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HEARING BEFORE THE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION HOUSE OF REPRESENTATIVES NINETY-FOURTH CONGRESS

FIRST SESSION

ON

H.R. 9472

TO AMEND SECTION 15d OF THE TENNESSEE VALLEY AUTHORITY ACT OF 1933 TO INCREASE THE AMOUNT OF BONDS WHICH MAY BE ISSUED BY THE TENNESSEE VALLEY AUTHORITY, AND FOR OTHER PURPOSES

SEPTEMBER 19, 1975

Printed for the use of the
Committee on Public Works and Transportation



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H. R. 9472

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 9, 1975

Mr. JONES of Alabama (for himself, Mr. BEVILL, Mr. LANDRUM, Mr. FLOWERS, Mr. EVINS of Tennessee, Mrs. LLOYD of Tennessee, Mr. FORD of Tennessee, Mr. DUNCAN of Tennessee, Mr. JONES of Tennessee, Mr. BEARD of Tennessee Mr. CARTER, Mr. WHITTEN, Mr. QUILLEN, and Mr. BOWEN) introduced the following bill; which was referred to the Committee on Public Works and Transportation

A BILL

To amend section 15d of the Tennessee Valley Authority Act of 1933 to increase the amount of bonds which may be issued by the Tennessee Valley Authority, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 That (a) the first sentence of subsection (a) of section 15d
4 of the Tennessee Valley Authority Act of 1933, as amended
5 (16 U.S.C. 831n-4), is amended by striking out "\$5,000,-
6 000,000" and inserting in lieu thereof "\$15,000,000,000".

7 (b) The first sentence of subsection (e) of section 15d
8 of the Tennessee Valley Authority Act of 1933, as amended
9 (16 U.S.C. 831n-4), is amended by striking out "Decem-
10 ber 31 and".

TVA BONDING AUTHORITY

FRIDAY SEPTEMBER 19, 1975

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
Washington D.C.

The committee met, pursuant to notice, at 10:09 a.m., in room 2167, Rayburn House Office Building, Hon. Robert E. Jones (chairman) presiding.

The CHAIRMAN. The committee will come to order.

I would like to announce that the committee has two bills on the floor that will be the first order of business after the rules are adopted. The two bills we will have up, involve the basin authorizations and the Denver Mint.

Today we are calling up H.R. 9472. It has not been referred to a subcommittee which would normally be the Subcommittee of Water Resources. Therefore, I am going to ask unanimous consent for the immediate consideration by the full committee of H.R. —9472.

I make that unanimous consent request due to the new rules that have been adopted by the House. Even though it might not require unanimous consent, I wanted to propound that unanimous consent request in order to avoid frailties that might ensue.

Is there objection to the unanimous consent request?

Mr. CLAUSEN. No objection.

The CHAIRMAN. If not, the unanimous consent is agreed to.

The Committee on Public Works and Transportation is meeting today to consider legislation to increase the borrowing authority of the Tennessee Valley Authority from \$5 billion to \$15 billion.

Because of the urgency of the request the committee will be considering at this time only the proposed changes to section 15d of the TVA Act.

H.R. 9472 is sponsored by all the Members of Congress from the TVA service area and has broad support throughout the Tennessee Valley.

The TVA's power construction plans have been extensively reviewed by the Office of Management and Budget during recent months and the request for an increase of \$10 billion in revenue bonding authority has been cleared by OMB from the standpoint of the President's program.

When this committee considered the last increase in TVA bonding authority in 1970, there was some difference on the amount of increase which would be proper. The committee approved the \$5-billion ceiling and this position has subsequently proven to be thoroughly justified.

There is no such difference this time. OMB has endorsed the \$10 billion additional authority requested in the legislation.

The urgent need for the \$10-billion increase provided in H.R. 9472 is clear. The people of the United States cannot wait until the lights go out before moving to provide authority to finance the necessary generating capacity for this 80,000 square mile area. The people of the Tennessee Valley cannot afford to wait until generating capacity is completely exhausted.

To do so would be to deny development of needed jobs, stifle the economy and freeze the quality of life for the people of a significant region who still seek to improve their lot and their personal environment.

Inhibiting the ability to provide adequate electric generating capacity at the lowest possible cost in the portions of seven States served by TVA would also have dire results for the entire Nation by increasing the total demand for other fuels in short supply such as oil and natural gas.

The very long time lag involved in the planning and construction of electric generating facilities requires prompt action on this legislation.

With approval of H.R. 9472, the TVA will be able to proceed in the most economical manner possible to sell revenue bonds to finance construction of the generating transmission facilities which will be required to service electric power needs of the region into the 1980's.

Without the authorization, the assurance of ample supply of electric power for 7 million people would be in doubt. This would inhibit the growth of the economy and the creation of new jobs which are essential if the people of the area are to realize the quality of life to which they aspire.

Witnesses today will provide the committee with details on the requirements for the increase and the use to which the funds will be put.

As part of their installation, TVA board members profess their belief in the feasibility and wisdom of the act and the obligation to assure ample supply of electric power for the region. Thus, Chairman Wagner's request for the \$10-billion increase is not made lightly for the sake of increase or to provide unnecessary frills.

The chairman's recommendation, endorsed by the administration through the Office of Management and Budget, is thoroughly based on solid experience and the thoughtful consideration of the prospective requirements for electric energy into the next decade.

The original bonding legislation in 1959 was developed to aid the corporation in discharging its responsibility for the advancement of the national defense and the physical, social, and economic development of the area in which it conducts its operations by providing it with adequate authority and administrative flexibility to obtain the necessary funds to assure ample electric power.

The corporation has executed this responsibility with a remarkably sound record. All of the obligations to the bondholders are being thoroughly honored. All of the obligations to the Treasury for payments have been completely serviced. In total, the TVA power consumers have paid to the people of the United States about \$1 billion.

The electric power facilities of the TVA are now valued at more than \$5½ billion and the ownership is entirely by the U.S. Government. This must be one of the most profitable investments this Government ever made even if only the financial returns are considered.

The splendid record of financial responsibility on the part of the TVA has prompted an additional section (b) contained in H.R. 9472. The effect of this minor change would be to put the TVA on an annual payment basis to the Treasury.

The other Government corporations such as Commodity Credit Corporation, Export-Import Bank, Federal Savings and Loan Insurance Corporation, and the Panama Canal Co., make their payments on an annual basis.

TVA also was on an annual payment basis prior to the extensive new financial arrangements established in the 1959 amendments. Since that time, the TVA has proven to be completely responsible in all financial obligations to the Treasury and to the bondholders.

By returning TVA to the normal annual payments of other Federal corporations, TVA would have full use of the payment funds until the payment date as other similar Government corporations do.

Section (b) in no way alters the amount of payment by TVA to the Treasury.

Through the years the TVA has received great acclaim at home and abroad for a remarkable job of resource management for the benefit of the people.

In the Tennessee Valley, the people expect no less than miracles from the TVA—even contradictory miracles. When I was home recently an issue of the same paper had two articles about TVA. One group of citizens was seeking an investigation of the Authority's coal-buying policies claiming the TVA was depressing the coal market and forcing coal operators to bankruptcy.

Another group of citizens was seeking an investigation of the Authority on the opposite belief—that TVA was paying too much for coal and thus charging too much for electricity.

It is rare, if ever, that any institution or person performs up to the total expectation of either admirers or detractors.

A diversity of opinion is expressed about the proper role of TVA from various groups of citizens within and without the service area. Some favor prosperity; others want to save us from it.

Each has a goal or a solution for the accumulated ills of our society. Each sees the TVA as the instrument for realization of that goal or solution.

That seems to be one of TVA's problems—the not surprising inability to be all things to all people.

On balance, it would be my judgment that the TVA—its board and employees—has been faithful to the letter and the spirit of the Tennessee Valley Authority Act. In actions and programs, the Authority has been an exemplary reflection of the attitudes and aspirations of the people of the region and of the Nation.

The flexibility of action afforded by the basic legislation enhances the usefulness of this significant instrument of the people in achieving their higher mutual aspirations.

While the TVA has a broad range of resource programs, the committee today will be considering only the section 15d proposals concerning financial arrangements for the power program.

I appreciate your indulgence, members of the committee. I felt like we ought to have the record explicitly straight as to the direction, the conduct, and usefulness of one of the fine institutions that has been created by the Congress of the United States. It has never waived, altered, nor deferred its responsibilities. So I am pleased to have today the Chairman of the Board, Mr. Wagner, and Mr. James Watson, Manager of Power of the Tennessee Valley Authority.

We are certainly pleased to have you today. We are deeply proud of the tremendous role and responsibilities that you have executed in the exigency, and always in good spirit and fine deportment.

Mr. Wagner.

Mr. CLAUSEN. Mr. Chairman?

Mr. CHAIRMAN. Mr. Clausen.

Mr. CLAUSEN. Mr. Chairman, I want to join in welcoming the witnesses before the committee and, in particular, I want to join in the recognition of the great work of the Chairman, Chairman Wagner, whom we have affectionately come to know as Red Wagner, because he has been doing an extraordinary job for the people of the TVA area, as well as the rest of the Nation.

Several of us that are on this committee have followed very closely the work of the TVA, and in particular its Chairman, have been following it closely for a number of years. I think no other institution of government has been as responsive to the needs of the people of those areas as has your organization.

Mr. Wagner has served now as Chairman of the Authority under the appointment, which is I think, somewhat ironic, of both Republican and Democratic administrations. So you must have something very special, Red.

In his leadership and guidance of this great national resource he has proven himself to be an able and skillful administrator, who is highly competent to deal with the most complex and perplexing of problems, and certainly his tenure is to be commended.

As the Chairman has said, apparently what is expected of you, to be all things to all people, you and your organization oftentimes, as is expected by Members of Congress, particularly our own chairman. These are trying times, very challenging.

I want to join the chairman, Mr. Wagner, on behalf of the minority, in welcoming you and the members who have committed themselves to testifying with you here this morning.

Mr. ROE. Mr. Chairman?

The CHAIRMAN. Mr. Roe.

Mr. ROE. Mr. Chairman, I would like to associate myself with the remarks being made here today. The Chairman of the Tennessee Valley Authority, Mr. Wagner, is known across the country as one of the most able public servants in modern times. Coming from the Northeast and realizing the order of magnitude of the energy problems we are faced with I would like to say that TVA was established as a unique enterprise, a Federal agency to work hand-in-glove with

State and local governments, a Federal agency which would have a unified approach to developing the region's natural resources. The work that you and your colleagues have been doing is a landmark endeavor in America.

Your task is really unparalleled in our history. Through this committee, those of us from outside the Administration of TVA really marvel at your success and are reassured by what can really be done in a strong partnership by government within different levels of government. We know the national reputation of your chairmanship and your outstanding achievements during over 40 years in your public service career, which is certainly something that will and should go down in the history books as far as I am concerned. We look forward to your continued leadership in helping TVA to provide a proving ground for new ideas aimed at meeting the energy, economic and environmental problems facing our Nation, not only the problems of today in the Tennessee Valley.

May I conclude with this observation: The excitement of what you are planning on doing in a very well-thought-out economic thrust is really a mark of leadership in this country. Months and years have been expended in debate on what we should be doing with energy. Here, embryonically, lies a national direction that you have established and shepherded for lo these many years. So it proves that Government with private enterprise can do a job, and I for one, coming from the Northeast, strongly support that which you are attempting to achieve.

The CHAIRMAN. Mr. Shuster?

Mr. SHUSTER. Thank you, Mr. Chairman.

I would like to associate myself with the remarks which have been made here thus far today also. I think it is particularly important to call attention to the fact that in the years since 1959, when TVA was first given the authority to borrow money to finance the growth of its power system and pay its own way, TVA has paid back into the U.S. Treasury more than \$980 million, which is nearly \$200 million more than the Agency received in Federal appropriations during the same period.

I for one would suggest that we need more Federal agencies like TVA. I would also emphasize that here we are today talking about more energy and if there is any time, any place, where that topic deserves the most careful consideration, the most positive and complete support, it is certainly in these days in America.

I talked just yesterday with Senator Brock from Tennessee, and he asked me to express on his behalf and on behalf of Senator Baker their strong continued support for TVA, and their determined interest to do everything in their power to assure its continued success.

It is my understanding, Mr. Chairman, from many, many different and diverse sources, that Red Wagner has made a unique contribution during his almost 14 years as Chairman of TVA and he deserves plaudits, credit, and the admiration and respect of all of us, not only in the Congress, not only the people who he serves so ably in the Tennessee Valley, but for all Americans, for not only that which he has done for the Tennessee Valley, but the example that he has set for

America in the development and expansion of a most vital power facility. So it is with great pleasure that I welcome the gentlemen who are here today and thank you for this opportunity to express myself, Mr. Chairman.

The Chairman. Mrs. Lloyd?

Mrs. LLOYD. Thank you, Mr. Chairman.

I, too, would like to welcome Mr. Wagner and applaud his work on behalf of TVA because my views are a little bit parochial, since I represent one-fourteenth of the area served by TVA.

I do not think that we can overestimate or overvalue the work that TVA has done, and I especially appreciate the comments that have been made that state that the United States is not subsidizing TVA, that it has more than paid its way as a valuable, integral part of our national facility in the production of electricity. It has not only been a proving ground for the potential and the growth of electricity, but I have noticed in my district when some of our prominent leaders of foreign countries visit the United States, one of the places they take them with pride is to the Tennessee Valley Authority to see what is being done in America, in the development of the land that has been reclaimed, the flood control problems that were solved through TVA, all of what we are doing.

To move away from a parochial viewpoint that naturally I have because I appreciate them as a resident of the Tennessee Valley, let's look at another thing that we are also working on that is of interest to all.

TVA serves our vital Oak Ridge area, where so much of our Nation's research and development for alternate sources of energy are being developed. So this is certainly a problem that should not be viewed as a parochial one, but it should be viewed as one in our national interest.

Not only should we recognize they are doing something for the country as a whole, but TVA is one of our Nation's greatest assets.

I do welcome you, Mr. Wagner.

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Roberts?

Mr. ROBERTS. Thank you, Mr. Chairman.

Mr. Chairman, I want to be off the record.

[Discussion off the record.]

The CHAIRMAN. You may proceed, Ms. Abzug.

Ms. ABZUG. Mr. Chairman, while I am very pleased to welcome Mr. Wagner here today, I think that the TVA has provided something very important in this country for one area of the country, but really, as a model, I think, for what is significant and should still be done for other areas of the country.

When I was a little girl growing up, that is a long time ago, I viewed with great interest and hopes the TVA project and I think that you have carried out its objectives in a very laudable way, and I join with the others here today in commending you for your leadership, and look forward to continued leadership on your part to help us, particularly at a time when we should take as an example what TVA means in terms of the conservation of energy and economic and environmental program planning.

So welcome, Mr. Wagner.

TESTIMONY OF AUBREY J. WAGNER, CHAIRMAN, TENNESSEE VALLEY AUTHORITY, AND JAMES E. WATSON, MANAGER OF POWER, TVA; ACCOMPANIED BY LYNN SEEGER, GENERAL MANAGER; JOHN S. BARRON, ASSISTANT TO THE GENERAL MANAGER (PLANNING, BUDGET, AND SYSTEMS); J. R. DURALL, CHIEF, FINANCIAL PLANNING STAFF, OFFICE OF POWER; G. H. KIMMONS, MANAGER OF ENGINEERING DESIGN AND CONSTRUCTION; J. A. McMAHON, CHIEF, MARKET ANALYSIS BRANCH, DIVISION OF POWER MARKETING; HERBERT S. SANGER, JR., GENERAL COUNSEL; WILLARD R. STINSON, COMPTROLLER; JOHN VAN MOL, DIRECTOR OF INFORMATION; JAMES L. WILLIAMS, JR., DIRECTOR OF PURCHASING; AND LAWRENCE L. CALVERT, WASHINGTON REPRESENTATIVE

Mr. WAGNER. Mr. Chairman, ladies and gentlemen of the committee, obviously we are humbled by these remarks, all of us. I think all I can say is, we will continue to do our very best to merit your confidence and to fulfill the high hopes written into the TVA Act when it was first enacted by this Congress 42 years ago.

Mr. Chairman, we welcome the opportunity to appear before this committee today and present testimony in connection with H.R. 9472, which would increase the present ceiling on the amount of power bonds and notes TVA may have outstanding at any one time.

We are not here simply to represent a Federal agency.

We are here on behalf of nearly 7 million people of the Tennessee Valley region who depend on TVA for the electricity that supplies their homes, and directly or indirectly makes possible most of their jobs.

As the committee knows, TVA's job involves far more than the production of electricity. The mission assigned by the Congress is the broad one of comprehensive regional resource development. We serve the Nation as a continuing demonstration—a "testing place." That means TVA, working with the people of the area, must help to make the best use of all the resources of what was once the most depressed region of the country so that people will have better lives, or at least the chance for a decent, satisfying living. Electricity, while certainly not the only resource tool for development, has proved to be a critical one, and we are convinced it will continue to be so.

The statutory obligation for supplying power to a large region of the country through the Nation's largest electric system carries with it some difficult responsibilities, and harsh realities. The difficult responsibilities come when hard decisions must be made. And harsh reality is an everyday environment, because when consumers in our area or anywhere flip the switch, the electricity is either there, or it is not. After all the complexities of energy policy and power supply questions are over and done with, it is that simple.

With virtually every decision that is made relating to power supply—whether it be in the area of electric rates, new generating capacity, or environmental controls—there are valid, yet often competing

and conflicting factors to be considered. That makes TVA's continual job one of seeking the balance point between the conflicting factors.

We seek equitable and workable solutions to the problems of energy supply and cost, and to blend economic growth with environmental enhancement for the benefit of the people we serve. On both sides of the environment-cost equation, the consumer's interest must be paramount. It is the fulcrum of the balance we seek.

Both of these commitments are critical, and the decisions they require will affect the people in the Tennessee Valley a generation or more in the future. We must, for instance, make the decisions now that will enable us to plan and build the generating capacity to produce the power that will be needed in the region 10 years from now. This is for electricity that will be needed to heat the homes, schools, and hospitals, and fuel the industries that will provide the jobs for our young people growing up in the region.

As I stated before, our very best efforts have been and will continue to be committed to finding answers to the problems of today and tomorrow that will provide the greatest good for the greatest number of people over the longest time.

The legislation under consideration today is a key piece of the puzzle if we are to find those answers, since it will give us the needed borrowing authority to meet growing electric power demands when and as they develop. And as our population grows and people continue to seek a better quality of life, there will be a continuing growth in the use of electricity despite our best efforts at conservation.

The growth in energy use will slacken, but even if it should level off, demand for electricity is bound to grow as it is called on to replace our disappearing natural gas and oil. Based on population trends in recent years, it now appears that the Tennessee Valley region will need to provide about 70,000 new jobs annually at least over the next 20 to 30 years to assure that no young person will have to leave the region for lack of job opportunity.

Obviously, the continuing economic and social health of the Tennessee Valley region depends upon an adequate and reliable supply of electric power. But in a broader sense, it is important to the whole Nation. And the economy of this region is one link in the chain of the Nation's economic strength. And as the country's largest producer of electricity, the TVA power system is certainly a key link in the Nation's power supply.

At a time when nuclear power has a growing role in the national energy picture, TVA also provides the electricity for about half of the Nation's uranium enrichment capacity, which in turn supplies the basic material for nuclear powerplant fuel and for national defense needs.

Since the need for an increase in TVA's borrowing authority is inexorably tied to the increasing demand for electric energy in the region we serve, it will be instructive to take a brief look at demand growth in the past, the situation today, and how we see it in the future.

As we look at the past, we see that a strong parallel can be drawn between current conditions and the set of factors which prevailed shortly after the 1959 legislation which changed the financing pattern for the TVA power system. As the committee will recall, before 1959, appropriations from Congress were the principal source of capital for

TVA power facilities. Since that time, the bulk of the capital funds for this purpose have come from the sale of bonds similar to those issued by utility companies, along with funds available from TVA power system proceeds.

Looking back, then, we know that the 1960-61 period was one of recession, but the region and the Nation came out of it strongly, as we believe they will do with the easing of the current economic crunch. In the 9 years following that recession, commercial and industrial use of TVA electricity increased by about 150 percent, while residential use grew by 130 percent.

Our projections do not indicate such rapid growth rates following the present recession, although growth will be substantial. The combination of higher energy costs and extensive energy conservation is resulting in more careful use of electricity by the region's businesses, industries, and homes. The rapid growth of the 1960's was partially accounted for by the purchase of major appliances such as refrigerators, electric ranges, and air-conditioners by families which did not then have them. Today most homes have these appliances, and in recent years this has meant a somewhat slower annual growth rate in the home use of electricity.

On the other hand, the growth of the 1960's did not include all areas of regional power demands. The exception to that growth occurred in power sales to Federal agencies, which underwent a major decline in the period. Now those sales are rising again, primarily because of increased production at uranium-enrichment plants, and this will add to the growth in other power requirements that TVA must meet in the coming years.

We also are seeing a trend toward new demands for electricity in the industrial and commercial sector. Many of these concerns are shifting over to electricity from high-cost oil, or from uncertain supplies of natural gas. And, because of supply and price factors affecting these fuels, this is a trend which can only increase in the years ahead. A greater dependence upon electricity gives our region and the country the opportunity to use domestic energy resources, principally uranium and coal, thereby helping move toward national energy self-sufficiency.

This Nation has been running a dangerous course in recent years in its energy use. Coal, for example, makes up an estimated 80 percent of our known energy reserves, yet less than 20 percent of the energy we use in this country comes from coal.

On the other hand, oil and natural gas make up less than 20 percent of known domestic energy reserves, and they supply between 75 and 80 percent of our energy needs. The Nation apparently has peaked in its ability to produce oil and natural gas. Thus, if we are to change our energy course, we must increasingly rely on electricity. That electricity, as we are making provision for it in our present and future plants in the Tennessee Valley region, must largely come from nuclear power and coal, at least for the remainder of this century. I do not mean to imply by this statement that we are not going to continue and need to use all of the natural gas and oil that we can produce domestically.

I think it is obvious to most of us who have studied it, that they will not be adequate to do the job even at our very best. We must recognize, too, that even as more exotic sources of energy come into use in the

future, such as fusion, geothermal, or solar power, they will still be utilized by the ultimate consumer largely in the form of electricity.

Like other power suppliers, TVA must add new facilities to its system on a schedule that is matched to projected growth of power requirements of the region it serves. That takes very large amounts of capital. In fact, the electric utility industry is perhaps the Nation's most capital intensive.

In 1973, for example, new capital requirements of the country's investor-owned utilities amounted to about 12 percent of total personal savings in the Nation. As electricity increases its percentage of the end-use energy market, it is reasonable to assume that the electric utility industry will require an ever-increasing share of the country's available investment capital in the years immediately ahead.

Pollution control has been an increasing cost factor in powerplant construction and operation in recent years. It will be an even greater factor in the future. TVA alone is investing hundreds of millions of dollars in pollution control facilities for new and existing plants.

But we are not here to ask for money. The effect of the bill we are discussing here today would be to continue the same basic financing approach established in that 1959 amendment to the TVA Act that authorized us to issue revenue bonds. However, this measure would increase to \$15 billion the ceiling on the amount of bonds and notes TVA may have outstanding at any one time. The present bond ceiling is \$5 billion.

Mr. Watson, our Manager of Power, will outline for you in a few moments some of the specific projects that will require this additional capital. I would like to emphasize, however, that this does not mean we are embarking on some new program of construction.

The size of the TVA power system has required a continuing construction program with several individual projects at varying stages of progress at any one time. This allows us to complete new generating units at intervals that will keep pace with the region's power requirements.

The additional borrowing authority is essential to permit TVA to continue work on a series of projects that are already underway, or for which equipment is on order, to meet regional power demands. This growth in generating capacity is not something that we are doing just to have a bigger generating plant. What has been growing is the region. It has been growing economically, it has been growing industrially, it has been growing in the quality of living of its people. This has demanded larger amounts of energy.

So, if our system has grown tremendously, it has grown because the region has grown and we have had to respond to it. Without these additional generating units, which are dependent upon additional borrowing authority, TVA simply will not be able to meet the demand. And when the power is not there when needed, things begin to come apart in a hurry.

We now face a somewhat different situation than in the past in forecasting the trend in regional power requirements, and in scheduling construction of new generating facilities to meet them.

In the early years of TVA's bond financing program, we could plan and build a major generating plant in 4 or 5 years. It takes twice as long with the nuclear plants we are building today. These projects

involve larger and more complex equipment, and much more comprehensive environmental and other requirements must be met in planning, siting, designing, licensing, and building powerplants now.

This means we must make decisions concerning power requirements about 10 years into the future instead of 4 or 5 years. There has also been a rapid escalation in construction costs for large powerplants.

As a result of both these factors, TVA and other electric systems face much larger construction financing commitments now than they did in the past. And these factors are of constant concern to the TVA Board because of our continuing responsibility to provide ample electric power for the people in the region at the lowest feasible rates. We foresee great difficulties if electricity cannot be supplied at a price people can afford.

I would like to emphasize just as strongly as I can just how essential it is to have this increase in the bond ceiling. By December 31 of this year, TVA's total of bonds and notes outstanding will exceed \$4 billion, and commitments for equipment already on order but not yet delivered will have totally exhausted the remaining unobligated borrowing authority. Without an increase in the bond ceiling, we would have to alter our construction and procurement schedules to such an extent that only the most critical work would continue.

At the very least, this disruption in orderly construction schedules would result in additional costs and would create significant unemployment among the 9,000 construction workers employed in this program. Equally important is the long-run effect. A disruption of the construction program could mean real difficulties in meeting the power requirements of the region's consumers in the future.

We believe that the record of TVA's self-financing program since 1959 demonstrates that it has been effective. It has enabled TVA to meet the rising power needs of a growing regional economy.

The total assets of this power system owned by the people of the United States are over \$5.5 billion. The Federal Government's earlier appropriation investment in the system has been reduced to less than \$1 billion by repayments. These repayments, as has been said earlier today, plus the dividends required by the 1959 amendment, have totaled nearly \$983 million in cash payments by TVA to the U.S. Treasury through fiscal year 1975.

Most of the power revenue bonds issued by TVA since 1959 have been sold directly in the financial market, and have been rated triple A by bond rating services.

The 1959 amendment made clear TVA's responsibilities both to the consumer and to the bondholder. That legislation requires TVA to charge rates that will produce adequate revenue to cover its costs and financial obligations, and such margin as the Board considers desirable for reinvestment in power system assets and other purposes connected with TVA's power business. At the same time, the bond financing amendment recognized the goal of supplying electricity at the lowest feasible rates consistent with this requirement for financially sound operation.

Unlike a privately owned utility company, TVA cannot issue additional common stock to help balance its financial structure as additional bonds are issued. It must depend on reinvested earnings as the source of capital to balance these borrowings. Therefore, it plows back

into the system the power system proceeds that remain each year after paying all costs and the required return on investment to the U.S. Treasury. Once again, this is in the interest of the power consumers in the region, because every consumer dollar with which we can build plants and transmission lines is a dollar less that we will have to borrow on the ratepayers' behalf, and that they will have to pay interest on.

The need for new capacity and the means to finance it, of course, are directly related to the question of how TVA is meeting its responsibilities to provide electricity to consumers in our area. Indeed, we believe that one of the key tests to determine how well an electric utility is carrying out its responsibilities to the public is whether electricity is being supplied at rates the users of electricity can afford.

As the committee is aware, the cost of electricity nationwide has increased at unprecedented rates, and rates in the TVA area have been no exception, although our rates are still much lower than most areas of the country.

This chart shows how we compare with other areas. The lowest rates are in the Pacific Northwest, where they still have abundant hydroelectric power and the cost of 1,000 kilowatt-hours per month is \$16. The highest area is in New York, where they have had problems with construction and so on, and in between—TVA rates. At a representative level, the TVA rate is about \$25.

I am glad to say, Mr. Chairman, that in the month of October that will become \$24. There will be a rate decrease due to a drop in our fuel adjustment clause in the next month's billings. But as the chart shows, \$25 per 1,000 kilowatt-hours in the TVA area compares to others which range generally in the neighborhood of some \$30 per 1,000 kilowatt-hours.

With increasing costs on all sides—although principally for fuel, related expenses, and interest costs—providing adequate electric power at a price consumers can afford is a greater challenge than ever before. While we are proud of the fact that TVA rates, despite the increases, remain among the lowest in the Nation, that is of small consolation, and we recognize this, to people in the region, in our region or any place, on low or fixed incomes who have difficulty in paying their bills.

Let me assure this committee that TVA is deeply concerned about the rising cost of electricity in the region. Since the electricity we provide is based on the cost of service, TVA and its distributors are fighting on the one hand to hold all costs to a minimum, and on the other hand, to help all consumers make the best, most efficient use of their energy dollars.

We and our distributors have between us extensive energy conservation programs underway. While it doubtless would be popular at this time to simply freeze rates or lower them without regard to cost, such action by the TVA Board would be in violation of the requirements of the TVA act, and in violation of the covenants we have made with our bondholders.

The act says that the TVA power system, while not operated for profit, must pay its own way. The act sets a ceiling above rates in the statutory objective that TVA power is to be sold "at rates as low as are feasible." And it sets a floor under them in the requirement that

TVA charge rates that will produce gross revenue sufficient to provide funds to cover specified costs, plus a margin determined by the Board.

We will continue to do our best to meet the problems of rising costs. Unfortunately, there is a limit to what TVA can do about certain of the cost increase problems such as fuel and interest charges, because they are national in nature.

A look at this chart of power operating costs for fiscal year 1970 and our estimates for fiscal 1976 will be helpful in this regard. The top bar is fuel and related costs. You will see that it took \$169 million in 1970, and the same item is projected at \$861 million in our estimates for the current year. That is more than a fivefold increase in fuel costs, even though our power sales increases amounted to only 20 percent over the same period. So only a fifth of that increase is because we are burning more fuel.

So I think it is easy for the committee to see why increased fuel costs are by far the greatest cause of increases in electric rates. In fact, two-thirds of the increase from 1970 to 1976 is increase in fuel costs.

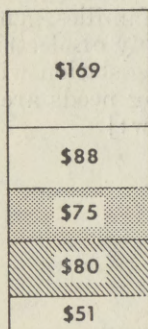
Other items have generally followed the trend of inflation. Depreciation also is up, because we have more plant on line, of course. But the fuel costs have risen far above the normal level of inflation of other things in the economy.

The problems of rising costs and rising rates are difficult, and we are committed to combat them to the maximum that is within our power. But even more important to the continued well-being of the people of the Nation and our region is the fact I mentioned before—the energy must be there when it is needed, when the homeowner flips the light switch or the factory worker starts the industrial motor that powers his paycheck. And in the TVA region this means the hundreds of thousands of people whose jobs, paychecks, and families, general well-being will be dependent upon a continuing supply of electricity. The increased bonding authority proposed by this legislation will remove a major obstacle to seeing that those continuing needs are met.

[Attachments to Mr. Wagner's statement follow:]

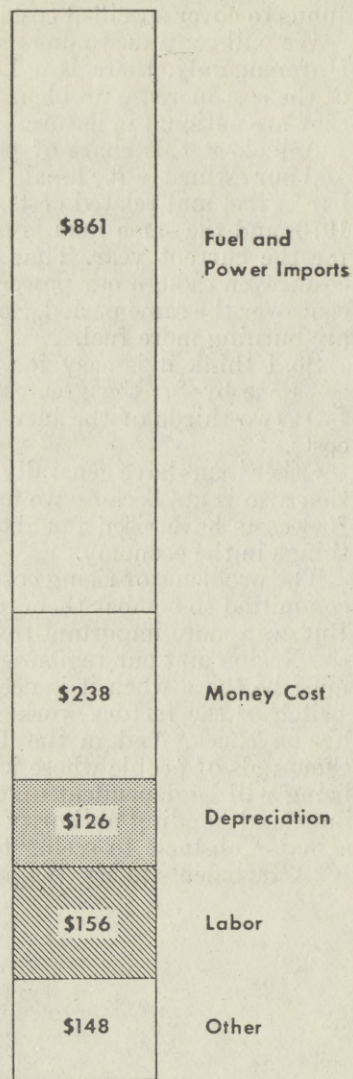
TVA POWER SYSTEM COSTS FISCAL YEARS

\$463 Million



1970

\$1,529 Million



1976
(Estimated)

MONTHLY RESIDENTIAL ELECTRIC BILLS

1,000 Kilowatt-hours

August 1975

New York	\$62
Boston	\$42
Atlanta	\$33
Wash., D.C.	\$32
Asheville	\$30
Birmingham	\$30
St. Louis	\$30
Chicago	\$29
Little Rock	\$29
Los Angeles	\$29
Louisville	\$26
TVA R-2	\$25
Portland, Or.	\$16

NOTE: Bills for others are based on residential rate information obtained directly from the utilities. Bills include all currently applicable adjustments and charges except local and state sales taxes. TVA rate level R-2 is typical of basic residential bills in TVA service area; amount may vary in particular locations due to rate level difference and application of special charges.

Mr. WAGNER. Now I will ask our manager of power, Jim Watson, to provide a more detailed discussion of the TVA power program.

Thank you.

The CHAIRMAN. Mr. Watson, we are pleased to have you, sir.

I forgot to introduce the new general counsel, Mr. Sanger, when I announced the other witness. We are pleased to have you, Mr. Sanger.

Before we proceed, Mr. Watson, are there questions to be directed to Mr. Wagner?

Mr. Hammerschmidt?

Mr. HAMMERSCHMIDT. I have some questions in mind, but I think maybe they might be cleared up by Mr. Watson and subsequent witnesses. So I will withhold the questions at this time.

The CHAIRMAN. Mr. Myers?

Mr. MYERS. Mr. Wagner, regarding the increase in the cost for fuel shown in red here, you indicated the price had gone up four times.

Could you tell me, does TVA own any of the sources of energy, for example, the coal mines?

Mr. WAGNER. We own some coal reserves, yes, sir. We are having about 4 to 6 million tons a year out of the 35 to 40 million tons that we normally burn mined from our own holdings. They are mined by contractors, by others.

Mr. MYERS. How does the price compare between your own coal and the coal that comes from outside sources as it is billed to customers?

Mr. WAGNER. It is lower. I had those figures in mind some time ago.

Mr. Williams, our director of purchasing, is in the audience.

Do you have the figures?

The CHAIRMAN. Will you identify yourself?

Mr. WILLIAMS. I am James L. Williams, director of purchasing for TVA.

The cost of coal from our own reserves is lower than most of the purchase contracts we have. It is higher than on a few long-term contracts.

In fiscal year 1975 coal from our own reserves was delivered to the steamplants at an average cost to TVA of about \$11.55. Average cost of the remainder of the coal delivered to TVA steamplants during that year was about \$15.15 a ton.

Mr. MYERS. Do you show an internal profit on that coal?

Mr. WILLIAMS. Well, we do not do the mining ourselves. This is done by contract, where a private contractor does the operation for a fixed fee; cost-plus-a-fixed-fee operation. So it is not our forces.

Mr. MYERS. So it is strictly a passthrough of costs?

Mr. WAGNER. Let me answer that, Mr. Myers.

I think you are asking about a passthrough in the full adjustment clause. There is no profit passthrough. We do charge in our costs, in the figures Mr. Williams gave you, a small royalty to account for the fact that we had to pay for this coal in the ground. But as it goes into our fuel costs it is based on the cost to us, it is not based on the market price.

Mr. MYERS. Do you expect to expand the percentage of your own reserves in your total energy mix?

Mr. WAGNER. Yes, sir. We are planning to expand the amount of coal we get from our own reserves by about 2 million tons a year. That is about all we can do at one time.

We also are looking for other reserves because in the current market we feel owning reserves is the only way we have of controlling our coal costs.

Mr. MYERS. Does this borrowing affect your capacity to increase your development of your own coal reserves?

Mr. WAGNER. Well, the development would be done with a mix of borrowed funds and revenues plowed back, but yes, this would help us to do that.

Mr. MYERS. I would like to thank you for testifying. I did not get in on the original statements, but I do thank you for coming here.

I think your situation points out the fact that we must focus on the need for capital in the utilities industry, not only in the Government-shared industry, so to speak, but in the private utilities industry as well.

If I recall your figures correctly, you said TVA now has a total investment of about \$4 billion.

Mr. WAGNER. About \$5.5 billion, I believe.

Mr. MYERS. And now you are attempting to increase the total capitalization by three times?

Mr. WAGNER. I misunderstood your question.

We have about \$4 billion worth of bonds outstanding now, and commitments to purchase made would require another \$1 billion. That would take us to our present ceiling on borrowing, \$5 billion.

We are asking it be increased by \$10 billion, to \$15 billion.

Mr. MYERS. Could you tell me what your total capitalization is now in the TVA project?

Mr. WAGNER. It is about \$5.5 billion.

Mr. MYERS. In other words, you are attempting to have authority to borrow three times your total and present capitalization?

Mr. WAGNER. That is correct.

Mr. MYERS. And what will that do for your capacity to generate energy or service the customers over the next 10-year period?

Mr. WAGNER. I believe Mr. Watson is going to cover that.

Mr. MYERS. I will defer until Mr. Watson testifies.

Thank you very much, Mr. Chairman.

The CHAIRMAN. Mr. Watson.

Mr. WATSON. Mr. Chairman and members of the committee, I would first like to review the progress that has been accomplished by TVA since the act was amended to permit self-financing of the TVA power program.

As you know, Congress amended the TVA Act in 1959 to authorize TVA to issue revenue bonds for financing power facilities. That amendment authorized TVA to have outstanding up to \$750 million in borrowings and provided that such bonds issued by TVA would not be obligations of or be guaranteed by the United States.

It further provided that annually TVA makes two types of payments to the U.S. Treasury, one a return on the Government appropriations remaining invested in the power system at the average cost of money to the Government, and one a repayment of a portion of those appropriations.

The 1959 amendment also provided that TVA shall charge rates for power which will produce gross revenues sufficient to cover all costs of operation, maintenance, and administration; to make payments to State and local governments in lieu of taxes; to pay the debt

service on borrowings, and to provide such additional margin as the Board may consider desirable for investment in power system assets and other purposes, having due regard for the primary objectives of the TVA Act, including the objective that power shall be sold at rates as low as feasible.

Subsequently, to enable TVA to borrow sufficient funds to finance the construction of the additional facilities necessary to supply the increased power requirements of the region, in August 1967 Congress revised the limit to \$1,750 million; then in October 1970, Congress raised the limit to \$5 billion.

Expenditures and commitments under the \$5 billion authority have risen to the point where TVA must again seek additional borrowing authority to enable it to discharge its responsibility of supplying electric power to accomplish the physical, social, and economic development of the area it serves.

As you know, TVA is the power supplier for an 80,000-square-mile region which has a population of nearly 7 million people. TVA generates and transmits electricity to meet the needs of 160 municipal and cooperative distribution systems which retail power to their customers. TVA also serves directly 50 industries which have large or unusual power requirements, and we also serve 11 Federal installations.

The distributors of TVA power include 110 municipalities and 50 rural electric cooperatives that are locally owned and operated. These distributors purchase power at wholesale from TVA and, together, they serve about 21½ million electric customers—homes, farms, businesses, and industries.

In just a few words I would like to review what has happened in the 16-year period since Congress approved the self-finance amendment to the TVA Act. In 1959 TVA provided about 57 billion kilowatt-hours to meet the region's electrical needs. By fiscal year 1975 this amount had almost doubled to more than 106 billion kilowatt-hours. This increase in electric power produced provided low-cost benefits to the region and the Nation.

The number of residential customers increased from about 1.225 million in 1959 to well over 2 million in 1975, and their power needs more than tripled, from 9.4 billion kilowatt-hours to 31.8 billion kilowatt-hours in that period.

The average amount of electricity used in homes in the Tennessee Valley has almost doubled, from 7,863 kilowatt hours in 1959 to 14,540 in fiscal year 1975. This increase reflects primarily the increased use of electricity for essential needs—home and water heating and air-conditioning. At the present time about 42 percent of the homes in the valley are heated by electricity.

The requirements of business and industry for electricity have also tripled, from 16.5 billion kilowatt-hours in 1959 to 50.1 billion kilowatt-hours in fiscal year 1975. Paralleling this increase in power requirements was an increase in employment of about 1 million jobs, and an increase in capital investment by industry of about \$8 billion.

The CHAIRMAN. Do not worry about that, Members of Congress are used to the huge figures, big figures, and little figures.

Mr. WATSON. Thank you, sir.

These increased opportunities for employment have helped raise the per capita income in the valley relative to the national average and have helped reverse the outmigration of the valley's young people.

The needs of the large Government establishments in the TVA region served directly by TVA have been a varying influence on the total rate of growth. The predominant segment of the Government-required load, about 90 percent, is in sales to the Energy Research and Development Administration (ERDA, formerly part of the Atomic Energy Commission) for the gaseous diffusion plants at Oak Ridge and Paducah. Sales to ERDA decreased from the 1957 peak of 31.2 billion kilowatt-hours to a low point of 10.5 billion kilowatt-hours in 1971 and rose from that point to 18.2 billion kilowatt-hours in fiscal year 1975. Under contracts between TVA and ERDA, sales are expected to increase by more than 20 billion kilowatt-hours between now and 1985.

TVA's borrowings under the act, of which we will speak more later, have enabled us to build to serve these growing needs—from a capacity of 11 million kilowatts in service and 1.7 million kilowatts under construction in 1959 to a capacity today of 26.7 million kilowatts, with another 21.2 million kilowatts currently under construction or on order.

The large increase in capacity under construction is principally the result of the longer lead times required to install generating capacity today. Our transmission system has increased from about 12,000 miles of transmission lines with the highest voltage at 161,000 volts, to almost 17,000 miles of lines with over 1,500 miles at the extra-high voltage of 500,000 volts.

The ability to raise funds necessary to provide this kind of growth in the power system—which led to progress in the valley, was greatly facilitated, in my opinion, by wise decisions embodied in the financing amendment of 1959 and the subsequent borrowing authority increases of 1966 and 1970.

The revenues from the sale of power continue to pay for all of the power system's operating expenses and for some construction, but proceeds from borrowings have provided the major portion of the capital needed for new facilities.

In our financial forecasts, we predict that about three-fourths of future financing needs will have to come from this source.

TVA's net investment in power assets at June 30, 1975, was approximately \$5.6 billion, made up of \$1 billion of appropriations, \$870 million of retained earnings, and \$3,660 million of outstanding borrowings. These borrowings include \$2,075 million of bonds sold to the general public, \$800 million of bonds, and \$635 million of short-term notes sold to the Federal Financing Bank, and \$150 million of short-term notes sold to the U.S. Treasury.

At the time the first bond issue was sold in 1960, the interest cost to TVA was 4.44 percent. With interest rates generally rising over the years, TVA bonds sold at the peak of interest rates in June 1970 cost TVA 9.29 percent. The 25 bond issues now outstanding have an average interest cost of 7.69 percent. TVA's bonds sold to the public have all received the highest bond ratings by both Moody's and Standard and Poor's and have been well-received in the market at interest rates lower than or comparable to those of triple-A utilities, both electric power and communications.

In accordance with the provisions of the 1959 amendment, TVA has each fiscal year made payments to the Treasury, in recognition of the previous investment of appropriated funds in the TVA power system.

TVA has made annual repayments of the appropriation investment at the rate of \$10 million a year from 1961 to 1965, \$15 million a year for the next 5 years, and \$20 million a year starting in fiscal year 1971—a total of \$225 million through the 15 years ending in June 1975. At the same time, payments as a return on the appropriations remaining invested in the TVA power system, have been made in compliance with the requirements of the 1959 amendment as determined by applying the average interest rate payable by the Treasury on its total marketable public obligations at the beginning of each year to the net appropriation investment in TVA power facilities. These annual payments have varied from a low of \$36.5 million at a rate of 3.063 percent in fiscal year 1962 to a high of \$71.4 million at a rate of 7.030 percent in the fiscal year just ended, and total \$757.8 million for the 15-year period.

To summarize, in repayment of the appropriation investment, and return on that investment, TVA since 1959 has paid into the U.S. Treasury a total of \$982.8 million. This year, of course, we will go beyond the \$1 billion mark.

The 21.2 million kilowatts of capacity now under construction or on order is needed to serve expected growth in power loads. Over the next 10 years the total electrical energy requirements of the region are projected to increase from 112 billion kilowatt-hours to about 220 billion kilowatt-hours. As I mentioned earlier, 20 billion of this 108 billion kilowatt-hour increase will occur in the requirements of ERDA. The remaining increase in the requirements of industry and the power distributors amounting to about 88 billion kilowatt-hours is based on nearly a 7 percent rate of increase. This is approximately the same rate of growth experienced during the last 10 years, but I should note here that these growth rates are computed from the severely depressed sales levels of fiscal 1975 and thus represent recovery from the recession as well as long-term growth.

The amount of leadtime required between the placing of orders for generating equipment and the time when the generating capacity will be in service has continued to increase from the approximately 3- to 4-year leadtime for a coal-fired steamplant built in the 1960's to an approximate 9- to 10-year lead for the nuclear-fueled steamplants being added now. The additional capacity now on order or under construction includes 4 combustion turbines, 4 pumped-storage hydro units for peaking purposes, and 15 nuclear-fueled units. The table attached to my testimony names the specific plants and gives capacity and financial data relating to each of them. This new generating capacity and related nuclear fuel inventories and transmission facilities are to be financed partly from proceeds from the sale of power; however, it is anticipated that funds for these needs will come primarily from additional borrowings whose interest will be paid, and whose principal will be repaid, by the consumers of electricity during the life of these facilities.

At the present time we have a total of \$3.7 billion of bonds and notes outstanding, and about \$4.5 billion obligated of the \$5 billion which is authorized.

Estimates of load growth and construction schedules indicate that the capacity additions listed on the attached table, together with the

associated transmission and auxiliary facilities, will be adequate to serve the region's power requirements until the middle 1980's. Estimates of construction costs and system earnings—assuming a leadtime of about 10 years for engineering, design, and construction of additional generating capacity and associated facilities—indicate that additional borrowing authority beyond the presently sought \$10 billion increase will be required within the next 5 years.

This legislation, proposed with the concurrence of the administration, recommends an increase in TVA's bond authority to \$15 billion. We estimate that this additional \$10 billion of borrowing authority will be adequate to fund those projects now under construction or planned for 1985 and earlier unless load or cost characteristics change significantly from those now anticipated.

[The table referred to follows:]

MAJOR GENERATING CAPACITY ADDITIONS
TO TVA POWER SYSTEM

This table includes only new power plants. It does not include capital investment required for other purposes such as transmission facilities and pollution control projects at existing power plants. Capital requirements for purposes other than new generating plants are estimated at \$359 million in fiscal year 1976.

	Major Generating Capacity Additions			Obligations (in Millions)	
	Fiscal Year Construction Started	Scheduled Commercial Service Date	Nameplate Capacity kW	Actual to 6-30-75	Estimate to Complete
Browns Ferry Nuclear Plant Unit 3	1968	Apr. 1976	1,152,000	\$ 273 ^a	\$ 27
Sequoyah Nuclear Plant Units 1-2	1970	Sept. 1977 May 1978	1,220,580 1,220,580	596	159
Raccoon Mountain Project Storage Project Units 1-4	1971	Feb. 1978 Apr. 1978 June 1978 Aug. 1978	382,500 382,500 382,500 382,500	196	104
Watts Bar Nuclear Plant Units 1-2	1973	Nov. 1978 Aug. 1979	1,269,000 1,269,000	437	368
Bellefonte Nuclear Plant Units 1-2	1975	June 1980 Mar. 1981	1,332,000 1,332,000	309	691
Proposed Hartsville Nuclear Plant Units 1-4	1976	Dec. 1981 Dec. 1982 June 1982 June 1983	1,287,000 1,287,000 1,287,000 1,287,000	114	2,386
Nuclear Plant being considered for Phipps Bend site ^c	1977	Mar. 1983 Mar. 1983	1,287,000 1,287,000	9	1,592
Nuclear Plant being considered for Yellow Creek site	1977	June 1983 June 1984	1,407,000 1,407,000	3	1,897
Additional generating capacity ^c			1,300,000 1,300,000	-	2,200
Gallatin Gas Turbine Plant units 1-4	1975	July 1975	325,200	32	2
Total obligations				\$ 1,969	\$ 9,426

a. Excludes \$535 million closed to plant applicable to units 1 and 2.

b. Hartsville work start is subject to construction licensing procedure.

c. All data are preliminary.

The CHAIRMAN. Thank you, Mr. Watson.
Are there questions?

Mr. Oberstar.

Mr. OBERSTAR. Thank you, Mr. Chairman.

I think by now, Mr. Wagner and Mr. Watson, you are getting the idea that somebody on this committee likes you—and by that I mean the TVA. I really think it is a credit to TVA, a measure of its success and effectiveness, that virtually every area in the United States would like to have one. Whenever new energy and economic problems are being confronted, I hear it often said, well, let's set it up like TVA. So, I gather that throughout the country, TVA is held up as the model government program which functions as government should and that doesn't happen just by accident. It came as a result of dedication to an ideal, imagination, and ingenuity as well as hard work, which is evident from your testimony and I congratulate you on what you have done.

I would like your response to a couple of questions: One, could you, Mr. Watson, identify for me the percentage of your present generating capacity which is in various forms of energy; coal, oil, natural gas, nuclear.

Mr. WATSON. The present system includes 29 hydroplants which TVA built or acquired and operates with a total capacity of 3,200,000 kilowatts and 12 fossile fuel plants, with a total capacity of 17,750,000 kilowatts. We have one nuclear plant which has been in operation and right now is being repaired. We hope to have it back in service very soon. The nuclear plant has two units in commercial service with a capacity of 2.3 million kilowatts. We have oil turbines of about 2,200,000 kilowatts. In addition we operate some 12 hydroelectric projects which belong to the Aluminum Company of America but are operated under contract as a part of our system. Their total capacity is 423,000 kilowatts. We also obtain power from eight hydroelectric projects built by the Corps of Engineers, with a total capability of 850,000 kilowatts. So basically our hydro is 4 million out of 25 million; our steam is 17 out of 25.

Mr. OBERSTAR. The largest single component is fossil fuel, coal. Do you have any natural gas-fired units?

Mr. WATSON. Yes; 20 gas type turbine units at Allen Steam Plant in Memphis; 8 in Alabama; and 16 at Johnsonville in west Tennessee. We are in the process of adding some additional turbine capacity at the plant in Gallatin, Tenn.

Mr. WAGNER. But they don't burn gas at present. They burn oil.

Mr. OBERSTAR. What do you see as the most promising source of fuel for your future generating capacity?

Mr. WATSON. Gas is not available as far as our area is concerned and I wonder about its availability for the rest of the Nation. Oil is not really competitive in the rest of the country as compared with the basic resource of the United States which is coal. Coal and uranium represent something like 80 percent of the Nation's energy resources. Between the two of them would seem to us to be the most desirable use of the Nation's resources, using the oil and gas for purposes which they

fit better into and using the coal and uranium for generation of electricity.

Mr. OBERSTAR. Second, the statement which you made, Mr. Watson, cited leadtimes for new construction. Would you cite the principal factors which result in the long leadtimes?

Mr. WATSON. First, of course, you have to have a license for construction of a plant, especially the nuclear plant, then you have to have an environmental statement which covers all the aspects of the environmental and the social-economic impacts of the plant—the whole general picture. These steps can consume a considerable amount of time and they involve public hearings and discussions with the people in the area. Then, of course, you have procurement leadtime now on major items of equipment which are longer than they used to be. So when you add those all up, it comes up to about twice the time to build a plant as it did in the 1960's.

Mr. OBERSTAR. You see this as a reflection of the national economic picture?

Mr. WATSON. Yes; I wouldn't want to pick one as being the reason. All of us in the business hope each one of these pieces of time can be shortened and we will at some time be able to build a plant faster than 10 years.

Mr. OBERSTAR. These factors are of concern in my part of the country. It doesn't help but it makes us feel a little better to know that TVA so expertly run as it is—it indicates that we're not making any big mistakes up our way, that we're just up against some tough problems—is having some of the same problems. Your testimony has been very helpful. We appreciate having you here and we appreciate the leadership of our chairman, Bob Jones who has contributed so much to the growth of TVA.

The CHAIRMAN. Mr. Myers.

Mr. MYERS. Mr. Watson, will you briefly reflect on the effect on TVA if Congress should alter the tax also in regard to the bond issue and minimum tax that is closing the so-called loopholes?

Mr. WAGNER. I think Mr. Watson could comment on that better than I could, Mr. Myers.

Mr. WAGNER. If I understand your question, Mr. Myers, TVA doesn't pay Federal income tax.

Mr. MYERS. Those who purchase your bonds have tax shelters.

Mr. WAGNER. They pay no State tax but do pay Federal taxes.

Mr. MYERS. Are they regarded as municipal bonds?

Mr. WAGNER. No.

Mr. MYERS. So any changes in municipal bonds taxes will have no effect?

Mr. WAGNER. No, sir.

Mr. MYERS. Thank you.

The CHAIRMAN. Any further questions?

We are certainly obliged to Mr. Wagner, Mr. Watson, and to your associates.

Our next witness will be Mr. William Shobe for the Vanderbilt Energy Study Group.

We are pleased to have you with us, you may proceed, sir.

TESTIMONY OF WILLIAM M. SHOBE FOR THE VANDERBILT ENERGY STUDY GROUP

Mr. SHOBE. Mr. Chairman and members of the committee, I would like to thank you for this opportunity to testify before this committee concerning the proposed debt ceiling increase for the Tennessee Valley Authority, hereafter the TVA.

My name is William Shobe and I am president of the Vanderbilt Energy Study Group. The Vanderbilt Energy Study Group is a group of students at Vanderbilt University who are concerned about the lack of good information on energy that is finding its way into policy-making circles. It is our goal to obtain and disseminate such information whenever possible. I am here today not to endorse or condemn the bill which you have under consideration but to offer our perspectives on the reasoning behind and alleged necessity for the debt ceiling increase for the TVA.

The need for debt ceiling increase arises from TVA's commitment to an accelerated program of construction of nuclear powerplants. Because of time limitations, I will not touch on the controversy surrounding our Nation's commitment to nuclear power for the generation of electricity. Suffice it to say that there is substantial, and growing, controversy in the scientific community concerning the safety of every facet of the nuclear fuel cycle. The matters to which I will address myself today are basically economic ones.

Nuclear powerplants are, by nature, highly capital intensive, much more so than fossil fuel plants of similar size, and any major nuclear construction program constitutes a significant drain on the domestic capital resources of the United States. Not only will these large amounts of capital be made unavailable for as long as 16 years, but they will be invested in one of the least labor intensive industries in the country. I must emphasize that whatever capital is used by TVA will be unavailable to other sectors of the economy. I am sure that every member of the committee is aware of that fact. My point, however, is that such a large demand for capital to build nuclear plants could very well have a depressing effect on the housing industry and many others as well. The increase in interest rates resulting from the greatly increased demand for capital would merely fuel the inflationary spiral and slow down recovery from the present recession.

Nuclear powerplants are also significantly less reliable than fossil fuel powerplants. David D. Comey, of the Chicago-based group Business and Professional People in the Public Interest, has done some outstanding analysis of capacity factors for nuclear powerplants. In his work, Comey found that the average capacity factor for nuclear plants was 54.7 percent through 1974. More importantly, the capacity factors for plants over 800 megawatts averaged only 46 percent as opposed to the 80-percent deliverability promised—46 percent is well below the capacity factor needed for a nuclear plant to just break even with a similar coal-fired plant. In effect, what this means is that, aside from the usual cost overruns encountered during construction of the plant, the utility must pay for a certain amount of capacity that it will not actually have. In some cases, this comes to as much

as a 50-percent extra cost overrun. The Browns Ferry plant is an excellent example of this, and I would like to predict here that the Browns Ferry headaches are just beginning.

GROWTH RATES AND OTHER RED HERRINGS

Committing TVA, and the country, to a rapid nuclear construction program could have profound adverse side effects even if the program were a necessary one, but it is my opinion that TVA's proposed expansion is not only unnecessary but unwise, because it is based on predictions of future peakload requirements that are outdated and inaccurate at best. The kindest word I can find for TVA's demand projections is "chaotic." Graph No. 1 describes TVA's projections of peakload requirements from 1973 by the dashed line. The solid line shows actual peak requirements for 1973 and 1974—and the probable peak for 1975 which was experienced in January. The dotted line is TVA's estimate of what will happen to their demand from 1975 through 1982.

This is taken from their final environmental statement on the Hartsville figures for 1982.

I am very disappointed that an agency such as TVA would go to such ridiculous lengths to justify projects that it knows are probably not needed. It is vaguely reminiscent of TVA's efforts to justify the Duck River project.

Because of its erroneous predictions, TVA could end up with a large amount of excess capacity in expensive unreliable nuclear powerplants for which the residents of the Tennessee Valley will pay dearly. The difference between projected and real demand for 1975 is more than 6,000 megawatts. According to TVA's own figures, even if their bloated projections hold true, which is very unlikely indeed, TVA will have 8,000 megawatts in excess capacity above the expected yearly peakload in 1982.

One major reason for TVA's offbase predictions is that TVA economists have consistently refused to recognize the fact that there is elasticity of demand for electricity. While almost every other Federal department and agency concerned with energy has now taken the position that there is demand elasticity for electricity, the TVA has refused to do so. A good example of this can be found in the final environmental statement for the Hartsville Nuclear Plant and I quote:

Higher electricity prices have had no identifiable effect upon load.

Later on, however, a contradiction surfaces. Again I quote:

In practice, it is difficult to identify the contributions of various motives to individual conservation actions . . . identification of other conservation factors may not be attainable on a practical basis.

THE ALTERNATIVES

It is my personal conviction that TVA has been mismanaged into the nuclear corner. A couple of very single-minded administrators have strongly, but not irrevocably, committed TVA to the nuclear option while doing little more than paying lip service to such intrinsically attractive options as energy conservation and solar energy. I think

that it is appropriate to mention here the old truism that an ounce of prevention is worth a pound of cure. The nice thing about that phrase is that the older it gets, the truer it becomes. Every kilowatt saved during periods of peak demand is a kilowatt of powerplant that doesn't have to be built, and it is probably much cheaper to save a kilowatt than to build a kilowatt's worth of powerplant.

The statistics demonstrating how much energy is wasted in our economy are well known through the work of Dr. Erik Hirst of Oak Ridge National Laboratories and also through the Ford Foundation Energy Policy project. From these figures, I think one can reasonably suggest the possibility that electrical energy use may actually decline in the Tennessee Valley during this decade, given a strong energy conservation program on the part of government, industry and, of course, TVA. This conservation could be achieved through improved rate structures and pricing mechanisms, advanced conservation technologies—including workshops to aid in diffusion of the technology into the marketplace—and a concerted recycling effort. Even a dramatic effort in this direction would probably cost only a fraction of the proposed nuclear construction program, and the benefits of reducing pollution and decreasing the risk of radiation poisoning would be apparent just as would the benefits of a more productive and efficient economy.

In the medium and long term, solar energy will pick up where energy conservation leaves off, and TVA can have a great deal to do with it when solar energy begins to do its part. In other parts of the country we are seeing solar energy being increasingly utilized, such as the Chicago gas supplier that is purchasing a system that will supply 7,000 homes with methane generated from cow dung collected on surrounding ranchlands and stockyards, or the farmers' co-op that uses agricultural products to generate methanol on which they run all of their cars and tractors. In the face of all this evidence, TVA calls solar energy exotic and unproven. What a far cry from the free-thinking men who pioneered the TVA concept and made it work years ago.

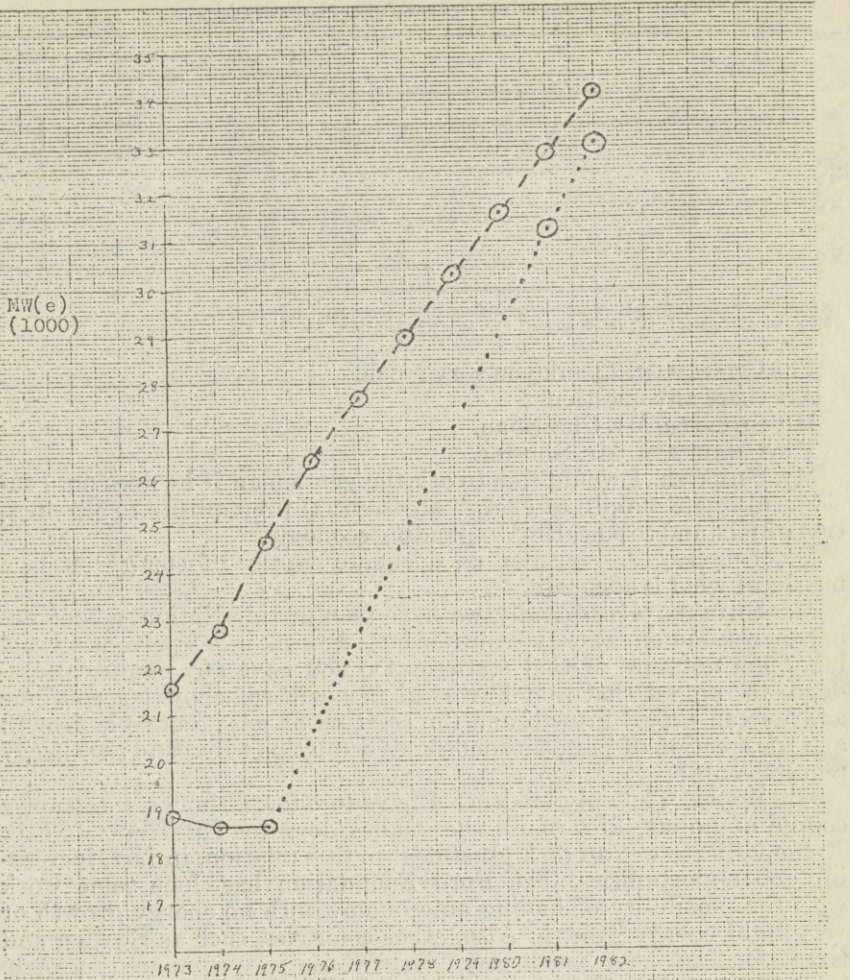
In conclusion, I would like to quote Mr. John P. Holdren of the University of California:

The energy producing industries comprise the most capital-intensive and least labor intensive sector of the U.S. economy. Accordingly, each dollar of investment capital taken out of energy production and invested in something else, and each personal-consumption dollar saved by reduced energy use and spent elsewhere in the economy, is likely to benefit employment.

Mr. Chairman and members of the committee, I hope that my testimony has been useful to you in formulating your position on this matter. I would be glad to answer any questions that you may have.

[The documents attached to Mr. Shobe's statement follow:]

GRAPH No. 1



- - - - - Projected Peak Demand in TVA documents justifying construction of the Cumberland fossil fuel fired plants
 ——— Actual Peak Demand
 Necessary Peak Demand growth to attain Peak Demands projected for 1981 and 1982 by TVA in the Final Environmental Statement for Hartsville Nuclear Plants (1975)

PEAKLOAD DATA FOR TVA, 1973-82

[Peakload and capacity figures in electrical megawatts]

Fiscal year	Estimated peakload ¹	Actual peakload	TVA generating capacity ²
1973	21,550	18,888	22,000
1974	22,800	18,611	24,000
1975	24,700	18,633	27,000
1976	26,400		29,000
1977	27,700		31,000
1978	29,000		31,500
1979	30,300		33,000
1980	31,600		35,000
1981	32,900		39,000
1982	34,200		42,000

¹ From TVA studies justifying the construction of Cumberland Steam Plant units 1 and 2.² Approximate figures from TVA bar graph ("TVA Annual Report 1974," vol. 1, p. 47).

The CHAIRMAN. Thank you very much.

Are there any questions?

Mr. SHUSTER. Mr. Chairman.

The CHAIRMAN. Mr. Shuster.

Mr. SHUSTER. I would like to ask the gentleman if he does not consider adequate supply of energy an essential prerequisite to the creation of jobs and to a healthy, expanding economy.

Mr. SHOBE. I do consider an adequate supply of energy; it is a matter of what is adequate.

Mr. SHUSTER. Historically we have seen in this Nation, a continuing increase in our energy requirements; I think it is 3 percent a year, but I am not sure of that statistic. Do you have any empirical evidence to suggest that that historical fact will somehow not continue and we can expect growth and the creation of jobs, economic growth and the creation of jobs, without some correlation to expand the energy requirements?

Mr. SHOBE. The only evidence I have to offer, although there are a couple of points, first of all the studies done by Dr. Mertz at Oak Ridge indicate we can do a great deal in this relation, in fact, increasing job opportunities. The Ford Foundation has done some work with the possibility of having an economy with no energy growth or very light energy growth. Also, other countries, such as Sweden and Great Britain, have much lower energy use rate compared to their industrial output. This is the kind of thing we should intensively explore in this country.

Mr. SHUSTER. Do you feel an agency such as TVA which is charged with supplying energy at a reasonable price to its consumers, should plan for its future, based on energy sources which are not yet proven?

Mr. SHOBE. Well, no, I don't.

Mr. SHUSTER. Do they feel that solar energy has already been proven as a fundamental, broadly acceptable cost effective source of substantial energy for America?

Mr. SHOBE. I think it has been proven very much, as much as breeder reactors have been proven and possibly much more.

Mr. SHUSTER. Do you think we have a serious energy problem in America?

Mr. SHOBE. Yes, sir; I think we do.

Mr. SHUSTER. Thank you very much. Thank you, Mr. Chairman.

The CHAIRMAN. Any further questions?

Mrs. Lloyd.

Mrs. LLOYD. I understand you represent the Vanderbilt Energy Study Group. Who is the head of this group?

Mr. SHOBE. I am.

Mrs. LLOYD. Is this part of the school?

Mr. SHOBE. We are a student organization.

Mrs. LLOYD. In your statement, the reference is made: "TVA calls solar energy exotic and unproven." On what do you base this statement?

Mr. SHOBE. In testimony you heard from representatives of TVA earlier, I think the term, "exotic," was used there. Also, there was a statement made by Mr. Wagner before the Illinois Energy Conference where solar energy was termed unproven.

Mrs. LLOYD. Are you aware of the interest TVA is displaying right now in the development of solar power?

Mr. SHOBE. Yes; I am.

Mrs. LLOYD. Are you aware last week there was a ground breaking at the university in Knoxville where Mr. Wagner took part on this where they put on a solar demonstration?

Mr. SHOBE. I believe I read an article about that.

Mrs. LLOYD. Are you aware it is statistically proven that by the late 1980's solar will be able to produce about 80 percent of our energy needs?

Mr. SHOBE. What do you mean, "statistically proven"?

Mrs. LLOYD. In the Subcommittee of Science and Technology, this is the estimate.

Mr. SHOBE. If that is what they say, I will go along with it.

Mrs. LLOYD. Are you familiar with the Rasmussen report?

Mr. SHOBE. Yes, ma'am.

Mrs. LLOYD. I notice in your report, you state: "Because of its erroneous predictions, TVA could end up with a large amount of excess capacity in expensive unreliable nuclear powerplants for which the residents of the Tennessee Valley will pay dearly."

According to the Rasmussen report the chance of an accident in one of these plants is the same as being hit by a meteor.

Mr. SHOBE. I am talking about the ability to produce electricity per installed megawatt.

Mrs. LLOYD. Would you not agree the cost of installing nuclear power compared to coal at any of these plants.

Mr. SHOBE. No, ma'am, I don't agree. There is a difference and there is a great deal of discussion in economic circles as to whether the costs can be externalized. There is also the question as to whether nuclear energy is feasible. There are many people who feel nuclear power has absorbed much more energy in producing it than it will produce in several years.

The CHAIRMAN. It has been a pleasure to have you.

Any further questions?

Ms. Abzug.

Ms. ABZUG. On the basis of your testimony, as I read the table which provides for generating capacity, there are a number of projects listed. There are a number of nuclear powerplants listed, starting with the dates of construction, as well as, a number of nuclear plants being considered for construction. Is it your position that you oppose these plants being constructed?

Mr. SHOBE. I did not understand your question.

Ms. ABZUG. Is it your testimony that you oppose the construction of these plants?

Mr. SHOBE. On a strictly economic basis, as far as necessary capacity goes, I think they are probably unnecessary. But I think really that is again something which we will have to wait and see. I do think they are, however, for the most part unnecessary to provide TVA's necessary powerlines.

Ms. ABZUG. Any other reason why you object to these plants?

Mr. SHOBE. Personally on a safety basis, very much so. I think the controversy surrounding safety at nuclear powerplants is not only alive, but getting hotter every day. There are many persons in the scientific and technical community who don't think they are safe.

Ms. ABZUG. Has there been any objection to these plants in that area?

Mr. SHOBE. Yes; there has. In the Fifth District of Tennessee, as a matter of fact, there have been a number of petitions collected, 5,000 or so now. There is substantial opposition especially at the Hartsville plant. I can't speak as to the other plants.

Ms. ABZUG. Your testimony is that there has been some opposition at the Hartsville plant, is that it?

Mr. SHOBE. Yes, ma'am, that is the next plant in line. It is in the licensing process right now.

Ms. ABZUG. Is it your testimony that if an increase in the bond authorization is not granted, that would deter the construction of, the Hartsville plant?

Mr. SHOBE. If the ceiling increase is not granted, then I don't think it will be possible to build the Hartsville plant under the TVA's present debt ceiling.

Ms. ABZUG. Do you have anything to submit for the record which indicates the questions of safety concerning this nuclear plant?

Mr. SHOBE. I could provide such information. I don't have it with me.

Ms. ABZUG. I had the impression originally, that your testimony essentially went to the economic question, that you thought all forms of energy would be less expensive and more effective.

Mr. SHOBE. Yes, ma'am.

Ms. ABZUG. Because in your testimony, you do speak of the general concerns of which we all have, with respect to the possible effects of the construction of nuclear plants without careful consideration of safety. We are all familiar with that and are concerned with it, I am just surprised we don't have anything from you in your testimony as to the functioning existing plants.

Has there been any problem with respect to those functioning there at this time?

Mr. SHOBE. I don't know how familiar this Committee is with the Browns Ferry plant, but I understand there was testimony, I am not sure which committee heard the testimony concerning the Browns Ferry fire in March of this year. This fire was very startling in my opinion and to get back to the Rasmussen report, the chances of all the things happening at Browns Ferry which happened are something like one in 10 billion and that is even more so than a meteor falling on someone but I think the Browns Ferry is an example of where we came quite close to having very serious accident at Browns Ferry.

The CHAIRMAN. If there are no further questions, Mr. Shobe, you have been a great advocate for your cause and we appreciate your coming and the attention you have given the subject matter.

Mr. EDGAR. Mr. Chairman.

The CHAIRMAN. Mr. Edgar has a question he would like to propound to Mr. Wagner.

Mr. EDGAR. I apologize for not being able to get back in time to ask my question. My concern is about the bidding process on generators and the equipment which is used for a large installation such as TVA. It would be helpful if you could provide to me and this committee, the bidding procedures and process which you use in the purchase of generators particularly, and also other large items. And, second, could you provide some information about the most recent contracts which were let for generators. I wish I had more specifics to share with you, but I think you know the contract most recently submitted and granted.

Mr. WAGNER. I would like to give you a brief answer and supplement it for the record, if you would like. In general we are required by the TVA Act to buy under competitive bidding with certain exceptions. Turbo-generators we normally buy through competitive bidding. Bids are analyzed as to whether they meet our specifications or not, and as to performance, and for other factors. In evaluating foreign bids, it is provided that we add to the cost of foreign bids 6 percent and 12 percent if the low domestic bidder is in an area of substantial unemployment. That is generally the way we do it. I believe the award you are referring to is one to Brown-Boveri.

Mr. EDGAR. That is the one I want information on. With areas of high unemployment in our country, I would like to know why General Electric and Westinghouse were unable to meet your specifications in competing with the foreign firm, Brown-Boveri. It is a real, age-old question of getting the best for your dollar. It seems funny that a foreign company can manufacture and deliver a generator more cheaply to this country than domestic corporations can.

Mr. WAGNER. We do have more General Electric and Westinghouse equipment than we do foreign equipment. We felt we ought not to impose our judgment above the Congress' in the Buy America Act. It just happened in this instance to be Brown-Boveri.

As I understand it a considerable part of this money will be spent in this country.

Mr. EDGAR. I appreciate your sharing this information with us. I need the information to be able to respond to people who have asked me about that contract award process. If Brown-Boveri is going to

manufacture some parts in this country, the information would be helpful.

The CHAIRMAN. Gentlemen, I thank you for your appearance here today. I have forwarded additional questions to you for reply and inclusion in this record. Additional requests for information by other members of the committee, without objection, will also be a part of the record.

[Additional questions by Chairman Jones and information requested by Mr. Edgar follow:]

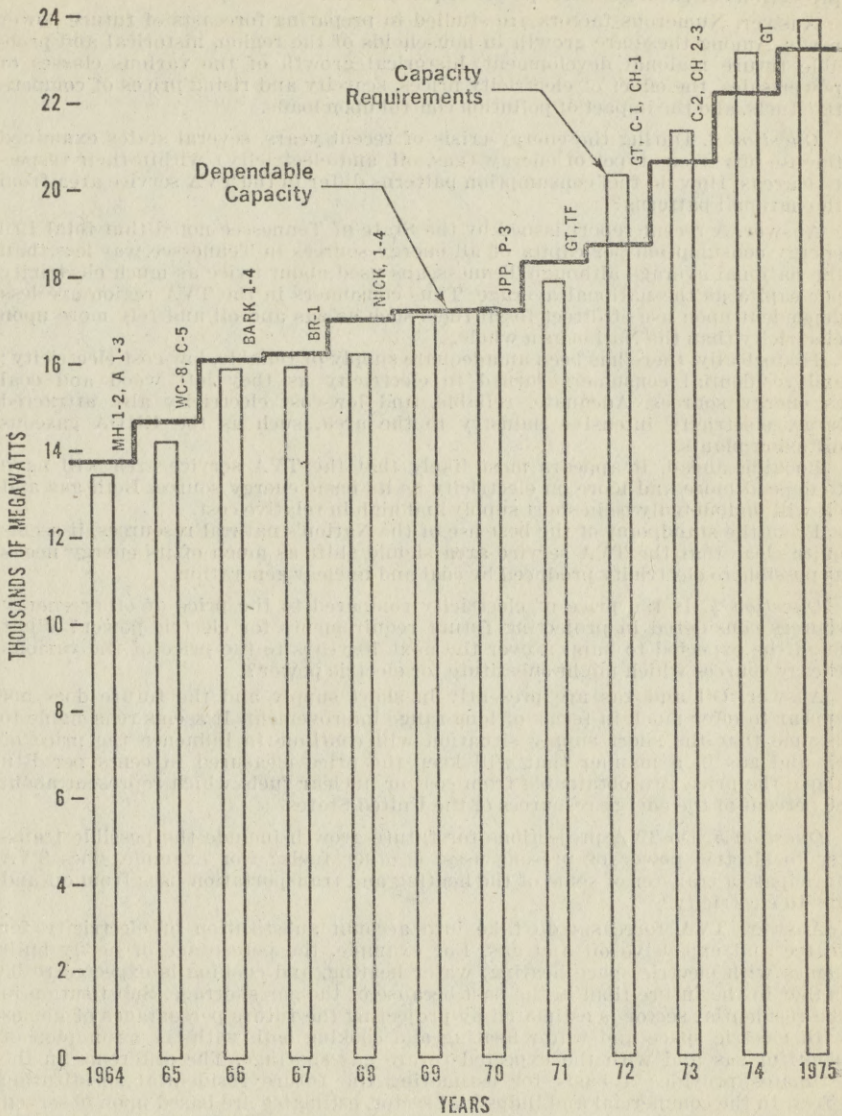
QUESTIONS POSED BY CHAIRMAN ROBERT E. JONES TO TVA, AND REPLIES
FROM TVA

Question 1. How has TVA's long-term power supply planning compared with the actual power requirements of the area over the past several years?

Answer. Over the years the capability of the TVA power system has been quite close to the actual power requirements. There are variations from year to year, of course, because of such things as weather conditions, economic booms or recessions, and variations in the requirements of very large Federal loads, such as ERDA (AEC); but on the average TVA's capability to carry its loads has been remarkably close.

The following chart shows the relationship of our load-carrying capability to the loads from 1964 to date. You will note that for these 12 years there were 5 years when we actually had slightly less capability than desired to carry our loads. In these cases we were forced from time to time to buy power from other power producers. During the other seven years we had slightly more than required but at no time did it represent more than 5.7 percent of our system peak load.

DEPENDABLE CAPACITY VS. CAPACITY REQUIREMENTS



- MH 1-2 = Melton Hill units 1 and 2.
 A 1-3 = Allen Steam Plant units 1-3.
 WC-8 = Widows Creek Steam Plant unit. 8.
 C-5 = Colbert Steam Plant unit 5.
 Bark 1-4 = Barkley Hydroproject Units 1-4 (Corps of Engineers).
 BR 1 = Bull Run Steam plant unit 1.
 Nick 1-4 = Nickajack Hydro units 1-4.
 JPP = J Percy Priest Hydro (Corps of Engineers).
 GT = Gas Turbines.
 P-3 = Paradise Steam Plant unit 3.
 TF = Tims Ford Hydro project.
 C-1 = Cumberland Steam Plant unit 1.
 CH-1 = Cordell Hull Hydro unit 1 (Corps of Engineers).
 C-2 = Cumberland Steam Plant unit 2.
 CH 2-3 = Cordell Hull Hydro units 2-3 (Corps of Engineers).

Question 2. What are some of the factors which TVA considers in preparing projections of future electric power requirements?

Answer. Numerous factors are studied in preparing forecasts of future power needs. Among these are growth in households of the region, historical and probable future regional development, historical growth of the various classes of power sales, the effect of electricity prices, scarcity and rising prices of competitive fuels, and the impact of pollution control upon loads.

Question 3. During the energy crisis of recent years, several states examined the use of various types of energy (gas, oil, and electricity) within their respective areas. How do fuel consumption patterns differ in the TVA service area from the national patterns?

Answer. A recent report issued by the State of Tennessee noted that total Btu energy consumption per capita of all energy sources in Tennessee was less than the national average although Tennesseans used about twice as much electricity per capita as the national average. Thus consumers in the TVA region are less dependent upon use of direct fossil fuels such as gas and oil and rely more upon electricity than the Nation as a whole.

Historically, there has been an adequate supply of reliable, low-cost electricity; and residential consumers turned to electricity as they left wood and coal as energy sources. Adequate, reliable, and low-cost electricity also attracted large, electricity intensive industry to the area, such as the ERDA gaseous diffusion plants.

Looking ahead, it appears most likely that the TVA service area will have to depend more and more on electricity as its basic energy source. Both gas and oil will undoubtedly be in short supply and high in relative cost.

From the standpoint of the best use of the Nation's natural resources, it seems quite clear that the TVA service area should shift as much of its energy needs as possible to electricity produced by coal and nuclear generation.

Question 4. Is the price of electricity compared to the price of other energy sources considered in projecting future requirements for electric power? What might be expected to happen over the next 10 years to the price of the various energy sources which might substitute for electric power?

Answer. Oil and gas are presently in short supply and the future does not appear to offer much in terms of long-range improvement. It seems reasonable to assume that the short supply situation will continue to influence the price of oil and gas in a manner that will keep the price measured in cents per Btu above the price Btu obtainable from coal or nuclear fuels which represent about 80 percent of the energy resources of the United States.

Question 5. Do TVA projections for future growth include the possible transfer to electric power of present uses of other fuels? For example, does TVA anticipate a transfer of some of the heating and transportation uses from oil and gas to electricity?

Answer. TVA forecasts do take into account substitution of electricity for scarce and expensive oil and gas. For example, the percentage of newly built homes with electric space heating, water heating, and cooking is expected to be higher in the future than in the past because of the gas shortage. Substitution in the residential sector is estimated by projecting the future percentages of homes with electric space and water heating and cooking both with the assumption of plentiful gas and with the expected future gas shortage. The difference in the estimates provides a basis for estimating the future residential substitution effect. In the commercial and industrial sector, estimates are based upon observed shifts to electricity in commerce and industry and consideration of probable higher gas prices and continuing gas shortages.

No provision for transfer of transportation uses from oil and gas to electricity has been included in TVA forecasts. This could be a very large factor, and there have been some recent inquiries relative to the electrification of sections of rail transportation. Electrification of automobiles appears farther into the future than the period with which we are now concerned, but its future use will be an additional long term factor in the growing use of electricity.

Question 6(a). How do electric rates in the TVA area compare to neighboring rates?

Answer. TVA rates are lower than those of the neighboring utilities. A typical example would be TVA residential rate R-2 for 1,000 kilowatt-hours, which is

from 8.4 percent to 18.3 percent below the neighboring utilities, and TVA's C-2 industrial rate for 1,000 kilowatts and 400,000 kilowatt-hours ranges from 4.5 percent to 29.5 percent below the neighboring utilities.

Question 6(b). How do electric rates in the TVA area compare to the national average?

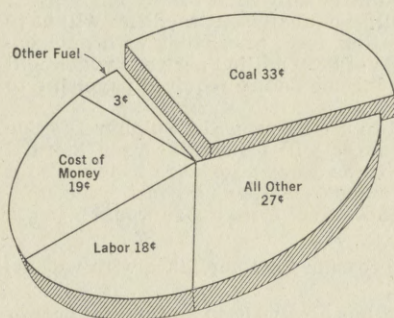
Answer. For the 12 months ending with June 1975, TVA's average residential rate was 1.76 cents per kilowatt-hour as compared with a national average of 3.04 cents per kilowatt-hour or TVA's rate was 42.1 percent lower than the national average.

For the 12 months ending with June 1975 TVA's average rate for all customers was 1.69 cents per kilowatt-hour as compared to a national average of 2.54 cents per kilowatt-hour or TVA's rate was 33.5 percent lower than the national average.

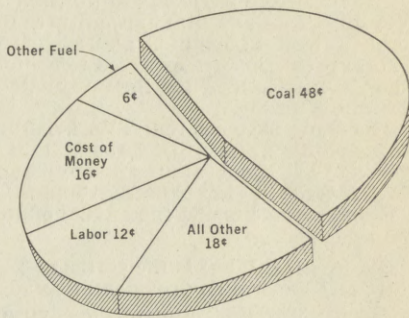
Question 7. Contrast the changes that occurred between 1970 and the present in TVA's power operating costs.

Answer. The following chart shows the changes.

TENNESSEE VALLEY AUTHORITY POWER OPERATING COSTS



THE 1970 DOLLAR



THE 1976 DOLLAR (ESTIMATED)

Question 8. Compared with nationwide percentages, what percent of the homes in the Tennessee Valley use electric heat? Compared with nationwide percentages, what percent of the homes in the Tennessee Valley have an electric stove? Water heater? Other indicators of region as an electric intensive area.

Answer. Estimates of the percent of the homes using electric heat, electric stove, and electric water heater for the TVA service area and for the Nation are shown below. TVA data are for fiscal year 1974 and U.S. data are for calendar year 1974.

	Percent of homes	
	TVA area	United States
Electric heat.....	42	11
Electric stove.....	79	68
Electric water heater.....	71	40

The average annual use of electricity by a residential consumer in calendar year 1974 was 14,330 kWh for the TVA area and 7,907 kWh for the United States.

Other indicators of the TVA region as an electric intensive area are the number of large, electricity intensive industries located in the area and the two ERDA gaseous diffusion plants.

There are severe limitations on the use of gas and oil in the region not only because of the scarcity of those resources in this area but also because of problems relating to the distribution of these energy sources in an area comprising

80,000 square miles. Practically everyone has electricity available. The availability of oil and gas is much more limited, and in our opinion electricity is and will continue to be the basic energy source for the region.

Question 9. What are the amounts of TVA's outstanding debts? To whom are the debts owed?

Answer. As of August 28, 1975 TVA's outstanding debt amounted to \$3,690 million. Power bonds outstanding account for \$3,075 million of this debt with \$2,075 million held by the general public and \$1,000 million held by the Federal Financing Bank. Short-term power notes amounting to \$465 million are all held by the Federal Financing Bank. The remaining \$150 million represents advances from the U.S. Treasury.

Question 10. How much has TVA spent in recent years to comply with environmental standards? What percent of its total expenses did TVA spend during the past year to comply with environmental standards? What is the outlook for the years ahead?

Answer. Through fiscal year 1975 estimated capital expenditures by TVA for environmental protection have totaled \$328.0 million. In fiscal year 1975 TVA's operating expenses and interest charges associated with environmental protection totaled \$53 million, amounting to 4.6 percent of total system operating costs. This \$53 million cost increase should be compared with our total net income for fiscal year 1975 before payments to the U.S. Treasury of only \$103.4 million. By fiscal year 1985 TVA's capital expenditures for pollution abatement facilities will have totaled about \$1.5 billion and system operating costs associated with environmental protection are expected to be in excess of \$220 million per year which will equal almost half of the then estimated net income before required payments to the U.S. Treasury.

The above assumes that TVA is permitted to use its proposed Sulphur Dioxide Emission Program (SDEL) and that variances will be obtained for thermal effects of existing coal-fired steam plants. If these assumptions are incorrect and TVA is forced to meet the EPA and State standards as they now insist, the additional investments and the annual additional costs set forth above would be more than doubled.

Question 11. What is the status of TVA's program for compliance with various state and Federal environmental standards?

Answer. The protection of the environment has always been an integral part of TVA's program. We now have under way a massive engineering and construction effort to complete facilities needed to meet state and Federal requirements relating to air and water quality. This program involves (1) an upgrading of fly ash removal equipment (electrostatic precipitators) at our coal-fired generating plants, (2) development and installation of a sulfur dioxide control system for stack gasses to insure achievement of Federal and state ambient standards in the areas around coal-fired plants, and (3) installation of cooling towers, where necessary, and chemical cleaning equipment to meet thermal and chemical water quality requirements at coal-fired and nuclear plants.

In 1965 TVA began a program to initially equip or upgrade fly ash removal equipment at 63 coal-fired electric generating units located in 12 plants. At that time this was the largest single environmental control effort of its kind in the United States. This program, when completed, will cost about \$300 million in capital expenditures. Thirty-nine units have been installed to meet the particulate emission standards of the states in which they are located. Installation of additional equipment and design is progressing as rapidly as possible on the other 24 units. The current schedule calls for completion of the entire program in 1978.

TVA has developed and is installing equipment for control of sulfur dioxide emissions from its coal-fired plants during periods of adverse meteorology which will insure that Federal and state ambient sulfur dioxide standards will at all times be met in the areas surrounding the plants. This program, called "sulfur dioxide emission limitation" or SDEL, uses a combination of very tall stacks, weather monitoring and forecasting computers, and, when indicated, temporary reductions in plant operations to meet the ambient standards. The SDEL method has been tested with excellent results at TVA's Paradise Steam Plant during the past five years. It is presently in operation at three other plants and will be operational at the remaining plants within a year. The SDEL program involves a capital cost of approximately \$137 million and an annual cost of approximately \$20 million. In contrast, if TVA should be required to adopt con-

stant emission limitation programs such as stack gas scrubbing, as is presently being advocated by EPA, the annual cost would be approximately \$150 million to \$200 million. Either system will meet all standards set for the protection of public health and welfare.

TVA's water quality environmental program involves the construction, where required, of cooling towers to protect the aquatic environment from any adverse effects of thermal discharges from coal-fired or nuclear plants. Cooling towers for 17 nuclear units now planned or under construction will require an investment of over \$600 million. The three-unit coal-fired Paradise plant is presently equipped with cooling towers. It is believed that most, if not all, of the remaining coal-fired plants can meet applicable thermal requirements without cooling towers. With respect to nonthermal discharges from coal-fired plants, the TVA Board recently authorizes a 75-million-dollar program to comply with stringent limitations on chemical and other nonthermal discharges set by EPA. This program will require approximately four years to complete.

Question 12. Comment on the potential danger of a serious nuclear accident resulting from the March 1975 fire at TVA's Browns Ferry Nuclear Plant.

Answer. TVA does not seek to minimize the seriousness of the Browns Ferry fire. We made mistakes or the fire would not have occurred. By the same token, it is a mistake to make the incident appear far more serious than it was by assuming for example that a radiological disaster was narrowly averted.

TVA's major objectives in any incident associated with its nuclear power plants are to protect the health and safety of the public and plant personnel, and prevent damage to the reactor core and other major plant structures. It is significant that these objectives were achieved in the Browns Ferry incident. This has been recognized in the recent Nuclear Regulatory Commission's Inspection and Enforcement report on the fire. The reactors were shut down safely and maintained in a safe condition. There was no radioactivity released from the plant above the normal fluctuations in the environmental background radiation. In fact, the radiation releases were only small fractions of that permitted by the operating license.

The fact that the plant was safely shut down and stabilized during the fire shows that such unusual events can be coped with. That is the essence of the concern and care that go into a licensee's design and construction effort and the review given that effort by the NRC regulatory staff and licensing boards.

As Ben C. Rushe, Director of the Office of Nuclear Reactor Regulation, Nuclear Regulatory Commission, stated in recent testimony before the Joint Committee on Atomic Energy, "At no time during the event was there either immediate danger of damage to the fuel, or danger to the public health and safety . . . In spite of the fire damage, there was considerable equipment available to keep the reactors in a cooled and safe configuration."

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., October 2, 1975.

HON. ROBERT W. EDGAR,
Cannon House Office Building,
Washington, D.C.

DEAR MR. EDGAR: This is in response to your request during the hearings conducted by the House Public Works Committee on September 19, 1975, that we furnish you information on the purchasing procedures which TVA is required to follow, and specifically on TVA's purchase of turbine generators from Brown Boveri Corporation of Switzerland earlier this year.

Section 9(b) of the TVA Act (16 U.S.C. § 831h(b)) requires that, except in certain limited situations not relevant to this question, all purchases and contracts for supplies or nonpersonal services made by TVA shall be made after advertising. This involves the issuance of invitations to bid which contain a description of the product or service to be procured and terms and conditions regarding performance of any contract resulting from acceptance of a bid under the invitation. It is a fundamental principle of formal advertising that all bidders must bid to the same terms and conditions. Accordingly, if a bidder takes a material exception to a term or condition of the invitation or deviates in a material manner from the specifications its bid is nonresponsive to the invitation and a contract cannot lawfully be awarded to such a bidder. To consider such a

bid would, of course, be unfair to the other bidders, since it would allow one bidder to bid to different terms, conditions, or specifications than other bidders and would constitute a purchase made without advertising.

In determining whether to award a particular contract to a foreign bidder or to allow foreign firms to participate as subcontractors to a domestic supplier, TVA follows the guidelines laid down by Congress and the President for the United States Government as a whole. The principal guidelines in this respect are the Buy American Act and Executive Order 10582, as amended by Executive Order 11051. As you know, the Buy American Act provides that purchases shall be made from domestic sources unless the prices quoted by domestic suppliers are unreasonable or the foreign purchases are otherwise inconsistent with the public interest. The act does not specify what constitutes an unreasonable price or when a purchase is inconsistent with the public interest, and Executive Orders 10582 and 11051 were issued to provide uniform standards for determining those questions. On the question of price, Executive Order 10582 provides that a domestic bid shall be deemed unreasonable and its acceptance deemed inconsistent with the public interest if the amount of the domestic bid exceeds the amount of the foreign bid by more than six percent. In accordance with a recommendation of the Council on Foreign Policy, a 12-percent differential is used when the domestic bidder is located in an area classified by the Secretary of Labor as one of labor surplus. A 12-percent differential is also used when the low domestic bidder is a small business firm.

In January of 1974, TVA invited bids for the purchase of four turbine generators. The invitation to bid for this equipment contained, as do all of TVA's invitations to bid, terms and conditions specifying the extent the prospective contractor will be liable to TVA in the event the equipment to be supplied under the invitation is defective or is not delivered in accordance with the contract performance dates. While in most of TVA's invitations to bid a contractor's liability for special or consequential damages is limited to the contract price, this invitation specifically limits the contractor's liability for such damages to only 15 percent of the contract price. In addition to other provisions describing the warranty to be furnished with the equipment and certain efficiency guarantees of the equipment, the invitation to bid also contained an *Operating Assurance* clause which specifies the extent of the contractor's liability in the event the equipment fails to operate properly during the first 12 months of operation, and a *Liquidated Damages* clause which establishes the amount TVA will be damaged if the equipment is late in being delivered. The contractor's maximum liability under these two provisions is 25 percent of the contract price. Bids were received under this invitation to bid from Brown-Boveri Corporation, Allis-Chalmers Power Systems, Inc., General Electric Company, and Westinghouse Electric Corporation. Allis-Chalmers, General Electric, and Westinghouse each conditioned their bid on deletion of the *Operating Assurance* and *Liquidated Damages* clauses and on a complete waiver of special or consequential damages. In addition, Allis-Chalmers took other exceptions to the provisions contained in the invitation, including the warranty and efficiency guarantee. General Electric Company also stated that its "Conditions of Sale" (which differ materially from the terms and conditions of the invitation) would prevail and that any provision contained in the invitation and not in General Electric's "Conditions of Sale" was unacceptable. Westinghouse also excepted to the warranty contained in the invitation. Since the bids of Allis-Chalmers, General Electric, and Westinghouse contained material exceptions to the terms and conditions of the invitation, their bids could not be considered for award of a contract. Brown-Boveri Corporation's bid was the only bid fully responsive to the invitation, and in March 1974 TVA awarded a contract to that company at a firm price of \$184,435,400.

It has been TVA's experience in recent years that exceptions to the liability provisions of invitations to bid for turbine generators have increased. If TVA were to contract on this basis, all or substantially all of the risk would be shifted to TVA, and any expenses or costs occasioned by late delivery of the equipment or failure of the equipment to operate properly would be for TVA, the purchaser, rather than the manufacturer. However, TVA has reviewed this situation and on several occasions has modified its terms and conditions to further reduce a contractor's potential liability while maintaining some degree of protection for TVA. We feel that the terms and conditions contained in the invitation to bid for these turbogenerators represented an equitable allocation of the risks.

The contract awarded Brown-Boveri contained an option to purchase two additional machines at a firm price of \$107,654,816 for delivery in 1978-81. A com-

parison of this price, in January 1975, with published handbook prices of domestic turbine generator manufacturers showed that significant savings would inure to TVA from the exercise of its option with Brown-Boveri. In addition, TVA will realize other benefits and cost savings because of the economies in purchasing two additional machines which duplicate those purchased last year. Accordingly, the decision was made to exercise the option.

While we do not know the exact value of the subcontracts to be placed with U.S. firms, Brown-Boveri has informed us that a substantial portion of the work necessary to fulfill the turbogenerator contracts will be done by its plant in Richmond, Virginia, and by Foster Wheeler Corporations at its plants in New Jersey and Texas. In addition, the Brown-Boveri price includes import duties on the six turbine generators of about \$14 million to be paid by the contractor to the United States Treasury.

If we can provide you with any further information, please let us know.

Sincerely yours,

AUBREY J. WAGNER,
Chairman of the Board.

The CHAIRMAN. The next witness is Mr. Neil G. McBride on behalf of the East Tennessee Energy Group and Save Our Cumberland Mountains.

TESTIMONY OF NEIL G. McBRIDE, ON BEHALF OF EAST TENNESSEE ENERGY GROUP AND SAVE OUR CUMBERLAND MOUNTAINS

Mr. McBRIDE. Mr. Chairman, members of the committee, I am Neil G. McBride. I am an attorney from Jacksboro, Tenn. I am here on behalf of two organizations, Save Our Cumberland Mountains and the East Tennessee Energy Group. The energy group is a coalition of students and citizens in Knoxville, Tenn., who are interested in all aspects of energy policy in the Tennessee Valley. Save Our Cumberland Mountains is a 400-member, 5-county organization of citizens in east Tennessee who are concerned primarily with environmental problems in their area. It is a grassroots organization led by farmers, retired coal miners and working people in Tennessee's Appalachian coalfields.

We appreciate this opportunity to testify on this important bill. When I discussed the possibility of presenting this testimony with the committee's staff I was asked whether we were for or against the bill. I told them that we were neither for it nor against it. I guess that since I was representing environmental organizations they figured we had to be against it, so that is why we are here in the lineup. I hope that my testimony will show that we are mainly asking that the legislation be qualified so as to insure the most effective use of the capital resources TVA plans to raise. I hope my testimony will show that we are mainly asking that legislation be qualified in effective use of the capital resources TVA plans to raise.

I would like to begin by emphasizing what I do not plan to say: We are not here today to oppose nuclear powerplant construction and we are not prepared to argue that TVA needs no new power-generating capacity or that it should not be given any increase in its bonding authority.

Instead, we offer two very specific questions which we hope the committee will ask itself in considering this legislation. First: Can TVA save itself and its consumers some money by devoting a larger share of its resources to the encouragement of more efficient use of available power? Second: Does the committee want to give up its

power to review TVA's activities for the full amount of time it will take the agency to use up an additional \$10-billion limit?

I will briefly discuss this final question first because it poses a political rather than a technical problem, a problem which you as Congressmen are uniquely suited to resolve.

As you know, TVA was established not only as a source of power and development for the valley, but as an experiment in grassroots democracy, a new form of government: The regional authority. In recent years, however, local and national leaders, including citizens, county judges, Governors and Congressmen, have become increasingly critical of TVA's lack of accountability to the public. You can speak to any of your Members from the area and you will find their mail reflects this to a large degree.

When it comes right down to formal power to shape TVA's policies, the agency is accountable only to the President and Congress. The President, with the Senate's approval, appoints members of the three-man board as their 9-year terms expire. The Congress considers TVA's annual appropriations and occasional requests for legislative amendment, as you are doing today.

Although recent events have shown that the selection of board members can be a vital process, congressional oversight of TVA activities has not been as close as it could have been. TVA's congressional appropriation represents only a fraction of its total budget and TVA's regional character seems to weaken the interest of Congress as a whole in overseeing its activities. As citizens' groups which are interested in improving TVA's accountability to the public, we urge you not to give up any of the small measure of control that presently exists.

Congressional guidance is more important than ever. TVA is capable of providing enormous leadership to the Nation's utility industry, leadership which is critical as the energy crisis worsens. This leadership does not just involve more power production, but more efficient and imaginative approaches to common industry problems. It does not imply a criticism of the agency to argue strongly that Congress should become as involved as it possibly can in insuring that TVA provides such leadership.

In considering such a massive increase in the agency's bonding authority, you are in the position of a corporate director being asked to sign 10 or 15 years of blank checks. It is just not good business.

As Mr. Watson's chart indicates, \$5.6 billion is the total obligations in the preliminary stage not approved by the government bodies needed. \$2.2 billion of that total obligation have had no previous expenditure at all. In other words, this is an increase which could be deferred pending your later consideration of the request.

TVA's bonds are not, of course, direct appropriations. But they represent 3 percent of the national debt. They have an enormous influence on private bond markets and would affect the availability of capital for other energy-related purposes. Congress should maintain its supervision of TVA's bonding authority so it can make sure that capital resources are put to the most efficient possible use. The power to review TVA's bonding authority is an opportunity which should not be surrendered without a very good reason. In the absence of such a compelling reason, you should consider raising TVA's debt

ceiling only by the amount it needs to carry on its program for the immediate future.

A later amendment need not represent a major commitment of TVA or congressional resources. The proposed bill fits nicely on one printed page. As TVA needs additional authority, it can ask for it, and welcome the opportunity to inform Congress of its problems and progress in meeting the energy needs of the region.

As TVA does come back for additional authority, one of the questions you will want to ask will be, is this new construction required to meet peak or daily loads? If it is for peakloads, very careful study will have to be made of whether the peak could be reduced by proper load management.

TVA may question the need for peak reduction measures to its own system because of its interchange agreements with other systems during off-peak periods. If significant peaks can in fact be reduced, then to make this argument would be to justify new capacity by the needs of other utility systems. TVA's consumers would, in effect, be subsidizing neighboring private utilities. As a national resource TVA should be supplying power throughout the country when it can, but Congress should be specifically informed if TVA justifies its new capacity requirements by the needs of other systems.

The first question I posed for the committee, whether TVA has exhausted all possible means of saving itself and its consumers the cost of the new construction anticipated by this bond limit increase, its really just a specific example of why TVA should remain accountable to Congress. During last fall's coal shortage the subject of energy conservation was of tremendous public interest for the people of the Tennessee Valley. It was during that period, when the coal miners' strike brought TVA's stockpiles to an emergency level, that TVA began its first intensive conservation campaign.

At the peak of the crisis it put out a press release which, among other things, urged the people of the valley to "Avoid staying up late which requires use of lighting and appliances—form the habit of longer hours of rest at night." It was a suggestion which I comply with as often as possible, but I doubt that it allowed those who were concerned about the effectiveness of TVA's conservation program to sleep soundly. TVA put out other press releases, of course, and it has other programs to encourage conservation, but it is not unfair to suggest that the statement represents a low level of commitment to the problem.

Before the committee grants TVA this huge increase in bonding authority we urge you to insist on a thorough study of the effectiveness of TVA's conservation efforts and possible alternatives to new plant construction.

A few weeks ago TVA issued a draft environmental impact statement entitled Policies Relating to Electric Power Rates. The statement discussed TVA's conservation efforts and the potential energy savings of load management and new approaches to pricing. Its conclusion, that very little reduction in power use was possible through economically feasible conservation efforts without significant decline in standard of living or production, was not in line with several Federal and private studies of the same subject. While TVA dismissed

load management as an effective tool for conservation, for example, the Federal Energy Administration is intervening in several State regulatory proceedings in favor of improved load management.

TVA's system is unique and may not be subject to the same criticisms of many private utilities, but conflicts between TVA's conclusions and other Federal policies suggest at the very least that further study is essential before Congress allows the full program of new construction anticipated by this legislation.

Some of the conclusions which should be examined are independent of the characteristics of TVA's system. For example, TVA dismisses potential energy savings in the industrial sector by noting that 95 percent of industrial power use is directly related to production, implying that any energy saving would come only at the expense of reduced production [environmental impact statement, at p. 3.0-5]. This assessment is at odds with numerous studies which show that use of energy per unit of production is higher in the United States than in other industrialized nations of the world. The impact statement rejected studies by the Oak Ridge National Laboratories which suggested significant potential savings in the industrial sector.

TVA stated: "Since ORNL found no significant relationship between electricity and industrial output, the ORNL results for the industrial sector are questionable." [At p. 3.0-16.]

The implication is that TVA has rejected another Federal study because it does not agree with its own conclusions. The ORNL studies mentioned are in a preliminary phase and are not available for full comparison.

Of special interest to the TVA region should be the Ford Foundation's energy policy project conclusion: "It is reasonable to expect that energy conservation in the most energy intensive manufacturing"—of which we have many—"industries will have little, if any, adverse effect on employment in these industries." "A Time To Choose," final report by the energy policy project of the Ford Foundation, 1974, at page 151.

Discussing potential savings in the residential sector, which TVA also dismissed as insignificant in its impact statement, the Joint Report of the Congress on ERDA appropriations concluded:

It is quite reasonable to anticipate that this program should lead to a reduction of from 20 to 50 percent of the energy used in existing buildings by the development and economical application of technology. At least a 50-percent reduction should be achievable in new buildings, with at least an overall sector average reduction of 30 percent. (Joint report, authorizing appropriations for ERDA for fiscal year 1976, No. 94-294, June 13, 1975, at p. 133.)

In applying national estimates to the TVA region it is reasonable to assume that potential savings should be even greater because of the extremely low cost of power and TVA's aggressive promotion of the use of electricity. These factors have caused the average residential consumer in the Tennessee Valley to use twice the amount of power as consumers in the rest of the country. Not all of this power could be conserved without the use of some substitute fuels, but the studies cited above suggest significant savings that TVA does not officially acknowledge.

The purpose of this testimony is not to suggest that any one study or prediction is correct. I do suggest that TVA's studies of the problem,

as described in its environmental impact statement and its public statements, are not worthy of its stature as the Nation's largest electric utility and a national yardstick for the utility industry.

At this point I should note that in the testimony of Mr. Wagner and Mr. Watson, there was no discussion of conservation measures, which I think would be an appropriate addition in their argument.

The CHAIRMAN. Mr. McBride, you will have to utilize some conservation. We have a roll call. So if you will proceed with your text.

Mr. McBRIDE. Thank you, Mr. Chairman, I am just about finished.

Criticism of TVA's efforts are not a contradiction of the remarks made concerning TVA's successes in other areas. It is because of these successes that we now ask that skills be applied to a new endeavor, not just more energy, but more efficient use. This effort as recognized by ERDA and Congress as a necessary element of national energy policy; one which creates new energy as much as new generating power does. We are asking that in considering this legislation you make sure TVA is in line with that policy.

The CHAIRMAN. Thank you very much, Mr. McBride. Your organization should be proud of your presentation and the very great efforts you have made in accumulating the facts which support the conclusions you have made.

Any questions?

Mr. EDGAR. I have a question.

I think I understand your testimony and I appreciate your comments.

Looking at the bill, H.R. 9472, are you suggesting the amount could be reduced? And are you asking that the TVA come back after that first step, at which time Congress will have a better handle on the TVA's progress?

Mr. McBRIDE. I think the chart at the back of Mr. Watson's testimony shows that.

Mr. EDGAR. I appreciate your testimony; and we thank you.

Ms. ABZUG. Are you suggesting that this committee exercise more significant oversight over the full efficiency of any funding granted?

I would like to ask the chairman if it is not, indeed, our concern and practice to continue some kind of oversight over the uses of the capital resources we have authorized here.

The CHAIRMAN. Yes; the oversight subcommittee will have that authority to look at the operations of TVA. Also, TVA makes the justification each year to the Appropriations Committee of its expenditures, not only the annual appropriations but the expectancy of the funds received from the sale of bonds and makes a total account of the use of the bond moneys to the Appropriations Committee. The projected power construction program for each year is transmitted to the Congress by the President, with his recommendations, in the budget estimates. So we have several avenues of total approach and examples of the use of every penny coming into the TVA. That has been exercised over the years.

The committee will stand in recess for 20 minutes in order to respond to the quorum call of the House.

[Brief recess.]

The CHAIRMAN. The committee will be in order.

We have one rule on the floor. I understand there are two more rules to be considered. Then the committee has two bills it has to present to the House this afternoon. So the committee will stand adjourned until 11 o'clock on Monday for the further consideration of the bill we have had under discussion this morning. I do not think there would be any need for any of the witnesses to remain over until Monday.

Under the unanimous consent request that I will propound, we will give everybody an opportunity to extend their remarks in the record, providing of course it is germane to the subject matter with which we are dealing. If it is not directed to the bill which we have under consideration, then it will be returned to you with proper notation, and proper explanation as to why it will not be included.

I thank you for your attendance. I feel awkward about the arrangements. I can pretty well design our committee schedule but I cannot design the schedule of the House.

[Whereupon, at 12:59 p.m., the committee adjourned.]

[Additional statements received for the record follow:]

STATEMENT OF J. WILEY BOWERS, EXECUTIVE DIRECTOR OF THE TENNESSEE VALLEY
PUBLIC POWER ASSOCIATION

Mr. Chairman, I am J. Wiley Bowers, executive director of the Tennessee Valley Public Power Association, Chattanooga, Tennessee. Unfortunately, the President of our Association, Mr. Marshall Mulherin, could not be here today for this hearing, and he requested that I present his testimony.

Mr. Mulherin is manager of the Southwest Tennessee Electric Membership Corporation, a rural electric cooperative headquartered in Brownsville, Tennessee.

Mr. Chairman, with your permission I would like to file a copy of Mr. Mulherin's statement for the hearing record, and briefly summarize it for the committee.

In the Tennessee Valley, the TVA—a Federal corporation—generates the electricity and delivers it over high-voltage transmission lines to 160 municipalities and rural electric cooperatives. Except for direct service to several large industrial and Federal agencies, TVA's role is that of a wholesaler of electricity.

The retail delivery of power to the consumer—the home, farm, business and industry—is the responsibility of locally owned, locally managed electric distribution utilities. These 160 distribution systems—110 municipal electric systems and 50 rural electric cooperatives—make up the Tennessee Valley Public Power Association.

I would like to highlight these facts about the bill sponsored by the chairman, other members of this committee, and other members of the House:

First, these 160 locally owned electric distribution utilities buy every kilowatt of their wholesale electricity supply from TVA, under long-term contracts. Our members can adequately serve their 6 million consumers only if TVA provides enough electricity. So this bill is *absolutely essential* to ensure an adequate supply of electricity for the Tennessee Valley.

Second, there is need for quick action on this bill. TVA's borrowing authority will run out by the end of this year.

Third, this bill increases the limit on TVA's borrowing authority by \$10 billion. It does *not* change the fact that the people of the Valley underwrite all of TVA's borrowing through their monthly electric bills. TVA's bonds and notes are backed by revenues from the sale of electricity, not by Federal guarantees. Those revenues come from the people of the Tennessee Valley, including the consumers served by the utility members of our Association.

Fourth, this bill enjoys widespread support in the Tennessee Valley. Members of our Association are vigorous supporters. The bill has broad, bipartisan House sponsorship. We are pleased that it has the endorsement of the Office of Management and Budget.

Mr. Chairman, we believe the Congress should promptly approve this bill, to permit TVA to continue to carry out its responsibility for electric power supply to the people of the Valley.

Thank you.

STATEMENT OF MARSHALL MULHERIN, MANAGER, SOUTHWEST TENNESSEE ELECTRIC MEMBERSHIP CORPORATION, BROWNSVILLE, TENN., AND PRESIDENT, TENNESSEE VALLEY PUBLIC POWER ASSOCIATION

I am Marshall Mulherin, manager of the Southwest Tennessee Electric Membership Corporation, a rural electric cooperative headquartered in Brownsville, Tennessee. I also serve as President of the Tennessee Valley Public Power Association, a regional association composed of the rural electric cooperatives and municipal power systems that purchase electricity at wholesale from the Tennessee Valley Authority (TVA).

The Tennessee Valley Public Power Association strongly supports H.R. 9472, and urges its speedy enactment by the Congress.

The rural electric cooperatives and municipal power systems that make up this Association are the retailers of electric power to the people of the Tennessee Valley. Our locally owned utility systems purchase our entire power supply at wholesale from TVA, and therefore we are vitally concerned with an adequate supply of electricity for the Tennessee Valley area.

Electric power reaches the consumer in the Tennessee Valley via a system that is unique in the United States.

TVA, a Federal corporation created by the Congress in 1933, is responsible for the generation and transmission of electricity. TVA operates a highly efficient regional power network of generating plants and high-voltage transmission lines to deliver power to our local distribution systems.

The retail distribution of electricity is in local hands. The final delivery of power to homes, farms, businesses, industries, schools and other users is the responsibility of consumer-owned utilities—110 municipal electric systems and 50 member-owned rural electric cooperatives. Of this total, 84 municipal and cooperative systems are headquartered in Tennessee, 28 in Mississippi, 25 in Alabama, 17 in Kentucky, and 2 each in Georgia, North Carolina and Virginia.

This separation of the generation and transmission function from the local distribution function permits the central agency to provide electricity supply through large-scale efficient generating plants and an interconnected high-voltage power transmission network; yet leaving the actual delivery of the electricity to locally owned distribution systems. These locally owned, locally managed distribution systems are governed by local citizens—by boards of directors from the area, in the case of rural electric cooperatives; and by city councils and commissions, or by independent electric utility boards, in the case of municipal power systems.

In the fiscal year ending June 30, 1975, the 160 municipal and cooperative distributors of TVA power paid TVA more than \$700 million for wholesale electricity, an increase of about 30% over the previous year. These local distribution systems are the major purchasers of TVA power, providing nearly two-thirds of TVA's revenues from the sale of electricity.

These local distributors own electric plant facilities totalling more than \$1¼ billion, and their assets amount to about \$1¼ billion. They provide electricity to about 2.5 million customers in an area covering 80,000 square miles in parts of seven states and with a population of more than 6 million. In the most recent fiscal year ending June 30, these local systems sold more than 60 billion kilowatt-hours of electricity, had electric revenues of more than \$1 billion, and the average home served used about 14,500 kilowatt-hours per year.

The bill before your committee, H.R. 9472, is sponsored by a distinguished bipartisan group of members of the Congress, including several members of this committee. The measure has the approval of the President's Office of Management and Budget. Its approval is a matter of urgency and necessity, since the Tennessee Valley Authority must have increased borrowing authority in order to finance needed electric power facilities to serve the people of the Tennessee Valley.

The Congress approved revenue bond financing for TVA in 1959, and has increased the ceiling on such authority on two subsequent occasions. In 1959 the bond ceiling was established at \$750 million. In 1966 it was increased to \$1.75 billion; and in 1970, the Congress set the present ceiling of \$5 billion. It is our understanding that the present \$5 billion limit on TVA's borrowing authority will be reached by the end of this year, and therefore it is essential that the authority be promptly increased.

The increase of \$10 billion—as proposed in H.R. 9472, and endorsed by the President's Office of Management and Budget—will enable TVA to meet the Tennessee Valley's electric power needs for a few years. The actual issuance of bonds will, of

course, take place as needed to finance construction of needed facilities. However, in electric power plant construction, there is a lengthy time lag between the planning of a plant and its active operation, as long as 8 to 10 years in the case of nuclear plants.

In supplying electric power, it is important to have the ability to make long-range plans, in order to assure an ample supply of electricity. TVA needs this borrowing authority, so it can continue to develop and carry out the long-range power supply planning that will enable our local distribution utilities to have the electricity to meet the growing needs of our consumers.

In my electric cooperative, in western Tennessee, the average residential use of electricity has increased by nearly 80 percent in the past decade—from 7,883 kilowatt-hours a year in 1965 to 14,165 kilowatt-hours in 1975.

An area's growth depends, to a considerable extent, on having enough electricity. And an area's growth is limited by an adequate supply of electrical energy. The Tennessee Valley region, if it is to continue to grow, critically needs the assurance of an adequate future power supply in order to plan its future in an orderly and efficient manner.

It is important to make clear that TVA's bonds and notes issued under the authority given by the Congress are backed solely by the revenues from the sale of electricity. Thus it is the consumers of the 160 municipal and cooperative distributors of TVA power—plus other industrial and Federal loads served directly by TVA—who will provide, through their electric bills, the money to back up these bonds. TVA borrows the money. The backing for the bonds and notes, however, is revenues that our electric consumers pay, month after month.

Our 160 electric distribution utilities purchase power at wholesale from TVA under long-term contracts. We need assurance of an adequate long-term supply of electricity. This bill will give us that assurance for several years.

We urge its speedy adoption. Thank you.

STATEMENT OF ALEX RADIN, GENERAL MANAGER, AMERICAN PUBLIC POWER ASSOCIATION

My name is Alex Radin. I am General Manager of the American Public Power Association, a national trade organization representing more than 1,400 local publicly owned electric utilities, primarily municipally-owned systems, in 47 States, Puerto Rico, Guam, American Samoa and the Virgin Islands. Our offices are located at 2600 Virginia Avenue NW., Washington, D.C. 20037.

I am submitting this statement in support of H.R. 9472. The American Public Power Association membership, at the Association's most recent annual meeting in Boston, Massachusetts on May 20, 1975, approved a resolution in favor of bills, such as H.R. 9472. I am attaching a copy of this resolution. Many of the 110 municipal electric utilities in the Tennessee Valley, who depend on TVA for wholesale power supply, are members of this Association.

TVA revenue bonds and other borrowings are not guaranteed by the Federal Government but are backed solely by power revenues from Tennessee Valley rate payers. There have been virtually no Federal appropriations to TVA for construction of electric power facilities for more than 20 years. The financing of TVA's power construction program to meet the electrical needs of the region has been backed solely by the revenues from the monthly electric bills of the millions of people in the area.

This legislation simply raises by \$10 billion the ceiling on TVA's authority to borrow funds. The financial support for future TVA borrowing will continue to be supplied by the power users in the Valley.

Growth of TVA's electric power production and transmission facilities will provide increased assets for TVA's owner, the Federal Government, even though these increased assets are being financed by the Valley's electric rate payers. The Federal Government, then, is in the enviable position of owning a corporation with increasing assets which are being financed not by the Federal Government but by the people of the region; in addition the Government is getting back each year a portion of its appropriation investment, via a \$20 million annual payment by TVA to the Federal Treasury, plus an annual dividend which this year will amount to about \$71 million. The people of the region, then, provide the revenues—through their electric bills—with which TVA meets all of its operating expenses, principal and interest payments on its borrowings, and

annual required cash payments to the Federal Treasury. As of July 1, 1975, a total of \$1.233 billion has been paid to the Treasury from TVA power revenue.

The 110 municipal electric systems and 50 rural electric cooperatives in the Tennessee Valley purchase their entire supply of wholesale power from TVA under long-term wholesale power contracts. Thus their ability to meet the growing electrical needs of the Valley's millions of people—in homes, schools, businesses, industries, farms and other establishments—depends wholly on TVA's ability to finance and build the necessary electric generating and transmission facilities. This legislation, then, deals with future power supply of more than 6 million Americans.

Additional borrowing authority for TVA is essential. It is needed quickly, since the present \$5 billion of borrowing authority will be committed by the end of this year.

The President's Office of Management and Budget has carefully examined TVA's electric power requirements in the years ahead, and has endorsed the \$10 billion increase in bonding authority.

The resolution of the American Public Power Association supports removal of a ceiling on TVA's borrowing authority. We understand that the imposition of a ceiling—first enacted in 1959, and readily increased in 1966 and 1970—provides an opportunity for Congress to review TVA's use of revenue bond financing. However, (a) TVA would not be likely to issue bonds to finance more power generating capacity unless additional kilowatts of power were needed by Valley power users, and (b) the money market would operate to discourage or prevent TVA from issuing bonds in a harmful or untimely manner. So TVA is, as a practical matter, limited in its exercise of borrowing authority.

Congress at present reviews TVA's programs on an annual basis, through the Appropriations Committees. The additional review that results from periodically increasing, rather than eliminating, limits on TVA's borrowing authority is, in our view, useful but not essential. The Congress in future years may well consider eliminating the ceiling on TVA's borrowing authority, in recognition of the reality of the controls enforced by the capital markets, and the steadily increasing need for more power facilities. Perhaps a periodic reporting to the Public Works and Transportation Committee could be added to the Congressional review process. In any case, Congress can always amend the TVA Act which it first enacted more than four decades ago.

We urge speedy approval by your Committee of H.R. 9472 or similar legislative proposals. This legislation is urgently needed to enable TVA to continue to meet the region's power supply needs. That this need is clearly recognized is evidenced by the bipartisan sponsorship of this measure, its endorsement by the Office of Management and Budget, and the widespread support in the Tennessee Valley for this legislation.

AMERICAN PUBLIC POWER ASSOCIATION RESOLUTION ON CEILING ON TVA BORROWING AUTHORITY, ADOPTED MAY 20, 1975, AT APPA NATIONAL CONFERENCE, BOSTON, MASS.

Whereas, the Tennessee Valley Authority (TVA) since 1959 has financed its power supply program through Federally taxable revenue bonds backed by electric revenues from electric consumers in the Tennessee Valley region, and

Whereas, it is essential to increase the present ceiling of \$5 billion on TVA's borrowing authority to permit this Federal corporation to contract for facilities to meet the area's growing power needs, and

Whereas, these investments—though paid for by the Valley's electric rate payers who purchase TVA-generated electricity from 110 municipal power systems and 50 rural electric cooperatives—are assets of the U.S. Government, thus benefiting all taxpayers, and

Whereas, TVA revenue bonds and other borrowings are not guaranteed by the Federal Government but are backed solely by power revenues from Tennessee Valley rate payers; now, therefore, be it

Resolved, That the American Public Power Association supports removal of the ceiling on TVA's borrowing authority to enable this Federal agency to continue to meet the power needs of the Tennessee Valley Authority, including the 110 municipal power systems and 50 rural electric cooperatives that provide electricity at retail to more than 6 million people, and Federal agencies and industrial customers.

STATEMENT OF NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

The National Rural Electric Cooperative Association is a service organization for about 950 rural electric cooperatives serving 25 million consumers in 2,600 counties in 46 states. These systems operate about 45 percent of all distribution lines in the United States.

NRECA strongly supports the enactment of H.R. 9472, to amend the TVA Act. This bill would raise the bond ceiling for the Tennessee Valley Authority from its present level of \$5 billion to \$15 billion and would require TVA to make only annual payments to the U.S. Treasury. (This increase has been approved by the Office of Management and Budget.)

We believe this bill is necessary for the continued orderly economic growth of the Tennessee Valley area. Much of this area is served by rural electric cooperatives in the 6 state service area. In fact, there are 50 rural electric cooperatives which depend almost entirely on the Tennessee Valley Authority for their power supply. Passage of H.R. 9472 will help to assure that these cooperatives have an adequate and reliable power supply in the future.

NRECA believes that it is not just the cooperatives in the Tennessee Valley which benefit from TVA. The TVA is a pioneer in the fields of pollution control and electric research. During its existence the Authority has participated with other executive agencies in formulating environmental rules and regulations while being one of the few agencies which must then implement those regulations.

TVA is one of the major participants in the Liquid Metal Fast Breeder Reactor project, a massive research effort sponsored jointly by the Federal government and the electric utility industry. Commercial development of the LMFBR will not only benefit residents of the Tennessee Valley but will also provide the groundwork for construction of other breeders in the country.

As you know, these benefits derived from increasing the bond ceiling will be obtained without any outlay by the Federal Treasury. By statute, all of TVA's power facilities are financed by taxable bonds issued by the Authority. The cost of power charged by TVA must cover all costs of operating, maintenance, administration and service on its borrowing. TVA also makes payments to state and local government in lieu of taxes and makes repayments to the Federal treasury for funds appropriated prior to 1959 for construction of hydroelectric plants.

TVA currently makes these payments to the Treasury on a semi-annual basis. H.R. 9472 would change this schedule to an annual basis like other Federal agencies such as the Commodity Credit Corporation and the Federal Savings and Loan Insurance Corporation. Adoption of this provision would save the ratepayers in the TVA service area about \$2 million a year. The savings is most important to the consumers who have been hit hard by drastic increases in coal prices and other fuels in recent months.

Attached to this statement is a resolution supporting the increased bond ceiling adopted by the representatives of NRECA members from regions II and III. These two regions cover the states of Kentucky, Tennessee, Mississippi, Alabama, Georgia, South Carolina, and Florida. A similar resolution will be considered at other regional meetings and at the annual meeting in Anaheim next January.

On behalf of all the member cooperatives of NRECA we urge prompt action on this legislation. TVA must have this increase in the bond ceiling authority by the end of the year if its construction and maintenance programs are to continue on schedule. This continuity is necessary to assure the people served by the nation's largest electric utility reliable service and to assure the people of the United States that the TVA's work in electric research and environmental controls will continue.

TVA BOND CEILING

Since 1959 the Tennessee Valley Authority, the nation's largest electric utility, has been financing its facilities by issuing bonds in its own name. At the same time, TVA has continued its repayments to the Federal treasury for facilities on its system originally financed by Federal appropriations.

The first self-financing law establishing TVA's bond ceiling provided for a bonding limit of \$750 million. Because of the growing needs of the rural and urban areas of the Tennessee Valley, this ceiling has been raised twice. Continued expansion of energy needs in this area makes it necessary to again increase the ceiling.

This bond ceiling increase will not require an outlay by the Federal treasury. All TVA bonds are repaid from the revenues collected from TVA's wholesale and industrial customers.

TVA's repayments to the Federal treasury will continue. Currently, these payments are made semi-annually, unlike other Federal agencies which only make payments annually.

We support the increase in the TVA bond ceiling and the adjustment of the repayment schedule to an annual basis. We believe that these proposals, incorporated in legislation introduced by Congressman Bob Jones (D-Ala.) and other members of the delegation from the Tennessee Valley, will assure TVA's continued favorable bond rating and will allow construction of facilities needed to insure continued reliable service to the rural electric cooperatives served by TVA.



