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STATEMENT OF  
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DIRECTOR, ENERGY AND MINERALS DIVISION  
BEFORE THE  
COMMITTEE ON BUDGET  
U.S. SENATE



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Senator Sasser:

We appreciate your invitation to discuss our recent report entitled "Electric Energy Options ~~Held Great Promise~~ For the Tennessee Valley Authority." My statement will focus on two areas in which you expressed special interest.

--The conclusion in our report that TVA could meet power needs through the year 2000 without constructing any more central station power plants beyond those under construction or licensed by emphasizing instead: energy conservation, improved power management, and the use of renewable resources.

--The implication of our report on TVA's request to increase its borrowing authority above the existing \$15 billion.

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*Testimony*

NEED FOR BETTER  
LONG RANGE PLANS

TVA has important responsibilities not only as a supplier of electricity, but also as an energy leader. Our work showed a need for different programs and priorities if TVA is to reflect national energy goals and to continue its role, since its creation in 1933, as a national yardstick.

When we started our work, TVA's future planning was based on a July 1977 single load forecast which projected an average annual electricity growth rate of 4.5 percent for a 15 year period. We believe the use of a single estimate for electricity growth implies that the amount of growth required is predetermined when, in fact, considerable influence can be exercised. It is for this reason that we developed two alternative projections designed to evaluate the effects of various conservation and other programs consistent with emerging national energy goals. Our high projection indicated an average annual growth rate to the year 2000 of 4 percent and our low projection an average annual growth rate of 2.7 percent.

Of course, we cannot state with certainty that either of our projections will precisely represent the future. I believe they do show, however, that increased emphasis on conservation and demand management could reduce substantially the electricity which will be required if such measures are not taken.

We believe TVA has the opportunity to demonstrate the benefits of pursuing various demand options in residential applications, power management, and solar alternatives. By exercising various options, TVA could (1) reduce the growth rate of energy demand, (2) make the existing power system more efficient, and (3) defer new generating systems. For example, TVA could save electricity and reduce energy-related costs in area households by implementing the three residential programs in the National Energy Plan. These include appliance efficiency standards, thermal standards for new construction, and several measures to encourage insulating existing residences.

Many options also exist for meeting the TVA region's power needs other than through its traditional focus on large central station nuclear construction. Our analysis showed that completion of plants presently under construction or licensed could, when coupled with a new efficiency in consumption, meet demand through the early 1990's. With expanded conservation, improved power management, and the use of renewable resources, our analysis showed the region could meet its power needs through 2000 without thermal plant construction beyond that now in the licensing process. This would allow time for evaluation, development, and testing of alternative options before making additional commitments to large central station units.

To take advantage of this opportunity, we recommended that TVA abandon its practice of issuing a single forecast based largely on extrapolation of historic trends. Instead,

TVA should develop a long-range comprehensive plan and several demand forecasts which could better reflect changing national goals. Such a plan could assess optional courses of action both from a cost-effectiveness viewpoint and in terms of TVA's yardstick function. TVA and the public could then evaluate the benefits and costs of alternative electricity futures and, as our projections suggest, consider initiatives which could influence future trends in electricity use.

While doing our work, we maintained an open dialogue with TVA regarding our tentative findings and conclusions including a briefing of the now Chairman of the TVA Board, after his appointment as a board member was announced. We believe TVA's overall response has been positive, particularly its efforts to improve in its planning and forecasting system. In July 1978, TVA developed several forecasts and extended its forecasts further into the future. In addition, TVA expanded its conservation-related programs.

TVA's most recent projections include four forecasts, the lowest of which is close to our high projection. We believe this approach is a step in the right direction and will offer TVA management some new opportunities for considering various options for the future.

As part of TVA's long-range comprehensive plan, we recommended that it undertake the following demand options.

- Increase efforts to implement national energy goals.
- Actively encourage installation of heat pumps in all new construction, in conjunction with the education and certification of heat pump installation and maintenance.
- Study and implement seasonal and time-of-day rates.
- Expand the use of interruptible contracts, but offer them on a regular interruption basis rather than an emergency.
- Initiate a program to switch off hot water heaters and larger air conditioners during peak hours.
- Evaluate and pursue opportunities for matching variable loads in the region.

To further decrease electricity demand, TVA should:

- Promote the use of solar passive building design with incentives such as design awards for builders, similar to the heat pump and Super Saver home programs.
- Design a strategy similar to the above promotion for solar water heating. In addition, TVA should provide alternatives for making these systems economically competitive for the consumer (such as reduced rates) since they are less costly to the power system than adding new generation capacity.
- Participate with the Department of Energy in the research and development of solar space heating and cooling for applications in the region.

--If the above options and other TVA initiatives do not adequately reduce demand, TVA should consider applying a power rate surcharge or issue bonds to provide money that could be used as an incentive to further conservation and the use of renewable resources.

Concerning energy supply alternatives, TVA should undertake an application/demonstration of cogeneration technologies, flue gas desulfurization technologies in its coal-fired plants, and construct commercial scale atmospheric fluidized bed combustion. Federal funding should be requested for that portion of the costs of these projects that exceed TVA's incremental cost per kilowatt. This would prevent TVA's customers from bearing the additional cost of a demonstration that benefits the Nation as a whole.

If TVA carries out the recommended programs, it can regain its position as an energy leader and as a model for the utility industry. Not only the Tennessee Valley, but the entire Nation, stands to benefit. To assure this outcome, we believe the Congress should revise TVA's legislative charter to better reflect current national energy priorities. TVA should be charged with:

- leading in the development of electricity management plans and programs,
- encouraging energy conservation and the most efficient production and use of energy,

- encouraging the use of renewable resources, and
- assuring adequate public involvement in energy planning and policymaking.

#### TVA BORROWING AUTHORITY

In regards to TVA borrowing authority, the Congress authorized TVA to incur a total indebtedness of up to \$15 billion to finance its power program. As of September 30, 1978, TVA had \$7.2 billion indebtedness outstanding and projected an outstanding level of \$9.1 billion by September 30, 1979.

Although our TVA study did not directly address the need for additional borrowing authority at this time, GAO has also conducted a recent review of cost overruns on three TVA nuclear plants under construction. That review indicates that additional borrowing of \$11.8 billion will be needed to finish the construction of those three plants and all other nuclear plants now under construction which are scheduled for completion by 1986. An internal TVA study, which we did not verify, shows that the \$15 billion borrowing authority could be exceeded by 1983 and indebtedness could reach \$28 billion by 1988. In addition, some funding would be needed to carry out the type of programs we have recommended in our report.

It seems clear that at a minimum TVA will need an increase in its borrowing authority to about \$20 billion just to finish the nuclear plants under construction.

Beyond that, the additional amount needed and timeframe for when it will be required could vary significantly. As our alternative projections have indicated, the need for adding additional capacity is based on many assumptions and uncertainties and there are various options available for decreasing or meeting demand that could have significant impacts on TVA's borrowing needs.

This is the key reason we suggested in our report closer congressional oversight of TVA operations. We recommended that TVA's plans should be reviewed and commented on by as wide a spectrum of regional citizens and institutions as practicable and by the Department of Energy, to assure consistency with national priorities. TVA, when its final plan is finished, should submit it to the Congress. The Congress should then evaluate and monitor the implementation of the plans. We of course would stand ready to assist the Congress in this regard.

This concludes my prepared statement. I will be happy to address any questions you may have.