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Report to Congressional Requesters

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TENNESSEE VALLEY AUTHORITY

Assessment of the 10-Year Business Plan

GAO

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The Honorable Bob Franks
The Honorable Marty Meehan
The Honorable Zach Wamp
The Honorable Bob Clement
House of Representatives

This report responds to your June 5, 1998, and September 24, 1998, requests asking us to review the Tennessee Valley Authority's (TVA) 10-year business plan. Increasing competition in electricity markets led TVA management to develop this plan to position TVA to be more competitive by, among other things, reducing its high debt servicing and other fixed costs. Because of concerns about TVA's ability to achieve the 10-year plan's objectives by 2007—when competitive pressures are likely to be greater and when many of TVA's long-term contracts could expire—you asked us to determine whether TVA will be able to reduce debt as envisioned in the plan and whether its goals and assumptions regarding capital expenditures and revenues and expenses are achievable or reasonable.

In order to obtain more information about TVA's competitive position as you consider its role in a deregulating electricity industry, you specifically asked us to determine whether the 10-year plan (1) addresses key issues facing TVA, (2) takes into consideration all applicable costs and revenue sources, (3) contains goals and assumptions that are achievable or reasonable and in line with industry estimates and expectations, and (4) has been updated to reflect significant changes in key goals and assumptions or actual experience. In addition, you asked us, based on our analysis of the plan, to conclude whether TVA is likely to achieve the plan's strategic objectives.

Results in Brief

Implementation of the 10-year plan is moving TVA in the right direction toward its strategic objectives by addressing the key issues it faces—its high fixed financing costs and large investment in nonproducing and other deferred assets[1] that have not been recovered through rates. The plan, which was issued in July 1997, calls for lowering fixed costs by reducing

[1]Deferred assets consist of nonproducing nuclear generating units and unamortized regulatory assets. At the time the plan was issued, the balances of these items were $6.3 billion and $2.2 billion, respectively. The costs of these assets have been deferred and have not been recovered through rates.

outstanding debt by about one-half—to about $14 billion—by 2007. The plan also provides for the recovery through rates of all but about $500 million of the $8.5 billion in deferred assets outstanding as of the plan issuance date.

The year 2007 is key for TVA because it expects to face greater competitive pressures by then and because many long-term contracts with customers could expire at about that time. As a result, the plan emphasizes changes designed to enable TVA to offer competitive rates by the end of 2007. The more progress TVA makes toward addressing the key issues it faces while it maintains its legislative protections and before its customer contracts could begin to expire, the better positioned it will be to successfully operate in a competitive market.

While focusing on the right issues, TVA's plan does not fully address certain costs. Not addressing these costs could jeopardize full achievement of the plan's objectives. Specifically, the plan does not include (1) the capital costs of increasing generating capacity to meet the growth in demand for power as is now currently planned; instead, it provides for meeting the growth in demand for power by purchasing power from other utilities, (2) the cost of complying with new and proposed environmental regulations, and (3) the cost of nonpower programs that were formerly fully funded through appropriations. TVA estimates that these additional costs will total about $1 billion over the remaining life of the plan and will likely be higher.

We also found that while many of the plan's goals and assumptions were achievable or reasonable, certain of them were not, largely due to the additional expected costs described above. For example, the plan calls for capital expenditures to be limited to about $600 million per year, which is not feasible given the additional costs that will likely be incurred to comply with new environmental regulations and to invest in new generating capacity to meet growth in demand for power. However, some of these additional costs could be offset by increases in expected market rates of power in 2007. Specifically, since many power producers will incur additional costs for the new and proposed environmental regulations, it is anticipated that the market price of power will increase across the board to help absorb these costs. However, the extent to which different producers will be affected, and the resultant impact on their power prices, is unknown at this time.

Because of the additional costs not addressed in the 10-year plan, it is unlikely that TVA can reduce its debt to the extent planned by 2007. Estimates in TVA's fiscal year 2000 federal budget request indicate that its debt reduction goal will likely not be achieved until 2009. The added costs will also negatively impact TVA's ability to meet its goal of reducing the balance of its deferred assets, since TVA may not have the ability to begin recovering these costs through rates if it does not sufficiently reduce its other costs first. Achieving these goals is key to TVA meeting its strategic objective of increasing financial flexibility by reducing fixed costs. This in turn is key to its ability to offer competitively priced power in 2007—TVA's ultimate objective.

However, since it is not possible to accurately predict what the market price of power will be in 2007, TVA could still achieve its objective of offering competitively priced power, even if it does not fully achieve the plan's other goals and objectives. Conversely, depending on the market price of power, TVA could fully achieve all of the goals and objectives outlined in the plan and still not be positioned to offer competitively priced power in 2007 and beyond. Nevertheless, any progress it makes toward its goals and objectives will put TVA in a better competitive position.

While TVA has acknowledged major changes to several of the plan's goals and assumptions and has factored these into its internal planning, the 10-year plan has not been formally updated to reflect these changes. Until the plan is formally updated, the Congress and other external users of the plan will not have the current information needed to make policy, oversight, and investment decisions related to TVA. Because of this, we have recommended that TVA (1) move quickly to formally update the plan and (2) periodically report to the Congress and other plan users about its progress toward meeting the plan's objectives.

Background

The Energy Policy Act of 1992 (EPAct) provides TVA with certain protections from competition. Additionally, under the TVA Act of 1933 (TVA Act), as amended, TVA is not subject to most of the regulatory and oversight requirements that must be satisfied by commercial electric utilities; instead, all authority to run and operate TVA is vested in its three-member board of directors. In 1959, the Congress amended the TVA Act by establishing what is commonly referred to as the TVA "fence," which prohibits TVA—with some exceptions—from entering into contracts to sell power outside the service area that TVA and its distributors were serving on July 1, 1957. Under EPAct, TVA is exempt from having to allow other utilities to use its transmission lines to transmit power to customers within TVA's service area. This legislative framework generally insulates TVA from direct wholesale competition and, as a result, TVA remains in a position similar to a regulated utility monopoly.

However, TVA is still subject to some forms of indirect competition. For example, TVA has no protection against its industrial customers relocating outside its service area or businesses deciding not to move to its service area for reasons related to the cost of power. In addition, customers can decide to generate their own power. Accordingly, TVA is currently subject to some competitive pressures.

EPAct's requirement that utilities make their transmission lines accessible to other utilities to transmit (wheel) wholesale electricity has enabled wholesale customers to obtain electricity from a variety of competing suppliers and has resulted in increased wholesale competition in the electric utility industry across the United States. This requirement does not apply to TVA if the power is going to be consumed within its service territory. Most of TVA's sales are wholesale because they are to its power distributors. In addition, continuing deregulation efforts in some states have led to competition at the retail level. Industry experts expect that retail deregulation will continue to occur on a state-by-state basis over the next several years. As this occurs, industrial, commercial, and, ultimately, residential consumers will be able to choose their power supplier from among several competitors rather than from one utility monopoly, as is now the case for long distance telephone service and cellular phones.

Because EPAct exempts TVA from having power wheeled to consumers in its territory, TVA has not been directly impacted by the ongoing deregulation of the electric utility industry to the same extent as other utilities. However, if TVA were to lose its exemption from the wheeling provisions of EPAct, its customers would have the option of obtaining their power from other sources after the expiration of their contracts. Under legislation proposed by the administration to promote retail competition in the electric power industry, which TVA supports, TVA's exemption from the wheeling provisions of EPAct would be eliminated after January 1, 2003. If the legislation is enacted, TVA may be required to use its transmission lines to transmit the power of other utilities for consumption within TVA's service territory. In addition, the proposed legislation would remove the statutory restrictions that prevent TVA from selling power outside its service territory.

Most of TVA's power is sold to municipal and cooperative power distributors who would be directly affected in the future by retail competition through their customers' ability to choose alternate power suppliers. Further, deregulation and the possibility of TVA losing its legislative protections have made many of TVA's customers more aware of price differences among utilities, raised expectations of lower prices, and increased demands for more competitive pricing.

Because of these ongoing deregulation efforts, TVA management, like many industry experts, anticipates that TVA may lose its legislative protections in the future. Even if TVA does not lose its legislative protections, TVA's management has recognized the need to take action to better position TVA to be competitive in an era of increasing competition and customer choice and, in July 1997, issued a 10-year business plan with that goal in mind. TVA established a 10-year horizon for implementing the key changes outlined in the plan largely because TVA officials expect to be facing greater competitive pressures within that time frame and many of its long-term contracts with customers could begin to expire in 2007. The published plan, which formed the basis of our evaluation, contains three strategic objectives:

- reducing TVA's cost of power in order to be in a position to offer competitively priced power in 2007,
- increasing financial flexibility by reducing fixed costs, and
- building customer allegiance.

In developing the 10-year plan, TVA set several goals and made certain assumptions about the future.[2] These goals and assumptions are that

- the future market price of wholesale power will be 3.4 to 3.5 cents per kilowatthour[3] (kWh) by 2007;
- annual growth in demand through 2007 will average 2 percent;
- fuel costs will increase 1.7 percent annually through 2007;
- improvements in supply chain management[4] will save $50 million annually;

[2]Dollars discussed in this report are nominal dollars.

[3]A kilowatthour is 1,000 watthours. A watthour is equal to 1 watt of power applied for 1 hour.

[4]Supply chain management is a comprehensive process that begins with examining the need for the product, progresses through procurement, and ends with utilization or disposition.

- TVA's labor force will be reduced and additional cost savings will be achieved through the creation of shared services[5] and other initiatives;
- debt will be reduced by about one-half to about $14 billion, and the balance of deferred assets will be reduced from $8.5 billion to $500 million—TVA's estimated net realizable value of these assets;[6]
- capital expenditures will be limited to about $600 million annually and increases in demand through 2007 will be met primarily through purchased power;
- $200 million will be saved annually through cost improvement initiatives primarily related to refinancing Federal Financing Bank (FFB) and public bond debt, pursuing changes to its retirement plan, and improving business processes;
- revenues from power sales will be increased by about $325 million annually by implementing a rate increase in 1998 and maintaining it through 2007; and
- customer relations will improve through new contract and pricing options.

To implement the 10-year plan, TVA has developed action plans and has linked the goals and objectives of the 10-year plan to its corporate and business unit goals. For example, one of TVA's corporate goals is to lower costs; one of the 10-year plan's strategic objectives is to increase financial flexibility by reducing fixed costs; and the Fossil and Hydro Power business unit's business plan includes a unit goal of maximizing net return by reducing fixed and variable costs.[7] However, TVA has not yet completed the process of developing performance measures to provide accountability. TVA expects to develop these performance measures later in 1999, business units will be expected to meet performance goals in 2000, and unit managers and TVA executives are expected to be held directly accountable through the use of compensation incentives in 2001.

[5]Shared services involve consolidating similar operations from various business units and thereby reducing duplicative efforts.

[6]While not specifically discussed in the published plan, TVA's supporting materials establish a goal of recovering about $8 billion in nonproducing nuclear generating units and unamortized regulatory assets (deferred assets) by 2007 in conjunction with its reduction of debt.

[7]Fixed costs (such as interest expense) remain fairly constant and do not fluctuate with the volume of production. Variable costs (such as fuel) fluctuate in the same manner as the volume of production.

Objectives, Scope, and Methodology

We evaluated the three strategic objectives of TVA's plan and the underlying goals and assumptions for reasonableness, achievability, and completeness. As agreed with your offices, we did not (1) assess whether achieving the objectives of the plan would ensure TVA's future competitiveness or (2) develop independent estimates of key elements of the plan, such as the future market price of power. We relied on comparisons of past performance to future projections, the opinions of industry experts, and economic forecasts made by knowledgeable sources to determine whether the individual components of the plan and the plan as a whole were achievable or reasonable. Additional information on our objectives, scope, and methodology is contained in appendix I.

We conducted our review from June 1998 through April 1999 in accordance with generally accepted government auditing standards. We provided a draft of this report to TVA for comment. While generally agreeing with the report's contents, TVA did provide oral and written comments, which we have incorporated, as appropriate. TVA's written comments are reproduced in appendix II.

Plan Objectives Address Key Issues Confronting TVA

Implementation of the 10-year plan is moving TVA in the right direction and addresses important issues facing TVA: its high fixed financing costs and limited financial flexibility to respond to competitive pressure and the large amount of deferred assets that have not been recovered through rates. These deferred assets, which totaled about $8.5 billion as of the beginning of the plan period, are primarily the result of investments made since the 1970s in nuclear generating plants that were never put into production. This helped contribute to TVA's large debt, which totaled about $27 billion as of September 30, 1998, and resultant high fixed financing costs.

TVA's ability to meet its strategic objective of being in a position to offer competitively priced power by 2007 and to improve its financial flexibility hinges largely on its being able to meet its goal of reducing debt by about one-half—to about $14 billion—by 2007. While not specifically stated in the plan, TVA also plans to recover through rates all but $500 million of its deferred asset costs by the end of the period covered by the plan.[8]

[8]The remaining $500 million is TVA's estimate of the net realizable value of its deferred assets at the end of 2007.

These issues were highlighted in reports[9] we issued in 1995 and 1997, in which we stated that TVA's annual financing costs and deferred assets were substantially greater than those of the utilities with which TVA would most likely have to compete. We also reported that these high fixed costs and deferred assets would limit TVA's flexibility to adjust its rates in a competitive environment. TVA, through its 10-year plan, is taking steps to address these issues. Other utilities are taking similar actions to prepare for competition. For example, utilities we previously identified as those most likely to compete with TVA are also taking steps to refinance debt at lower interest rates and accelerate recovery of the costs of their regulatory assets. However, as we reported in 1995 and 1997, these other utilities generally have fewer financing costs and deferred assets than TVA, giving them more flexibility to respond to changing market conditions. To the extent TVA recovers the costs of its deferred assets and increases its financial flexibility, it will increase its ability to adjust rates as necessary to meet changing market conditions. TVA's focus on these areas before the full advent of competition is key to its chances of being competitive without legislative protections.

Plan Does Not Include Certain Major Costs

The 10-year plan includes costs that correspond to those incurred in prior years and to those reported by other utilities. In addition, the plan considers costs for Year 2000 compliance[10] and likely environmental expenditures under existing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) regulations.[11] However, the plan does not

[9]Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability (GAO/AIMD/RCED-95-134, August 17, 1995) and Federal Electricity Activities: The Federal Government's Net Cost and Potential for Future Losses (GAO/AIMD-97-110 and 110A, September 19, 1997).

[10]The Year 2000 problem is rooted in the way dates are recorded and computed in many computer systems. For the past several decades, systems have typically used two digits to represent the year—such as "98" for 1998—to save electronic data storage space and reduce operating costs. With this two-digit format, however, the year 2000 is indistinguishable from 1900, 2001 from 1901, and so on. As a result of this ambiguity, system or application programs that use dates to perform calculations may generate incorrect results when working with years after 1999. We verified that TVA's plan had considered the cost for Year 2000 compliance. However, we did not determine whether TVA would be Year 2000 compliant or assess its estimated costs for becoming compliant.

[11]CERCLA (as amended) governs cleanup of both federal and nonfederal hazardous waste sites. RCRA addresses prevention and remediation of releases of hazardous waste from both current and past industrial operations. As a power producer, TVA has been identified by the Environmental Protection Agency as a potentially responsible party for releases from various sites.

include certain major costs. Specifically, the plan does not include the following:

- The capital costs of additional generating capacity that may be acquired to meet growth in demand for power. The plan assumes that TVA would meet the increasing demand for power over the plan period by purchasing power from other utilities. The costs of the power purchases are reflected as operating costs in the 10-year plan.
- The cost of complying with new environmental regulations.
- The cost of nonpower programs that, to date, have been funded primarily through appropriations. These appropriations, which amounted to $70 million in fiscal year 1998, are expected to be substantially reduced or discontinued beginning in fiscal year 2000.

By not including these costs, TVA will have less cash than contemplated in the plan to pay down debt and reduce fixed costs, which could jeopardize full achievement of the plan's objectives.

Plan Does Not Include Costs Associated With Investing in New Generating Capacity

TVA estimates that the demand for peaking power[12] in its service territory through 2007 will exceed its current and planned generating capacity. TVA currently has several options planned or underway to meet a portion of this excess demand, including (1) purchasing new gas-fired combustion turbines, (2) purchasing power that was already under contract when the 10-year plan was issued, (3) modernizing hydro facilities, (4) improving the efficiency of certain existing fossil plants and combustion turbines, (5) contracting for the power from a new lignite[13] plant, (6) upgrading certain nuclear plants, and (7) issuing a request for proposal for purchasing power generated from renewable resources. TVA projected that these measures would not be sufficient to meet the entire increase in demand, and the 10-year plan assumes that TVA will purchase power from other utilities to make up the difference, which is inconsistent with prior year practices.

However, since the plan was finalized, TVA officials have told us that they plan to evaluate other power supply options and to invest in new capacity if

[12]Peaking units are used to meet the demand for power that exceeds the capacity of generating equipment that is operated to meet normal demand.

[13]Lignite is low-grade coal with high moisture and volatile matter content that is used almost exclusively for electric power generation.

the resulting long-term increase in costs to produce power (interest and operating expense) would ultimately be less than the cost of purchased power. TVA has already decided to invest in new capacity rather than purchasing power in at least one case—in 1998, TVA announced plans to purchase eight gas-fired combustion turbine units[14] that will be used to replace a like amount of purchased peaking power that was assumed in the original plan.

According to TVA officials, while they expect this decision to result in a positive cash flow by fiscal year 2010, the decision to purchase these units will require about $65 million more in cash disbursements through 2007 than would have been necessary to purchase a comparable amount of power from other utilities. But, according to TVA's analysis, while acquiring this new generating capacity in lieu of purchasing power will initially increase capital expenditures and thus reduce the amount of cash available to pay down debt, it will also decrease TVA's annual cost of power because it will be less expensive for TVA to operate this new equipment than to purchase a like amount of power from other utilities. Decreasing the cost of power should, in the long term, improve TVA's ability to meet its ultimate objective of offering competitively priced power. In addition, purchasing new generating capacity provides the added benefit of removing the uncertainty of having to rely on another utility for power. Based on our discussions with TVA officials, while it may make economic sense in the long term, additional decisions to increase capacity in lieu of purchasing power from other utilities will likely further reduce TVA's cash available for debt reduction through 2007, thus jeopardizing its ability to fully meet the plan's debt reduction goals by 2007.

Plan Does Not Include Costs of Complying With Environmental Regulations

The 10-year plan does not include estimated costs of complying with recent and proposed environmental regulations because TVA did not believe the costs were estimable at the time the plan was developed. Since that time, some of these costs have become estimable.

In October 1998, the Environmental Protection Agency (EPA) issued a regulation requiring states to develop plans to reduce nitrogen oxide emissions. TVA now estimates that it could spend about $500 million to $600 million for capital modifications to its fossil plants to comply with

[14]TVA estimates that these new units will produce about 576 megawatts of power each year beginning in fiscal year 2000.

state plans that would be implemented under this regulation, which is commonly referred to as the NOx SIP Call.[15] The time frame for TVA's compliance with the states' plans is 2003, within the scope of the 10-year plan. In October 1998, EPA also issued a proposed regulation regarding regional haze,[16] which EPA expects to be put into effect during the life of the plan but for which EPA does not expect compliance until after 2004. TVA has estimated that this regulation could require capital expenditures of about $450 million to $500 million. It is likely that at least a portion of these costs will be incurred during the time frame of the 10-year plan.[17] Additionally, all of the estimated $500 million to $600 million in costs related to the NOx SIP Call will be incurred during the plan time frame and, thus, will negatively impact TVA's ability to meet its cost reduction goals.[18] However, as discussed later, TVA officials told us that they still believe TVA will be in a position to offer competitively priced power in 2007 because these same types of costs will be incurred by many other power suppliers and therefore would tend to increase the future market price of power.

Plan Does Not Include Costs of Nonpower Programs Formerly Funded Through Appropriations

The plan does not include the costs of nonpower programs that historically have been funded through appropriations but now are likely to be funded through power revenues. The plan assumes that TVA will continue to receive appropriations for its nonpower programs, such as flood control and navigation. While this assumption was reasonable when the plan was developed, TVA's nonpower appropriations have been sharply curtailed in recent years, from $109 million in fiscal year 1996 to only $7 million in TVA's budget request for fiscal year 2000.[19]

[15] 63 Fed. Reg. 57356, 57491 (1998) (to be codified at 40 C.F.R. pt. 51).

[16] 63 Fed. Reg. 56394 (1998) (to be codified at 40 C.F.R. pts. 52 and 98) (proposed Oct. 21, 1998). Regional haze concerns visibility problems from airborne particles.

[17] TVA estimates that the impact of the NOx SIP Call and regional haze regulation on the future market price of power would be to increase it by up to .3 cents per kWh. As is discussed later, this also impacts TVA's projection for its target price of power in 2007.

[18] In addition to the EPA regulations, the Kyoto Protocol--an international treaty to reduce net emissions of certain greenhouse gases--could impact the future market price of power. Because the treaty has not been ratified, the methods to be used and time frame for compliance have not been established. Therefore, the 10-year plan appropriately does not address costs related to the treaty.

[19] As of April 21, 1999, the appropriations bill containing TVA's requested appropriations had not been passed.

TVA officials have indicated publicly that future appropriations for nonpower programs are likely to be eliminated or substantially reduced and, in accordance with the fiscal year 1998 Energy and Water Development Appropriations Act, have indicated they will use power revenues to continue these nonpower activities. These costs totaled approximately $70 million in fiscal year 1998 and are expected to range from about $50 million to $60 million annually in the future.[20] Since funding nonpower activities with power revenues was not assumed in the 10-year plan, these costs will further reduce the cash available to reduce debt to the level envisioned in the plan.

Seven Key Goals and Assumptions Are Achievable or Reasonable, While Three Are Unachievable or Uncertain

We assessed 10 goals and assumptions TVA made about the future in developing the 10-year plan. Based on economic forecasts, comparisons with TVA's results of past operations, and the opinions of industry experts, we concluded that seven of the goals and assumptions were achievable or reasonable, two were unachievable, and one was uncertain. The goals and assumptions we assessed, and our conclusions about each, are summarized in table 1 and discussed in detail in the following sections.

Table 1: GAO Conclusions About the 10-Year Plan's Goals and Assumptions

Goal or assumption assessed	GAO conclusion
Future market price of power	Reasonable
Increase in demand for power	Reasonable
Increase in fuel costs	Reasonable
Supply chain savings	Achievable
Labor force reductions	Reasonable
Debt reduction and recovery of deferred assets	Unachievable
Capital expenditure limitation	Unachievable
Cost improvement initiatives	Achievable
Increased revenues	Uncertain
Customer relations improvements	Achievable

[20] TVA officials have indicated that they will seek to identify and implement operating efficiency measures that are expected to reduce the costs associated with nonpower programs without affecting program operations.

Assumption About the Future Market Price of Power Is Reasonable

TVA's assumption about the future market price of wholesale power is important to the success of the plan because it establishes a target that TVA must achieve in order to offer what it considers to be competitively priced power in 2007. TVA estimated that the price of wholesale power in 2007 would fall between 3.0 cents to 3.7 cents per kWh, with its best estimate being 3.4 to 3.5 cents per kWh. The Energy Information Administration (EIA) within the Department of Energy (DOE) estimated that the price of wholesale power in 2007 would be 3.69 cents per kWh, while Standard and Poor's DRI[21] estimated that it would be 3.91 cents per kWh. The combined range of EIA and DRI estimates was 3.57 cents to 4.35 cents per kWh.[22] Since TVA's projection of the future market price of power in the 10-year plan is lower, TVA is forced to be aggressive in pursuing its options to reduce costs and increase revenue.

TVA officials said that if they were to prepare the 10-year plan today, their projection for the market price of wholesale power in 2007 would increase to between 3.5 and 3.8 cents per kWh, due primarily to new environmental regulations. TVA officials stated that the new environmental regulations would likely drive up the market price of power and affect many utilities similarly. Any upward revision in the projected price of wholesale power in 2007 would have a positive impact on TVA's ability to achieve the objectives of the plan and would help offset some of the previously identified costs that are not currently considered in the plan—specifically, costs for the new environmental regulations.

However, the extent to which new environmental regulations affect any utility depends on the type and condition of its generating equipment, the portion of its power generated by coal, and the types of controls it chooses to meet the new environmental regulations. Although, in aggregate, the mix of generating plants among investor-owned utilities in the states that border on TVA's service territory is similar to its own, TVA and these utilities will not necessarily all be affected equally, depending on the condition of their equipment and the compliance options they choose.

[21] DRI is an economic forecasting and consulting company with expertise in the energy industry. DRI did not project the future market price of wholesale power based on the same criteria as TVA and EIA; we extrapolated an estimate from the data it provided.

[22] In all cases, data from other sources is not 100 percent comparable to TVA's data because of slight differences in geographic boundaries, timing differences (for example, TVA's plan was developed in mid-1997 and we conferred with other sources in late 1998 and early 1999), and possible differences in methodologies.

Therefore, the relative impact of the new and proposed environmental regulations on TVA, its neighboring utilities, and the market price of power is uncertain.

Assumption About the Increase in Demand for Power Is Reasonable

The 10-year plan assumes that the increase in demand for power in TVA's service region will average 2 percent per year over the plan period. While TVA's recent historical increase in demand for power has averaged over 3 percent annually, TVA officials were conservative in this regard because they do not expect this level of growth in demand to continue. We obtained other estimates of the increase in demand for power in TVA's geographic area from EIA, DRI, and ICF Kaiser Consulting Group, an organization hired by the Edison Electric Institute (EEI), an industry group for investor-owned utilities, to analyze TVA's 10-year plan.[23] Their estimates of growth in demand ranged from 1.7 percent to 2.5 percent. TVA's assumption about growth in demand for power is reasonable based on this range of estimates established by industry experts.

Assumption About the Increase in Fuel Costs Is Reasonable

The 10-year plan assumes that TVA's fuel cost, including its mix of both nuclear and coal as a fuel source, will increase 1.7 percent annually over the plan period. We obtained a cost increase estimate of 1.4 percent annually from EIA, which was based on a blended coal and nuclear fuel mix. We also obtained a cost increase estimate of 2.2 percent annually from DRI, which was based on using only coal as a fuel. Based on the range of these estimates, TVA's assumption about fuel costs is reasonable.

To control fuel costs, TVA officials stated that they competitively bid all coal contracts, use a cost model to determine which type of coal to purchase, and have reduced inventories to save carrying costs. These fuel-handling initiatives are expected to reduce fuel expense by $1.6 million per year. In addition, TVA has expanded its by-product program[24] and expects revenue from this program to be over $5 million per year. TVA's efforts to

[23]Although ICF was hired to analyze TVA's 10-year plan by utilities that would likely compete with TVA in a deregulated environment and therefore lacks independence in this instance, ICF does offer specialized knowledge of TVA and surrounding areas. We did not rely exclusively on ICF for confirmation of TVA's assertions.

[24]By-products are produced from burning coal. Under the by-product program, TVA avoids certain disposal costs and generates revenues from the sale of ash for ready-mix concrete, gypsum for wallboard, and structural landfill products.

control these costs are positive steps toward the plan's cost reduction goals.

Goal for Supply Chain Savings Is Achievable

The 10-year plan assumes that improvements made to supply chain management will save, on average, $50 million per year over the 10 years covered by the plan. And, by expanding its supply chain management efforts in the future, TVA officials believe that they can increase efficiency, save money, and maintain quality. For example, through contract management improvements, TVA expects to realize cost savings by consolidating its blanket purchasing contracts, reducing the number of small purchase orders, and renegotiating the terms and conditions of its purchases.

From the publication of the 10-year plan in July 1997 through September 1998, TVA had documented savings of about $75 million, some of which represents categories of savings that should occur on a monthly basis. The balance represents savings on individual purchases and other procurement initiatives, some of which may also recur. As TVA implements additional supply chain management initiatives and applies lessons learned from industry and individual plants to other TVA functions, supply chain savings are expected to increase. For the first 6 months of fiscal year 1999, TVA documented savings of about $37 million, or about $6.2 million per month. Of the $6.2 million, about $4.9 million should recur monthly. On an annual basis, TVA's supply chain savings are therefore likely to be at least $59 million, making this goal achievable.

Assumption About Labor Force Reductions Is Reasonable

The 10-year plan assumed that TVA would reduce its labor costs by reducing its labor force size from 14,960 at June 30, 1997, to 14,275 by September 30, 1997. Although TVA did not achieve this staffing level by September 30, 1997, it had reduced staff to 14,194 by December 31, 1997, and to 13,818 by September 30, 1998. Since TVA has exceeded its labor force reduction goal, the corresponding cost savings will be greater than originally anticipated.

In addition, TVA has taken or planned a number of other actions that will further help reduce labor costs, including

- negotiating compensation levels with one of its large unions, which TVA expects will help to curtail the rise in future labor costs,

- replacing higher paid employees with lower paid employees as its aging workforce retires, and
- implementing a "shared services" concept, which involves consolidating similar operations and reducing duplicative efforts.

Although TVA did not quantify the dollar savings it expects through its labor initiatives, TVA's current efforts in this area should help it reduce costs.

Debt Reduction and Deferred Assets Recovery Goals Are Unachievable

The 10-year plan calls for reducing debt by about one-half to about $14 billion by 2007. This reduction, in turn, would lower TVA's annual interest costs by half—from about $2 billion in 1997 to about $1 billion in 2007. The additional cash that is made available as debt is paid down and interest costs are reduced can be used to further reduce debt. This interrelationship is integral to meeting the debt reduction goal. In addition to reducing interest costs by reducing debt, TVA is pursuing other interest savings by refinancing outstanding debt, as discussed later in this report.

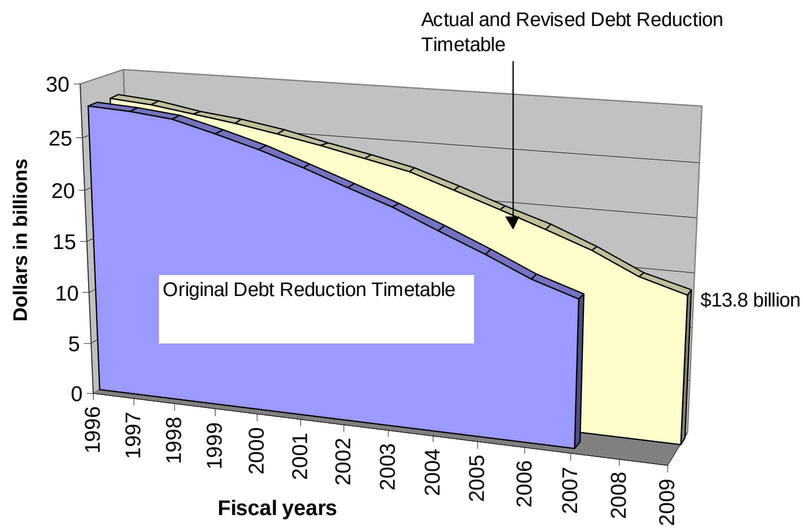
TVA's ability to meet its strategic objective of being in a position to offer competitively priced power by 2007 depends, to a large extent, on meeting its debt reduction goal. The plan calls for the cash flow needed to achieve this debt reduction to be provided by a combination of planned revenue enhancements, cost savings initiatives, and capital expenditure limitations. However, as discussed previously, the plan excluded additional capital costs related to investing in new generating capacity to meet growth in demand for power, complying with new environmental regulations, and funding nonpower programs that were previously funded through appropriations. As shown in figure 1, TVA exceeded its debt reduction goals for the first 2 years of the plan but does not expect to meet its original estimates for the remaining years due to the additional capital expenditures for new generating capacity and environmental regulations discussed previously.

Figure 1: Comparison of Planned to Actual and Revised Annual Debt Reduction Plan

Source: GAO analysis based on data from TVA.

As a result of changes in certain of its cost estimates, TVA now does not expect to reduce debt by one-half until fiscal year 2009, about 2 years after the plan's original target date. This revised goal is reflected in TVA's fiscal year 2000 federal budget request. TVA's original and revised debt reduction timetable is shown in figure 2.

Figure 2: Original and Revised Debt Reduction Timetable



Source: GAO analysis based on data from TVA.

TVA's planned revenue enhancements and cost savings were also intended to provide TVA with the opportunity to recover a portion of the cost of its deferred assets. As noted previously, TVA expects to recover all but about $500 million–its estimated net realizable value–of the deferred assets. However, TVA's ability to include the costs of these assets in its rates without further rate increases is directly related to its ability to meet the plan's revenue and cost savings targets. To the extent TVA does not recover the cost of its deferred assets while it is legislatively protected from competition, competitive pressures could prevent it from selling power at rates sufficient to recover the cost of these assets indefinitely.

Capital Expenditure Limitation Goal Is Unachievable

The plan assumes that capital expenditures will be limited to about $600 million per year and excludes any capital costs for increasing generating capacity and complying with new environmental regulations. However, as discussed previously, known environmental costs alone are an estimated $500 million to $600 million. In addition, costs for complying with a proposed environmental regulation that is likely to be implemented within the plan period could amount to another $450 million to

$500 million, some of which would be incurred before 2007. Also, the costs for meeting growth in demand for power with additional generating capacity, which are not fully estimable at this time, could further increase TVA's required capital expenditures within the period covered by the 10-year plan.[25] Even though upward revisions in TVA's projected market price of wholesale power could offset some of these additional costs, TVA is likely to exceed its annual $600 million planned capital expenditures limit, thus making this goal unachievable.

Cost Improvement Initiatives Goal Is Achievable

The 10-year plan calls for TVA to undertake cost improvement initiatives that are assumed to save about $200 million a year over the life of the plan. These initiatives include refinancing TVA's Federal Financing Bank (FFB) debt, refinancing and replacing other debt at lower interest rates, changing retirement benefits, and improving business processes. Overall, the goals related to these initiatives are achievable.

Reducing Interest Costs by Refinancing Debt

To achieve a large portion of the $200 million annual cost improvement initiatives, the plan called for TVA to obtain authority from the Congress to prepay, without penalty, the $3.2 billion that TVA then owed FFB, then to refinance that debt at lower interest rates. TVA received that authority in the fiscal year 1999 Treasury and General Government Appropriations Act. TVA refinanced the FFB debt with $2.7 billion of long-term bonds having an average interest rate of 5.37 percent compared to the original 9.67 percent FFB debt, plus $469 million of short-term debt which, as of April 1999, had a current interest rate of about 4.8 percent. Based on the actual interest rates of the refinanced FFB debt, we estimate that the interest savings will total about $1 billion through 2007, providing an average annual savings of about $116 million toward the $200 million plan goal.

In addition to reducing interest by refinancing the FFB debt, the plan calls for reducing annual interest costs by refinancing a portion of the $24 billion in outstanding publicly held debt and replacing maturing debt, as needed, with lower interest rate borrowings. Since the plan was issued, TVA has refinanced about $6 billion of long-term public bonds that had an average interest rate of 6.96 percent with long-term bonds having an average interest rate of 6.00 percent and $699 million of short-term borrowings that had about a 4.8 percent interest rate as of April 1999. We estimate that

[25] As previously discussed, TVA believes any capital investments for generating capacity will lower its cost of power relative to the estimate contained in the plan.

these actions will save an average of $44 million in annual interest expense through 2007.

TVA may have further opportunities to refinance additional long-term public bonds at favorable rates since as of April 1, 1999, about $11 billion of TVA's outstanding long-term public debt had interest rates higher than TVA's estimated 6.55 percent borrowing rate.[26] Of the $11 billion, $6.3 billion is callable during the plan period; however, none was callable as of April 1, 1999.

Retirement Plan Changes

According to TVA officials, another $20 million to $25 million a year will be saved by changes made to TVA's retirement plan. The costs of certain retiree health benefits that TVA was paying for from operations were discontinued, while at the same time a supplemental pension benefit was added to the retirement plan. The result, according to TVA officials, was a net cash flow saving of about $20 million to $25 million per year. According to TVA officials and as confirmed by TVA's fiscal year 1998 audited financial statements, the pension plan is currently overfunded because it has an excess of plan assets over projected benefit obligations of $323 million as of September 30, 1998. TVA does not expect to have to make any additional contributions to the pension plan through 2007.

Business Process Improvement Initiatives

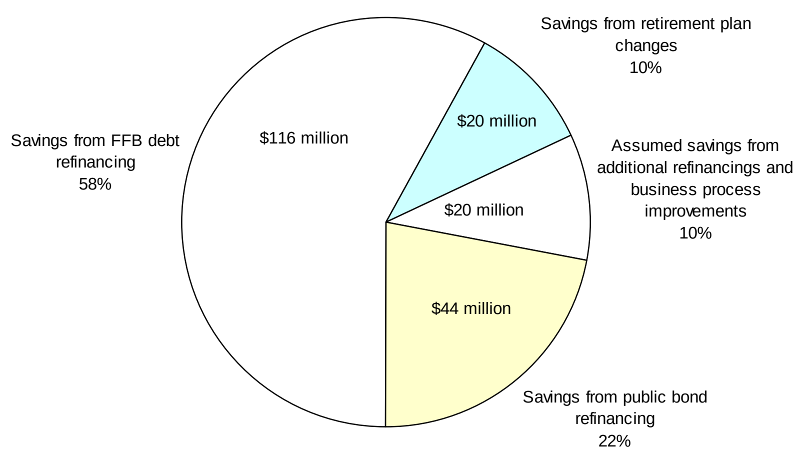
TVA also expects to achieve cost savings from business process improvement initiatives that involve bringing teams of TVA staff together to evaluate how TVA does business. For example, TVA has established teams from throughout the organization to (1) improve the technology used to process information, (2) benchmark best practices of industry as well as individual TVA plants, and (3) adopt identified best practices across the organization. While some teams appear to be well established, others are only getting started. Because these initiatives are in the early stages, their benefits have not yet been quantified, and TVA officials told us that they are only now beginning to identify cost saving techniques that can be shared throughout the organization.

As shown in figure 3, TVA substantially achieved the $200 million cost savings goal for fiscal year 1999 by reducing interest costs and changing its retirement plan. Assuming that TVA's annual savings from refinancing debt and changing its retirement plan average $160 million and $20 million,

[26]This rate represents an average rate estimated to be available to TVA for callable and noncallable long-term public bonds.

respectively, TVA must save an additional $20 million annually by improving business processes, refinancing additional debt, and reducing other costs to achieve the $200 million savings assumed in the plan. Since this required additional savings of $20 million is relatively small—less than half of 1 percent of TVA's fiscal year 1998 operating revenues of $6.7 billion—we believe that it is feasible that these changes will enable TVA to save the additional amount needed to achieve the $200 million annual cost reduction goal.

Figure 3: Cost Savings for Fiscal Year 1999 Under TVA's Cost Improvement Initiatives



Source: GAO analysis based on data from TVA.

Assumption About Increased Revenues Is Uncertain

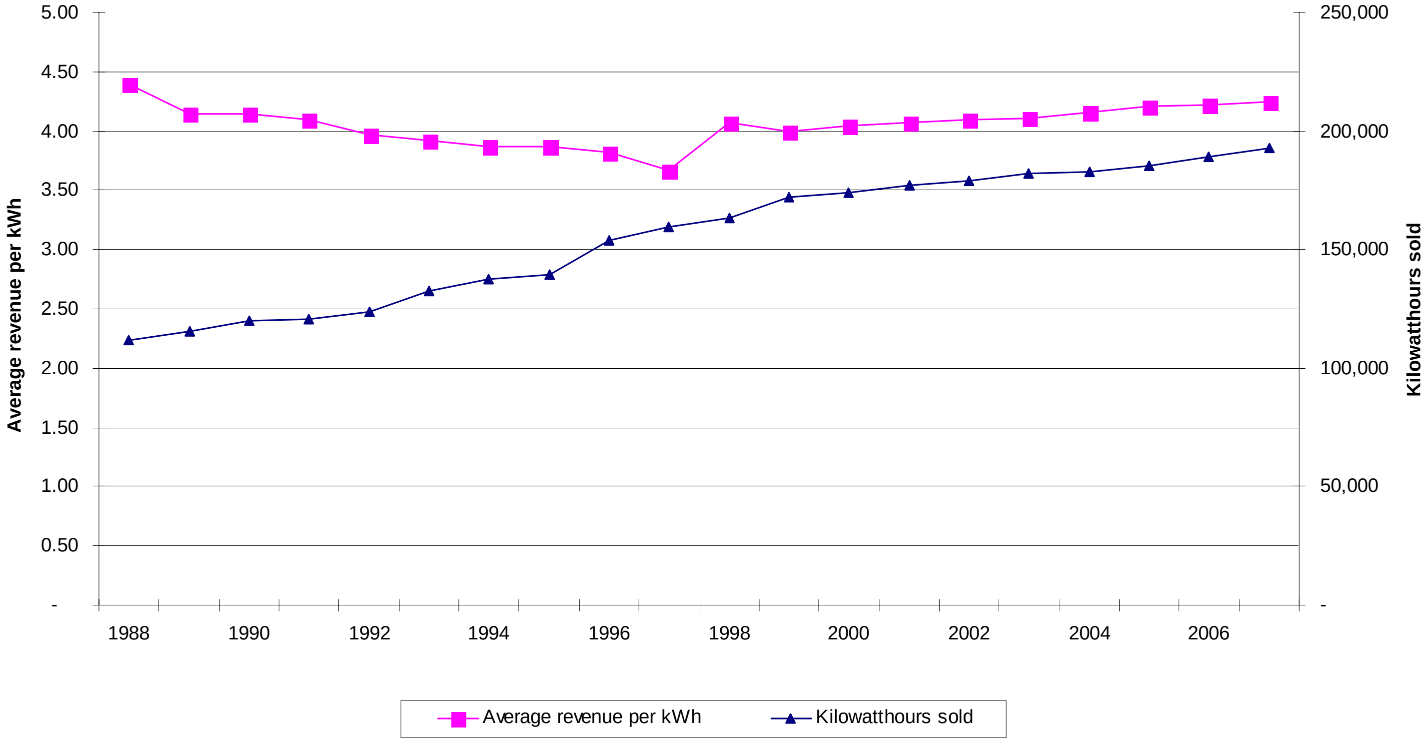
TVA's revenues increased significantly in fiscal year 1998 due to a rate increase and to increased energy sales. TVA's fiscal year 1998 revenues totaled about $6.7 billion, compared to $5.9 billion in fiscal year 1997—an increase of about $800 million. According to TVA, about $350 million of the increase is attributed to the rate increase; the balance is attributable to increased sales volume that resulted from extreme weather in the summer months and other factors.

The 10-year plan assumes that this rate increase is sustainable and will generate additional revenues of about $325 million annually through 2007.

However, based on the decline in TVA's average revenue per kWh over the past 10 years, and expectations of increasing competition in the electricity industry, we agree with some industry experts who question TVA's ability to meet the plan's assumption about future revenue. Specifically, an analyst from the Congressional Budget Office (CBO) with expertise in issues related to TVA and consultants from ICF Kaiser (which was hired by the Edison Electric Institute to analyze TVA's 10-year plan) questioned TVA's ability to meet its future revenue projections given the decline in its average revenue per kWh over the last several years.

As shown in figure 4, from 1988 through 1997, TVA's average revenues per kWh declined steadily, despite a steady increase in the amount of kilowatthours of energy sold. This decline in average revenues per kWh was attributable to credits given to large industrial customers. The actual decline in average revenues per kWh over the past 10 years contrasts sharply with the increase projected in the 10-year plan for 1998 through 2007.

Figure 4: Comparison of Average Revenue per kWh to Kilowatthours Sold



Source: GAO analysis based on data from TVA.

In order to offer competitive rates to its industrial customers, TVA offers price breaks to its larger industrial customers. In fact, to offset the impact of the last rate increase, TVA expanded its existing credit program to include companies with commitments to purchase firm loads of more than 1 megawatt. (Previously this credit had been limited to industrial customers with firm load commitments of more than 5 megawatts.) Although deregulation of the electric utility industry is expected to put downward pressure on rates, the 10-year plan assumes that TVA will not have to offer any additional price breaks to its large industrial customers through 2007. This assumption is questionable given that TVA has offered new credits to reduce the rates of its larger industrial customers for the past 10 years and competition in the industry is increasing.

Because deregulation of the electric utility industry is expected to continue to cause future wholesale and retail electricity prices to fall, TVA will likely feel pressure to continue to reduce rates. In addition, recent media coverage about competition has made many utility customers more aware of price differences among utilities and raised expectations of lower prices. All of these factors combined make it uncertain whether TVA can generate an additional $325 million in annual revenues on a sustained basis through 2007.

Goal to Improve Customer Relations Is Achievable

TVA's management recognizes that in a competitive environment, its current customers would be free to obtain power from other utilities after giving appropriate notice. Therefore, to improve its future competitive position, TVA's management decided that it must offer contract flexibility to improve relationships with its customers—159 distributors and 64 industrial and federal concerns. The 10-year plan calls for TVA to build customer allegiance by developing contract and pricing structures that better meet its customers' needs. TVA has taken actions geared toward this goal.

For example, one new contract option allows distributors to change the length of their power contracts with TVA from a rolling[27] 10-year term to a rolling 5-year term, after a period of 5 years (5+5 contract). This 5+5 contract, like all of TVA's power contracts with its distributors, requires the distributor to purchase all of its electric power from TVA. TVA has also implemented a new program for its large industrial customers that permits customers with power usage of more than 1 megawatt annually to be billed under real-time pricing (RTP),[28] which will enable these customers to reduce their electricity costs by adjusting usage patterns. TVA has implemented the RTP program on a 3-year pilot basis. TVA expects that in the long-term, the RTP program will increase revenues by increasing the demand for power. Both the 5+5 contracts and the real-time pricing program are options that TVA developed as a result of input from customers.

Customer groups we contacted were pleased with the efforts TVA is making to provide more flexible contracts. Since these options were developed in response to customer input and the initial customer response

[27]Rolling contracts automatically renew each year (referred to as the "evergreen" provision).

[28]RTP reflects the actual cost differences of producing power, which vary from hour to hour. RTP allows customers to reduce costs by scheduling production to take advantage of variable prices.

has been positive, we determined that TVA's goal to improve customer relations is achievable.

Plan Has Not Been Updated to Reflect Significant Changes

As previously discussed, since the 10-year plan was issued in July 1997, actual experience related to certain key goals and assumptions has differed from that projected in the plan, and certain expectations about the future have changed. For example, TVA officials indicated that if they were to update the 10-year plan today, they would increase their projection for the future market price of power and would include costs for new environmental regulations. However, TVA has not formally updated the plan to reflect these and other changes. Examples of actual experience that differ from expectations in the plan or goals and assumptions that have changed since the plan was developed, along with their impact on the overall plan, are shown in table 2.

Table 2: Summary of Changes and Their Impact on TVA's 10-Year Plan

Changes	Impact on plan
Purchase of 8 turbines in lieu of purchasing power	Reduce net cash flow by $65 million through 2007, but also expected to reduce the cost of power
Environmental regulations:	
(1) Nitrogen oxide	(1) Reduce total cash flow by $500 million to $600 million through 2007
(2) Regional haze	(2) Reduce total cash flow by up to $500 million through 2007 [a]
Funding nonpower programs through power revenues	Reduce total cash flow by $400 million to $480 million through 2007 [b]
Possible upward adjustment in the future market price of power	Reduce the amount of cost reduction and/or revenue needed to meet a market price projection
Debt not reduced as quickly as planned	Delay debt reduction goal from 2007 to 2009; Increase risk that TVA will be unable to offer competitively priced power by 2007

[a]Due to uncertainty regarding the timing for compliance, not all expenditures may occur during the time frame of the plan.

[b]The estimate is based on estimated expenditures of about $50 million to $60 million per year. TVA officials stated that they would seek to identify and implement operating efficiency measures that are expected to reduce the costs associated with nonpower programs without affecting program operations.

Changes in individual goals or assumptions or actual experience that differs from that projected when the plan was developed can affect the entire plan. For example, the unplanned purchase of additional generating capacity results in a decrease in projected cash flow through 2007. This affects the availability of cash to pay down debt, which further impacts interest costs. Funding nonpower programs through power revenues has the same effect. The result of these and other unplanned expenditures, such as for new environmental regulations, is that TVA's time frame to meet its debt reduction goal has been extended from 2007 to 2009. In contrast, any upward change in TVA's assumption for the future market price of power increases TVA's target price for power in 2007. This means that TVA could reduce the level of cost reduction and/or revenue enhancement planned through 2007 and still be in a position to offer competitively priced power at that time.

TVA officials told us that they have internally analyzed the combined impact of an upward revision in the projected market price of wholesale power in 2007 and lower-than-planned debt reduction on TVA's ultimate objective, which is to be in a position to offer competitively priced power in 2007. While TVA officials acknowledge that they will not meet the debt reduction goal by 2007, they believe, based on their internal analyses, that TVA will still be in a position to offer competitively priced power in 2007. However, these analyses have not been formalized, nor have the results been communicated to users of the plan.

Although TVA views the plan as a living document and recognizes that projections in the plan will change over time, there is no formal mechanism for communicating changes to those who use the plan. In addition, there is no mechanism available to plan users to gauge TVA's progress toward achieving the plan's goals and objectives. Therefore, while variances in results, changes in goals and assumptions, and progress toward plan objectives may be known to TVA, they are generally not known by the plan's users. These users include public policymakers considering legislation that might impact TVA's future, analysts and investors who use information in the plan when assessing the desirability of TVA's debt offerings, and customers who are considering alternative sources of electricity in the future. As a result, those who rely on the plan to make investment and policy decisions cannot fully assess the impact of the variances and changes in assumptions on TVA's ability to meet its strategic objectives as set forth in the plan.

The legislation proposed by the administration to promote retail competition in the electric power industry, which was discussed previously in this report, would require that TVA annually report several types of information to the Congress. If enacted, the legislation would require that TVA annually report, among other things, its progress toward its goal of competitively priced power, its prospects for meeting the objectives of the 10-year plan, any changes in assumptions that may have a material effect on its long-range financial plans, the amount by which its debt has been reduced, and the projected amount by which its debt will be reduced. This type of reporting to the Congress would help provide the information needed to monitor TVA's readiness for a competitive environment.

Conclusions

TVA management recognizes the need for TVA to be positioned to compete with other utilities in a changing marketplace. The 10-year plan is moving TVA in the right direction by addressing the most important issues facing TVA: its high fixed financing costs and limited financial flexibility and the large amount of deferred assets that TVA has not recovered through rates. The more progress TVA makes in addressing these issues while it maintains its legislative protections, the greater its prospects for being competitive if it loses these protections in the future.

Because TVA's actual experience and assumptions about the future market price of power, capital expenditures, and planned debt reduction have varied in significant ways from those envisioned in the 10-year plan, it is unlikely that TVA will generate sufficient cash flow to reduce debt and the corresponding fixed interest costs to the extent stated in the plan through 2007. This will impact TVA's ability to recover the cost of its deferred assets to the extent planned. TVA has acknowledged that its debt reduction goal will not be achieved until at least 2009. To the extent it does not sufficiently reduce debt and related fixed costs and increase financial flexibility during the 10-year period, TVA's ultimate strategic objective—to be able to offer competitively priced power by the end of 2007—could be jeopardized, depending on market conditions at the time.

However, since no one knows what the market price of power will be in 2007, it is uncertain whether TVA will be in a position to offer competitively priced power at that time. TVA could fall short of its objectives and still be competitive if its cost of producing power is at or below market. Conversely, TVA could achieve all of its objectives and not be competitive if its cost of producing power is higher than market.

Because of changing electricity markets and other economic conditions, it is essential that TVA continuously update the plan and communicate the results of these updates, as well as TVA's progress toward its goals and objectives, periodically and formally to the Congress as it considers TVA's future in a deregulating electricity industry and to other users who have a vested interest in TVA.

Recommendations

We recommend that the Chairman of the Board of Directors of the Tennessee Valley Authority move quickly to improve the reporting of information to the plan's users. Specifically, we recommend that the Chairman ensure that TVA take the following actions:

- Revise and reissue the plan to reflect evolving conditions and operating plans and their impact on TVA's ability to meet the strategic objectives outlined in the plan by 2007. TVA should also include a discussion of its plans to recover the costs of its deferred assets. As further significant changes occur, the plan should be updated to communicate these changes to plan users.
- Periodically communicate its progress toward achieving the 10-year plan's strategic objectives to those who rely on the information contained in the plan. One option would be for TVA to expand its discussion of the 10-year plan in its annual reports, including reporting
  - how actual results compare to all of the plan's key goals and assumptions, including those for revenues, debt reduction, capital expenditures, cost savings, and the market price of power;
  - progress toward achieving performance measures related to the plan, when developed; and
  - an overall assessment of whether TVA is on course to provide competitive power in 2007.

Agency Comments and Our Evaluation

In oral and written comments on a draft of this report, TVA generally agreed with the report's contents. TVA also provided us with technical comments, which we have incorporated as appropriate. TVA's written comments are reproduced in appendix II and discussed below.

TVA commented that the market price of power is the most significant uncertainty in achieving its goal to be in a competitive pricing position as the industry is deregulated. TVA also stated that the target cost of power in the 10-year plan is aggressive and that it has not yet altered its estimate of the future market price of power, even though there are indications of upward movement in market price forecasts. Our report noted that TVA's target for the cost of its power in the 10-year plan is lower than projections by other knowledgeable sources and therefore forces TVA to be aggressive in pursuing its options to reduce costs and increase revenue. During the course of our review, TVA officials told us that if they were to formally update the 10-year plan, they would increase their projection of the future market price of power. As we note in our report, TVA has not formally updated the 10-year plan, even though certain expectations about the future have changed and actual experience related to key goals and assumptions has differed from projections in the plan.

TVA stated that while it will likely incur the costs of funding traditional river management programs that have historically been funded largely through appropriations, the Congress has also enacted legislation allowing TVA to refinance its FFB debt for a savings of over $100 million a year. While we agree with both of these statements, the anticipated savings from refinancing the FFB debt were included in the 10-year plan, but the additional cost of funding traditional river management programs was not. Therefore, for purposes of gauging progress toward achievement of the plan's goals, the planned savings cannot be assumed to offset these unplanned expenditures. Our report separately discusses each of these points.

TVA noted that although its decision to purchase additional generating capacity for periods of peak demand rather than purchasing power from other utilities will adversely impact its ability to reduce debt to the extent planned, it will also help TVA achieve a lower cost of power and improve system reliability. Our report acknowledges these points and states that the decision will impact TVA's ability to reduce debt, but that TVA believes the decision will reduce the cost of its power and remove the uncertainty of having to rely on another utility for power.

With regard to our recommendations, TVA stated that its planning process is being refined and will improve over time and that TVA has committed to update the 10-year plan as material changes occur so that stakeholders will know how TVA is doing in comparison to the plan. As we noted in our report, TVA has made significant changes in assumptions and its actual experience has differed from projections since the plan was issued in July 1997, but TVA has not formally updated the plan to reflect these changes. Therefore, it is important that TVA move quickly to improve the reporting

Contents

Abbreviations

CBO	Congressional Budget Office
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EEI	Edison Electric Institute
EIA	Energy Information Administration
EPA	Environmental Protection Agency
EPAct	Energy Policy Act of 1992
FFB	Federal Financing Bank
kWh	kilowatthour
NRC	Nuclear Regulatory Commission
OMB	Office of Management and Budget
RCRA	Resource Conservation and Recovery Act
RTP	real-time pricing
TVA	Tennessee Valley Authority

Objectives, Scope, and Methodology

We were asked to determine whether the goals and assumptions in TVA's 10-year plan are achievable or reasonable in light of TVA's strategic objectives to (1) reduce the cost of power to a competitive level, (2) increase financial flexibility by reducing fixed costs, and (3) build customer allegiance. Specifically, we were asked to determine whether the 10-year plan (1) addresses key issues facing TVA, (2) takes into consideration all applicable costs and revenue sources, (3) contains assumptions that are reasonable and in line with industry estimates and expectations, and (4) has been updated to reflect significant changes in key assumptions or actual experience that differs from TVA's expectations when the plan was developed. In addition, you asked us, based on our analysis of the plan, to conclude whether TVA is likely to achieve the plan's strategic objectives.

TVA's plan consists of three strategic objectives, with goals and assumptions designed to help accomplish the strategic objectives. We evaluated the achievability and reasonableness[1] of 10 of the goals and assumptions and their impact on TVA's ability to accomplish its 3 objectives. Specifically, we assessed the achievability and reasonableness of the following goals and assumptions:

- the future market price of wholesale power will be 3.4 to 3.5 cents per kWh by 2007;
- annual growth in demand through 2007 will average 2 percent;
- fuel costs will increase 1.7 percent annually through 2007;
- improvements in supply chain management will save $50 million annually;
- TVA's labor force will be reduced, and additional costs savings will be achieved through the creation of shared services and other initiatives;
- debt will be reduced by about one-half to about $14 billion, and the balance of deferred assets will be reduced from $8.5 billion to $500 million—TVA's estimated net realizable value of these assets;
- capital expenditures will be limited to about $600 million annually and increases in demand through 2007 will be met primarily through purchased power;
- $200 million will be saved annually through cost improvement initiatives primarily related to refinancing Federal Financing Bank (FFB) and

[1] We assessed the achievability of the 5 goals and the reasonableness of the 5 assumptions contained in TVA's 10-year plan.

public bond debt, pursuing changes to its retirement plan, and improving business processes;
- revenues from power sales will be increased by about $325 million annually by implementing a rate increase in 1998 and maintaining it through 2007; and
- customer relations will improve through new contract and pricing options.

As agreed with your offices, we did not (1) assess whether achieving the objectives of the plan would ensure TVA's future competitiveness or (2) develop independent estimates of key elements of the plan, such as the future market price of power. Instead, we relied on comparisons of past performance to future projections, the opinions of industry experts, and economic forecasts made by knowledgeable sources to determine whether the individual components of the plan and the plan as a whole were achievable and reasonable.

Assessing Whether the Plan Addressed Key Issues Confronting TVA

To determine whether the three objectives of the 10-year plan addressed key issues confronting TVA as it seeks to increase its prospects for being competitive in the future, we (1) examined the actions that were being taken by other utilities to prepare for competition and compared them to TVA's plan, (2) reviewed prior GAO reports on issues confronting TVA, (3) interviewed TVA officials, (4) reviewed TVA's annual reports for 1997 and 1998, (5) spoke with officials from the Congressional Budget Office (CBO) and Office of Management and Budget (OMB) with expertise in issues pertaining to TVA, (6) interviewed industry representatives from TVA's customer groups, and (7) interviewed representatives from both the public power and investor-owned segments of the industry familiar with TVA and its service area.

Assessing Whether Appropriate Costs and Revenues Were Considered

To determine whether the 10-year plan considered appropriate costs and revenue sources, we (1) reviewed prior GAO reports on TVA, (2) interviewed TVA officials, (3) reviewed other electric utilities' annual reports and audited financial statements to determine the types of costs they were reporting, (4) reviewed TVA fiscal years' 1997 and 1998 annual reports and audited financial statements to determine the types of costs and revenues TVA had reported, (5) analyzed comparative historical and forecast operating statement percentages calculated from TVA financial model information underlying the 10-year plan, (6) spoke with an official from the Environmental Protection Agency (EPA) regarding environmental costs under new regulations and TVA's status as a potentially responsible party under CERCLA and RCRA, (7) interviewed industry experts familiar with TVA and its service area, (8) spoke with an official from the Nuclear Regulatory Commission (NRC) on the adequacy of TVA's nuclear decommissioning fund, (9) determined that TVA's external financial statements auditor was satisfied with TVA's nuclear decommissioning obligations and trust fund assets as part of its fiscal year 1998 audit, and (10) inquired about costs related to TVA's plans to comply with Year 2000 computer issues. However, we did not assess TVA's readiness to deal with Year 2000 computer issues.

Assessing Whether the Plan's Goals and Assumptions Were Achievable or Reasonable

To determine whether goals and assumptions were achievable or reasonable and in line with industry estimates and expectations, we (1) interviewed TVA officials, (2) compared past results of TVA's operations to projections in the plan, and (3) spoke with officials from (a) the Energy Information Administration (EIA), the statistical agency within DOE, (b) Standard and Poor's DRI, an economic forecasting and consulting company with expertise in the energy industry, (c) EPA, (d) CBO, (e) NRC, (f) groups of TVA customers, including both distributors and direct-served customers, and (g) industry groups representing both the public power and investor-owned utility segments of the industry.

For each goal or assumption, we compared TVA's projections with those of the appropriate agencies and with TVA's historical results. Specifically, to determine whether each goal or assumption was achievable or reasonable, we did the following work:

- <u>Future market price of wholesale power</u>: We interviewed TVA officials and spoke with EIA, DRI, and industry experts familiar with TVA and its service area. We then compared TVA's projections with those of these other entities.
- <u>Annual growth in demand</u>: We reviewed TVA's past annual growth history and interviewed TVA, CBO, DRI, and EIA officials and industry experts familiar with TVA and its service area. We also relied on previous GAO work on TVA's demand growth methodology done in 1995; we did not reassess this methodology because our comparison of TVA's projections with past results and the projections of DRI and EIA gave us no reason to believe that any changes TVA may have made in its methodology would have caused a significant difference. Based on the results of our review, we determined the reasonableness of TVA's assumptions.

- Increase in fuel costs: We reviewed TVA's annual fuel costs for prior years, interviewed TVA officials, and spoke with officials from DRI and EIA. We then compared TVA's projections to those of these other entities to determine reasonableness.
- Improvements in supply chain management: We interviewed TVA officials and examined documentation on (1) changes in procurement policies and procedures, including the use of blanket contracts versus individual purchase orders, (2) savings achieved since 1997, both recurring and nonrecurring, and (3) plans to phase in additional cost savings programs. We then analyzed whether these changes would be likely to enable TVA to achieve and sustain the level of savings projected in the 10-year plan.
- Reduced labor force: We interviewed TVA officials, reviewed the decrease in personnel over the last 10 years, and analyzed whether TVA's assumptions seemed reasonable.
- Reduced debt and related interest costs and recovery of deferred assets: We interviewed TVA officials, analyzed information in the President's fiscal year 2000 budget, contacted Moody's Investors Service in regard to the effect of bond ratings on interest rates, and analyzed and verified the plan's supporting documentation by tracing it to TVA's audited financial statements. In addition, to determine whether TVA's plan to recover through rates the costs of deferred assets was achievable, we interviewed TVA officials, spoke with a CBO official about the impact of planned revenues on the availability of income to recover the costs of these assets, and analyzed supporting schedules provided to us by TVA. We also spoke with TVA officials about its plans for the Bellefonte nuclear plant, which comprises the bulk of TVA's deferred nuclear generating units.
- Capital expenditures: We interviewed TVA officials, a CBO analyst, and industry experts. Additionally, for each of the two capital expenditure issues, we performed additional procedures. Specifically:
  - for capital expenditures for new capacity and upgrades to existing capacity, we compared TVA's historical capital expenditures to its planned expenditures and analyzed whether the plan's goal of meeting future growth in demand by purchasing power from other utilities was achievable and
  - for expenditures related to new environmental regulations, we obtained data from EPA and EIA on projected costs under new and proposed environmental regulations. We then compared TVA's projections with those of EPA and EIA to determine the achievability of TVA's goals.

- Cost improvement initiatives: We interviewed TVA officials, examined documentation relating to TVA's business process improvement efforts, reviewed information in TVA's annual report on its pension fund, analyzed the impact of TVA's refinancing efforts to date, obtained projected interest rates through 2007 from EIA, and compared the plan's projections to TVA's actual portfolio interest rates and EIA's projections.
- Projected revenues: We interviewed TVA officials, reviewed TVA's revenue experience over the past 10 years, analyzed the correlation between kWhs sold and revenue, spoke to TVA's customer groups about their expectations for TVA's price of power, and interviewed CBO and industry representatives about the reasonableness of TVA's revenue projections.
- Improved customer relations: We interviewed TVA officials, representatives of TVA's customer groups, and industry representatives from both the public power and investor-owned segments of the market.

Assessing Whether the Plan Had Been Updated for Significant Changes

To determine whether TVA had updated the plan for significant changes, we (1) determined whether significant changes had occurred based on the procedures described above, (2) examined the process whereby TVA internally updates its projections, and (3) interviewed TVA officials about whether they had updated the plan internally or externally and/or had any plans to do so.

Assessing Whether Strategic Objectives Are Achievable

After we determined the achievability or reasonableness of each of the underlying goals and assumptions of the plan, we assessed the plan in its entirety to determine whether all of these separate elements added up to a cohesive, reasonable plan that should enable TVA to achieve its three strategic objectives. For the two interrelated strategic objectives—reducing the total delivered cost of power and increasing financial flexibility by reducing fixed costs—we analyzed whether achieving the goals of the plan was possible and whether achieving the goals would necessarily help TVA achieve the strategic objectives. For the third strategic objective, building customer allegiance, we analyzed the results of our discussions with both TVA's customer groups as well as industry representatives from both the public power and investor-owned segments of the market.

We conducted our review from June 1998 through April 1999 in accordance with generally accepted government auditing standards.

Organizations Contacted

During the course of our work, we contacted the following organizations.

Federal Agencies

- Congressional Budget Office
- Department of Energy's Energy Information Administration
- Environmental Protection Agency
- Nuclear Regulatory Commission
- Office of Management and Budget
- Tennessee Valley Authority

Bond Rating Agency

- Moody's Investors Service, New York, New York

Customer Representative or Trade Groups

- American Public Power Association, Washington, D.C.
- Tennessee Municipal Electric Power Association, Brentwood, Tennessee
- Tennessee Valley Industrial Committee/Associated Valley Industries, Columbia, Tennessee
- Tennessee Valley Public Power Association, Chattanooga, Tennessee

Consulting Firms

- Gas Research Institute, Chicago, Illinois
- ICF Kaiser Consulting Group, Fairfax, Virginia
- Standard and Poor's DRI, Lexington, Massachusetts

Others

- Federal Accounting Standards Advisory Board
- Edison Electric Institute's TVA Watch Group, Washington, D.C.
- McMinnville Electric System, McMinnville, Tennessee

Comments From the Tennessee Valley Authority

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

David N. Smith
Chief Financial Officer and Executive Vice President
Financial Services

April 23, 1999

Ms. Linda Calbom
Director, Resources, Community and Economic Development,
Accounting and Financial Management Issues
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Calbom:

Thank you for the opportunity to provide comments on the GAO's draft report on TVA's Ten-Year Business Plan, published in July 1997.

As your report noted, the primary objective of TVA's 10-year plan is to ensure that TVA retains its competitive pricing position as the industry is deregulated. Of course, the future market price of power is the most significant uncertainty in achieving that goal.

As the report states, TVA projected an aggressive target of 3.4 to 3.5 cents per kWh for the price of power in 2007—which is about 15% below TVA's already competitive average price. Even though there are indications of upward movement in market price forecasts—supported by projections cited in the report between 3.57 and 4.35 cents per kWh—TVA has not yet altered its estimate.

The report points out that since TVA's plan was published, it has become likely that TVA will incur the cost of funding traditional river management programs that have been largely funded in the past from Congressional appropriations. Appropriations for these essential stewardship functions were $50 million for FY 1999. But, as you know, Congress enacted legislation since the issuance of the plan allowing TVA to refinance its Federal Financing Bank debt for a savings of over $100 million per year.

The report also expressed concern that our recent decision to build additional peaking capacity, rather than purchase power on the market, would impact TVA's ability to reduce its debt to the extent planned. While this is true, TVA's plan expected that there would be economic choices to make along the way which could require additional capital investment to achieve a lower cost of power or to increase system reliability. Our recent decision to add certain amounts of peaking capacity was one such example.

Ms. Linda Calbom
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TVA management developed its 10-year Business Plan using the best information available in July 1997, and we remain committed to the fundamental objective of the plan—to be in a position to deliver competitively-priced power to TVA's customers in the year 2007. As actual events unfold and planning assumptions evolve, TVA will adjust its plan accordingly, but without losing focus on the primary objective of the plan—to ensure that our prices remain competitive in a deregulated future. All of TVA's organizational units are fully engaged in further refining the plan, and through this continuous process our planning capability will, in itself, improve over time.

TVA has various stakeholders—including customers, investors, the Congress, and the Administration—who are interested in and have the right to know how TVA is doing against its plan. We have in fact had many discussions with members of all these groups since the plan was published, and have committed to them that we will update the plan as material changes occur. Although there have been new developments since July 1997—some positive and some negative—we believe that, overall, TVA is still on track toward meeting the objectives of the plan.

Thank you again for the opportunity to provide these comments.

Sincerely,

David N. Smith

David N. Smith

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