroelectric projects has the FPC identified and what is the power potential?

Mr. NASSIKAS. The Commission staff has identified over 1,400 undeveloped conventional hydroelectric sites in the United States. The total conventional capacity estimated for these 1,400 sites is about 120 million kilowatts, capable of producing about 427 billion kilowatt-hours annually. However, nearly 80 percent of this capacity, or 100 million kilowatts, could be developed at about 400 of the sites. Currently 21 of the potential developments are under construction and about 100 more appear to be possible of development during the next 20 years.

BACKLOG OF LICENSE APPLICATIONS

Senator STENNIS. In view of the existing energy situation, what actions are being taken to reduce the backlog of license applications and expedite or reduce time required for licensing review?

Mr. NASSIKAS. All applications for licenses which would allow construction of new hydroelectric generating capacity or additions of new capacity to existing plants are assigned top priority and processed as quickly as possible. This does not reduce the overall backlog of applications but it is effective in expediting the applications involving new generating capacity. In the past 5 months the Commission has

issued two preliminary permits, three licenses, and one amendment of license involving more than 1,600 megawatts of new capacity.

In addition, by Order No. 501 issued in January 1974, the Commission amended its regulations for the filing and processing of applications for license. The amendments will provide a sufficient number of copies of applications and will reduce the time required by staff to process an application. Experience had shown that the initial filing of an application was often deficient in some respect, necessitating the filing of supplements and amendments to the application. In the past, staff had undertaken the burdensome task of incorporating such changes into the original application. The amendments shifted this burden to the applicant. The amendments also provide for an initial filing of an application for review by the staff, and the filing of the requisite number of copies only after the application is found acceptable for processing.

NEW STAFF FOR ELECTRIC CASES

Senator STENNIS. Five new positions have been requested for the Formal Proceedings, Rulemaking, and Litigation activity in fiscal year 1975. How do you justify this request when the workload is estimated to increase only slightly in fiscal 1975?

Mr. NASSIKAS. In our budget for fiscal 1975 we are seeking five additional people for Formal Proceedings, Rulemaking, and Litigation in order to reduce our backlog of cases. The buildup in our workload is occurring much more rapidly than we originally estimated in our budget submission. In the first three quarters of fiscal year 1974, we have received 59 formal proceedings. This is 14 more than we estimated to receive during the entire fiscal year. We estimated completion of 45 cases in fiscal year 1974, through the third quarter of fiscal year 1974 we have completed 20. Our total backlog at the beginning of the fourth quarter is 135 formal proceedings. We believe that without additional staff in fiscal year 1975 our backlog will become intolerable. We have made every effort to streamline our procedures including the development of a fully computerized program for preparation of cost-of-service studies.

In addition to the rapid buildup of our caseload, additional staff effort will be required to implement the Commission's rulemaking Docket No. R–463 requiring the use of future test-year data for all increases involving more than a million dollars. Because of the energy conservation program, many companies are seeking relief as the result of a decline in revenue. This also will add to our workload.

It is generally necessary for several staff people to devote several man-months each to the processing and final disposition of a major rate increase proposal. This is true at the present time since almost all of our current cases are undergoing full formal litigation. With the continuing rise in the cost of money, fuel, labor, and equipment for system expansion, we expect the number of formal proceedings to continue to increase. The extent and character of the workload is such that a minimum of five new positions will be required if substantial delays in the processing of presently filed and anticipated formal rate cases are to be avoided.

29-353 O - 74 - pt. 5 - 29

Senator STENNIS. Can't the efficiency of this activity be improved, thereby reducing the number of additional positions needed?

Mr. NASSIKAS. We have been making every effort to improve the efficiency of this activity thereby keeping to a minimum the number of positions required. For example, we have largely eliminated field investigations with respect to proposals for rate increases and most other types of formal electric rate proceedings. We have devoted considerable manhours to the development of a cost-of-service program utilizing the computer. We are beginning in the month of April to obtain our first output from this program; the staff formal evidence in about four cases to be served in the month of April will utilize this output. Savings in time and effort as a result of the use of this program are expected, and we are in the process of training all of the members of the Rate Investigations staff in its use.

We also anticipate improved efficiency as the staff grows more mature and becomes more expert in wholesale electric rate work. At the present time our electric rate staff is quite young and a large number are still relatively inexperienced. We anticipate that as their experience increases their output will also materially increase. Finally, until the last few years, there were very few wholesale electric rate cases decided by the Federal Power Commission, and there are still a great many specific issues being litigated in cases upon which the Commission has not had an opportunity to establish precedence. As additional opinions are issued by the Commission and precedents thereby established on many of these issues, we anticipate that a great many more cases will be settled expeditiously by the parties without the necessity for protracted litigation.

Our estimates of additional staffing requirements have reflected to the extent possible savings anticipated from these several improvements in efficiency outlined above.

NEW STAFF FOR RELIABILITY ANALYSIS

Senator STENNIS. Now, the Federal Power Commission is requesting two additional positions for the Reliability Analysis activity. Just what do these people do and what is the need for the additional positions?

Mr. NASSIKAS. Our power supply and reliability functions increasingly require the use of electronic computer in analyses of electric power systems reliability and in the determination of the benefits of interconnection and coordination. Consequently we need two electrical engineers with knowledge of electric power system computational procedures for assistance and support to the Bureau of Power's staff in utilizing current computational programs in electric power systems reliability and interconnection studies.

ADMINISTRATION STAFFING

Senator STENNIS. The FPC has requested seven additional positions for administration which include two staff assistants for the Executive Director and two staff assistants for the Chairman's Office. Now, what is the justification or need for these new staff positions?

Mr. NASSIKAS. Four of the positions are to provide the Chairman

and the Executive Director with two additional staff each to assist in coping with the increased substantive and administrative workloads resulting from a general rise in the pace of Commission activity, additional hearing before Congressional committees, and a considerable volume of correspondence related to the activities of the Commission.

The increase will provide a third much-needed attorney to assist in analyzing substantive electric power and natural gas items coming before the Commission for decision, performing legal research related to internal and adjudicatory proceedings, and preparing material for use in appearing before Congressional committees. The second position is needed to provide an additional secretary to assist with the administrative and stenographic workload.

The increase in the Office of the Executive Director will provide an additional junior grade Equal Employment Opportunity Technician to support the one Equal Employment Opportunity Officer, an assistant in the middle grades to help in coping with the myriad of executive and administrative problems. At present the Executive Director has no such assistant.

The other three additional positions are to: provide a voucher clerk in the Office of the Comptroller to help process the increasing number of financial transactions resulting from the increased tempo of our activities; provide a clerical position to keep abreast the high volume of work in the filing, docketing, service, and recording functions associated with the various filings, applications and cases before the Commission; and to provide an additional personnel management specialist to accentuate the staffing and recruiting program of the Commission in order to obtain and maintain the highly technical and competent skills required to administer the Commission's regulatory programs.

OUTCOME OF LITIGATION AFFECTING ANNUAL CHARGES

Senator STENNIS. Briefly update the committee on the outcome of the litigation affecting the collection of annual charges and fees. What is the impact on collections for fiscal year 1975? How would the reductions of annual charges affect Federal Power Commission activities?

Mr. NASSIKAS. On March 4, 1974, the U.S. Supreme Court affirmed the decision of the Court of Appeals for the District of Columbia Circuit which set aside the provisions of our Order No. 427 which established annual assessments against electric public utilities and natural gas companies. Provisions of the order which dealt with filing fees remained in effect.

As a result of this order the Commission will refund $360,970.40 collected in annual assessments on new gas reserves certificated by natural gas pipeline companies and $2,083,598 collected in annual assessments from electric public utilities for reliability and coordination work. The Supreme Court decision, No. 72–1162, reduces our estimated annual collections in 1974 and 1975 by $9.9 and $13.7 million, respectively. All funds collected are deposited to the miscellaneous receipts funds of the U.S. Treasury and are not available to the Federal Power Commission. The amount of funds collected therefore,

have no impact upon the programs of the Commission, except for the billing and collection activity.

We have prepared the appropriate legislation, and it is being cleared with the Office of Management and Budget, for consideration by the Congress that would grant the Federal Power Commission the authority to levy and collect annual assessments, based upon our cost, against the regulated electric utilities and natural gas companies.

REGULATORY INFORMATION SYSTEM

Senator STENNIS. Again, in fiscal year 1975 the Federal Power Commission has requested funds to continue the Regulatory Information System. How much money is included in the Fiscal Year 1975 budget for this system? What is the estimated total cost to implement this program?

Mr. NASSIKAS. The fiscal year 1975 budget includes $1.82 million for continued development of the Regulatory Information System.

It is estimated that it will cost $4.82 million in contract services to implement the first operational phase of the Regulatory Information System. This phase includes the automation of the public use form data and the utilization of computers through the first half of 1976.

NEW SOURCES OF POWER

Senator STENNIS. I have one final question. It is my understanding that the Federal Power Commission has responsibility for assuring adequate, low-cost, reliable power supplies throughout the United States. What action can the Commission take to insure new sources of power are brought on line in a timely manner?

Mr. NASSIKAS. Mr. Chairman, the Federal Power Act does direct the Federal Power Commission to take actions toward assuring adequate, low-cost, reliable power supplies throughout the United States. However, we have direct licensing responsibilities for electric generating facilities only for non-Federal hydroelectric projects. We have no power to command that new power sources be brought on line in a timely manner. This does not mean, however, that the Federal Power Commission cannot influence the amounts of new capacity planned for the Nation. For example, we have worked closely with the electric reliability councils, urging them to expand their planning horizons and, where needed, we have encouraged and on occasion directed additional interconnections. In addition, we monitor the planning criteria used by utilities to assure that planned expansion programs will indeed provide an adequate supply of electric power. We continue to assess the Nation's power supply situation on both a short- and a long-term basis, with regular reports to the Congress and the public, pointing out problem areas and recommending programs such as energy conservation or improved plant siting procedures to alleviate such problems. We have urged expanded research and development in all aspects of the electric power program to develop more economical, more efficient, and more dependable equipment and have modified our accounting rules to clarify the treatment of R. & D. expenses. We have also supported continuing investigation of the institutional, planning, and operational structure of the electric utility industry for potential

improvements. We also continue to review and comment on the programs of other Federal agencies, such as EPA, FEO, and AEC, which influence the prospective availability of electric power. We identify problems which the rules of other agencies may occasion, and press for interpretations and decisions which reflect recognition of the special importance of electric power in our national life.

Senator BELLMON. The Vice Chairman and Commissioner Brooke were away earlier.

Do either of you have comments you would like to make?

ENERGY TRENDS TO YEAR 2000

Mr. SPRINGER. Mr. Chairman, there is just one thing, and this is a broad sweep, but I think that it is important. This morning I talked with Chet Holifield, who has been Chairman of the Joint Committee on Atomic Energy, and discussed with him a survey that was made by Jack Bridges, "Understanding the National Energy Dilemma," which is a thick document. Principally, it was the graphs that he showed me of the whole energy picture that were most illuminating, projecting what we lost in energy, not just what energy we produced from sources of gas, oil, coal, electricity, and nuclear, and projecting the trends of the future into the year approximately 2000, which is 26 years away.

There were two points that were obvious to me, that stuck out, yet had nothing to do with what we have jurisdiction over. One was our growing dependence upon coal. But the most prominent projection was for nuclear energy which amounted to more than the gas, oil, and electricity put together.

Now, I do not think there is a chance in the world—and I think he has reached that conclusion, too—a chance in the world of achieving what they are talking about, the nuclear projection, by the year 2000. Unless they reach that, however, putting these projections forward, what we are doing would not amount to anything anyway, unless you can attain that nuclear projection and unless you are able to utilize this tremendous amount of coal in some form or another, either in its natural form or gasification, a fact that is rather shocking.

NUCLEAR PROJECTION OPTIMISTIC

They are convinced that these five charts are correct. But with the problems we are experiencing in construction of nuclear facilities—and we have one in central Illinois now—it is questionable if we can reach the goal. Especially, in view of the pending lawsuits, one of which would stop all present nuclear plants now and the second suit would stop nuclear plants in the future. This is the point that bothered me the most, although I do not think those two lawsuits are going to be successful, the resulting delays would be so great as to create a serious setback in our aim for energy independence. A good example of what is happening is the New River project down in the Carolinas. It is the delays that result from lawsuits, either pending or projected into the future, which make it impossible to proceed.

The use of substantial amounts of coal must be brought into the

picture, or, in my opinion, we will fall short in filling our energy demands.

Now, if you do not, and if you are going to rely entirely on the other three forms of energy—gas, oil, and electricity—I do not think there is a chance for these to expand sufficiently to take up that slack in the whole energy picture.

I am getting a copy of this national energy supply written by Jack Bridges, at Georgetown University. He is probably one of the outstanding men in the world on this particular subject. But I wanted to comment on this broad approach and particularly that unless we do use coal, and you do reach the nuclear goal that is set out in that report, I do not see, looking down the road how in the world we are going to have an adequate energy supply. Because there is only so much oil to be had; there is so much oil to be imported, to be produced; only so much gas and only so much electricity that we can produce using the same limited supply of gas and oil to produce it.

GROWTH IN NUCLEAR ENERGY

Senator MAGNUSON. Well, does he contend that the nuclear goal cannot be reached because of the environmental problem?

Mr. SPRINGER. Well, that is only one drawback, but it is a major part of it.

Senator MAGNUSON. Well, that is about the only part of it that is stopping us right now.

Mr. SPRINGER. He has admitted that is by far the biggest. That is right.

Senator MAGNUSON. Because, as you say, I cannot envision the future energy problem of the United States, even by 1980. I hope you and I will still be around. But we must at least double, triple, or quadruple our nuclear energy, and maybe more. I would think that you could supply 35 to 40 percent of your total energy requirements with nuclear energy. The technology in nuclear energy in this country is getting better and better.

Mr. SPRINGER. That is about what it was, 35 to 40 percent.

Senator MAGNUSON. And I see the Secretary of Interior issued a statement over the weekend, I think it was, where they anticipated only 6 percent of nuclear power.

Mr. SPRINGER. That is right.

Senator MAGNUSON. And we have plenty of it, and we are getting down now to even today 8 mills per kilowatt, even today.

Mr. SPRINGER. But you are talking about multiplying it roughly by 12 to 15 times in the course of 16 years.

Senator MAGNUSON. But that does not preclude us from doing the things you are talking about.

Mr. SPRINGER. None whatever.

Senator MAGNUSON. They have got to come along; they are part of it, the power demand. I do not think we could suggest that nuclear power is any alternative to what we need to do, but it could be a hell of a good supplement for our power needs.

DELAY IN GETTING NUCLEAR POWER ON LINE

Mr. SPRINGER. I think what you mentioned a moment ago, these delays, whatever they are caused by, environment or whatever it is, he was talking about producing nuclear power in 3 to 5 years, and that timelag has been increased to roughly 10 to 12 years.

Senator MAGNUSON. Well, I will not delay this a minute. But we took the plans of the nuclear plant which is now being completed, the Trojan plant out on the Columbia River, and gave those to some German engineers, British engineers, and Japanese engineers, and said, how long would it take you to complete this plant?

They were all about 3½ years, if there was nothing else to interfere with them. All of them, they were right close together. But you have got now 8½, 10; if you average 8, you are lucky.

Mr. SPRINGER. We have one in central Illinois now that has been planned for 10 years and construction on it just started the other day, and they are thinking now it will take another 5 years.

Senator BELLMON. Mr. Springer, thank you very much.

Senator MAGNUSON. Thank you very much.

But we would like to see a copy of that.

Mr. SPRINGER. He only had one. I am trying to get a copy.

Senator MAGNUSON. Well, if you can get up here, we will have it xeroxed so we can see it. This is very important.

Mr. NASSIKAS. The nuclear program is behind about 30,000 megawatts right now. But the last year the slippage has stayed about constant. We are not gaining but we are not losing, which is somewhat helpful.

Thank you, Mr. Chairman.

SUBCOMMITTEE RECESS

Senator BELLMON. Thank you, gentlemen. Thank you very much.

The subcommittee will now recess subject to the call of the Chair.

[Whereupon, at 3:48 p.m., Thursday, April 11, the subcommittee was recessed to reconvene at the call of the Chair.]

CHRONOLOGICAL LIST OF HEARINGS

	Page
Monday, April 8, 1974:	
Tennessee Valley Authority	3597
Appalachian Regional Commission	3819
Thursday, April 11, 1974:	
Federal Power Commission	3925

LIST OF WITNESSES

	Page
Barron, John S	3597
Brooke, Albert B., Jr	3925
Calvert, Lawrence L	3597
Ellis, Leon Edward	3597
Jenkins, William L	3597
Lerch, Orville H	3819
Lewis, Brinley J	3819
Marquis, Robert H	3597
Matson, John R	3925
Maxson, Webster P	3925
McBride, Don	3597
Moody, Rush, Jr	3925
Moravitz, Francis E	3819
Moy, Marsh H	3925
Nassikas, John N	3925
Nelson, Lewis B	3597
Phillips, T. A	3925
Seeber, Lynn	3597
Springer, William L	3925
Teter, Harry, Jr	3819
Wagner, Aubrey J	3597
Watson, James E	3597
Whitehead, Donald W	3819
Williams, James L	3597

SUBJECT INDEX

Page

Allen steamplant, Memphis, Tenn ---- 3794
Appalachian corridor system ---- 3820
Appalachian Region Commission ---- 3819–3924
  Access road program ---- 3820, 3845
Appalachian Regional Development Programs:
  Area development program:
    Appropriation requested ---- 3822, 3849
  Authorization for programs ---- 3902
    Budget needs ---- 3901
    Estimated obligations by regions ---- 3919
    Health demonstrations ---- 3824, 3857
    Mine area restoration ---- 3825, 3866
    Railroad situation in Appalachia ---- 3920
    Research, demonstrations, and local development districts ---- 3881
    Supplemental grants ---- 3826, 3875
    Vocational education ---- 3825, 3870
  Goals and objectives ---- 3833
  Highway program:
    Accomplishments ---- 3917
    Appropriation request ---- 3820, 3837
    Expenditures ---- 3923
    Financing and accomplishments ---- 3847
    Mileage summary ---- 3841
    Mississippi and New York included ---- 3903
    Personnel summary ---- 3848
    Purpose ---- 3842
    Socioeconomic effect ---- 3844
    State-by-State summary ---- 3839
  Housing fund ---- 3888
  Justification ---- 3819
  New jobs ---- 3921
  Office location ---- 3922
  Organization chart ---- 3898
  Salaries and expenses ---- 3894
  Section 302 program ---- 3827
  Summary of requirements ---- 3836
Appalachian Regional Development Act ---- 3823, 3901
  Budget request ---- 3899
  General statement ---- 3829
  Summary of appropriations by activity ---- 3828
  Summary of budget request for 1975 ---- 3831
Bear Creek multipurpose water control system ---- 3616, 3792, 3807
Bellefonte nuclear plant ---- 3732
Blue Ridge case ---- 4028
Browns Ferry nuclear plant ---- 3722
Central Appalachia ---- 3853, 3916
Commonwealth Edison Co ---- 3805
Cumberland steamplant ---- 3729
Duck River project ---- 3609, 3792, 3803
Elk River ---- 3600
Federal Power Act ---- 3945

Page

Federal Power Commission 3925–4049
Administration 4004
Conservation research 4002, 4039
Curtailments 4022, 4041
Duplication of power between agencies 4034
Electric power:
Applications 3951, 4042
Energy used 4027
Fuel supply and requirements 4022
Future shortages 4040
Industry systems evaluation 3969, 4034
Programs summary 3960
Rate design 4031
Responsibility 4031
Utilities regulation 3974
Energy crisis 4030
Energy trends to year 2000 4047
Environmental statements 3940
Federal regulations 4035
Fuel problems 4036
Funds for pay increase 4033
Gas shortage 4021
Hydroelectric power 3951, 3961, 4042
Jurisdiction 4023
Justification 3926
Litigation 4045
National gas survey 3933
Natural gas:
Action taken to increase supply 4022
Competitive price 4032
Consumer protection 4032
Demand stimulated by low price 4030
Energy 3930, 4025
Environmental impact statement 4023
Industry systems evaluation 3993
Pipeline and producer applications 3952
Pipeline regulation 3982
Producers regulation 3990
Programs summary 3981
Rate design 4031
Regulatory policies 4038
Reserves 4024
Variations in reserve estimates 4036
Wellhead price 4032
New sources of power 4046
Nuclear projection optimistic 4047
Personnel need 4027
Positions increases requested 3949, 4033, 4043
Regulatory information system 4018, 4046
Responsibilities 3948
Services to other agencies and public 3997
Source and application of funds 3954
Summary of activities 3928, 3953
Workload increases 3949
Greene County decision 3936, 4027
Hartsville nuclear plant 3734
Highlands Appalachia 3917
Land Between the Lakes project 3684, 3811
Little Tennessee River 3601
Lower Elk River 3683
Muscle Shoals 3600, 3791
Clean Air Act amendment proposed 3806
Greene County decision 4027
National Fertilizer Development Center 3600
National gas reserves study 3933

Page

Natural Gas Act 3945
Northern Appalachia 3853, 3906
Prudhoe Bay pipeline 4023
Scenic Hudson case 4029
"Seamless Web" 3600
Sequoyah nuclear plant 3725
Southern Appalachia 3853, 3915
Sulfur dioxide emission limitation program 3814
Tellico Dam and Reservoir:
  Cost overrun 3802
  Construction 3620, 3792
  Timberlake community planned 3600
Tennessee River 3600, 3801
Tennessee Valley Authority 3597–3817
  Administrative and general expenses 3784
  Agricultural projects 3661
  Air quality management 3675, 3798
  Aquatic weed control 3655
  Area served 3599
  Board salaries 3799
  Chemical facilities 3697
  Clean coal 3801
  Coal costs 3793
  Current programs 3597
  Dam reservations, operations, and upkeep 3656
  Education and manpower development 3678
  Employee totals 3789
  Environmental costs 3794
  Environmental quality projects 3673
  Environmental regulations 3796
  Farm test demonstration 3714
  Fertilizer and munitions development 3694, 3812
  Fisheries and waterfowl resources development 3646
  Flood control facilities 3628
  Flood control operations 3635
  Forest and wild land resources development 3668, 3803
  General resources development 3660, 3811
  General service activities 3772
  Industrial development 3801
  Interagency health service 3683
  Investigations for future facilities 3630
  Junk car removal 3807
  Justification:
    Appropriation request 3600
    Power program 3601
    Presentation 3599
  Land and land rights 3744
  Land Between the Lakes project 3684, 3811
  Liquid fast metal breeder reactor 3805
  Minerals resources projects 3672
  Multipurpose dams, additions and improvements 3624
  Multipurpose reservoir operations 3651
  Navigation facilities 3625
  Navigation operations 3631
  Nuclear fuel 3749
  Nuclear plants 7 and 8 3736
  Payments to the Treasury 3770
  Plant protection 3656
  Power:
    Facilities additions and improvement 3745
    Financing 3799
    Inventories and deferred items 3769
    National and world energy situation 3793
    Problems of system 3795
    Research and development activities 3767
    Supply and use 3717, 3752, 3813

	Page
Tennessee Valley Authority—Continued	
Preface (description and purpose)	3603
Progress	3790
Questions and answers	3809
Recreation development	3641
Recreation facilities	3629
Regional development planning	3679
Regional water quality management	3639
Reimbursable services	3782
Reno Bridge-Great Falls Reservoir	3772
Reservoir land management	3657
Scrubbers: their environmental backlash	3815
Solid waste disposal	3674
Steel shortages	3805
Strip mine reclamation	3671
Sulfur dioxide control	3797, 3814
Summary of budget	3603
Surveys and engineering	3648
Tornado damage	3794
Townlift community improvement	3680, 3791
Transmission system facilities	3737
Tributary areas development	3676
Valley mapping and remote sensing	3779
Valleywide assessment of water needs	3650
Visitor services	3656
Water control operations	3654
Water resources development	3609, 3631, 3809
Waterfowl management and use	3645
Timberlake, Tenn	3600, 3681
Watts Bar nuclear plant	3730
Yellow Creek Port project	3598, 3626, 3801

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