Chapter One

Overview and Objectives

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TVA is the largest producer of public power in the United States. With a generating capacity of 28,000 megawatts, TVA provides wholesale power to 160 distributors, and it directly sells power to over 60 large industrial and federal customers. Together with the distributors, TVA's power system serves nearly 8 million people in a 7-state region that covers some 80,000 square miles.

Like other utilities, TVA is expecting important changes in the relationship between utilities and their customers. Consumer, legislative, and utility actions across the nation are changing the electric utility industry from a regulated monopoly to a more competitive marketplace. TVA is at the forefront of this change and welcomes the opportunity for growth with improved, responsive services to best meet the needs of its current and new customers.

TVA's integrated resource plan--Energy Vision 2020--will guide TVA in entering this competitive marketplace by identifying the best energy resource choices for the current and future generation of consumers.

Energy Vision 2020 goes beyond simply providing for competitively priced power. The plan, built with extensive public involvement, also considers economic development and the environment as part of TVA's mandate to be a leader in total resource development. Innovative approaches to meeting the demand for energy through new technologies and business arrangements are among the means TVA will use to achieve its goals: competitively priced power, opportunities for economic growth, and a quality environment rich in natural resources.

In the process of developing Energy Vision 2020, several issues developed that are important to TVA and its customers. These include TVA's debt; competition, including the legislative restrictions on TVA sales (e.g., the fence); electric rates; privatization of TVA; and TVA's nuclear program, including the consequences of completion of Watts Bar Nuclear Plant Unit 1 and Browns Ferry Nuclear Plant Unit 3. Each of these issues is addressed in Energy Vision 2020.

This Chapter Includes:

- Introduction to Energy Vision 2020
- A Brief Description of TVA
- Purpose of and Need for Integrated Resource Planning
- Energy Vision 2020 Objectives
- The Changing Electric Utility Industry
- Public Participation in Energy Vision 2020

Overview and Objectives

Introduction to Energy Vision 2020

Energy Vision 2020 is TVA's roadmap for meeting the energy needs of its customers during the next 25 years with economical and environmentally sound energy choices. These are important challenges for TVA, which is the largest single producer of electricity in the United States. With a generating capacity of 28,000 megawatts, TVA provides wholesale power to 160 distributors and directly serves 60 large industrial and federal customers. In partnership with the distributors, the TVA power system serves 7.7 million people in an 80,000-square-mile area that covers parts of seven southeastern states.

TVA is expecting important changes in the relationships between utilities and their customers. Consumer, legislative, and utility actions across the nation are changing the electric utility industry from a regulated monopoly to a competitive marketplace. TVA is at the forefront of this change and welcomes the opportunity for growth and improved service and responsiveness to the needs of its current and new customers. By identifying the best energy choices for current and future consumers, Energy Vision 2020 will guide TVA as it enters this competitive marketplace.

Moreover, Energy Vision 2020 goes beyond the issue of how TVA can provide competitively priced power. The plan also considers economic development and the environment as part of TVA's mandate to be a leader in total resource development. Innovative approaches to meeting the demand for energy through new technologies and business arrangements are the means by which TVA can provide competitively priced power, opportunities for economic growth, and a quality environment rich in natural resources.

The TVA Board has already taken several strategic actions in part based on information and analyses performed in conjunction with Energy Vision 2020. These are:

- Reversed TVA policy on nuclear plant construction.
- Placed an internal limit on new capital debt and announced a debt reduction program.
- Kept TVA's electric rates steady for a ninth consecutive year.
- Introduced TVA to the global energy market through international bond offerings.
- Commissioned a major study to identify strategic actions that will strengthen TVA's position in an open marketplace.

The result of these efforts is that TVA's self-supporting power system is financially strong. TVA's electric power production and operating costs are com-

Today, TVA is looking ahead to the 21st century, to answer the questions necessary to best serve the future needs of Valley residents: How much electricity will the Tennessee Valley need in coming years? What is the most economical and environmentally acceptable way to provide that energy?

petitive with utilities in the regional market. The same is true for the electric prices paid by consumers in the TVA service area.

Energy Vision 2020 provides the TVA Board with a flexible energy supply plan that will help guide the strategic actions necessary for TVA to serve its customers efficiently, and to compete and succeed in the electric utility marketplace of the future.

Launched in the winter of 1994, Energy Vision 2020 includes an unprecedented effort by TVA to involve the public in TVA's energy planning process. Environmental, consumer, and energy industry representatives were appointed to a citizen group to provide input on the formulation of the plan, and public meetings were held throughout the TVA service area to gather public comments and suggestions. Interviews were also conducted with elected officials and opinion leaders. The open process produced a stronger partnership with the more than 7.7 million people who use the electricity produced by TVA.

Energy Vision 2020 identified a viable mix of conservation programs and options for power plant operations that will be used to responsibly and economically provide energy for sustainable economic growth. For all resource options, the environmental consequences and economic impacts were considered as part of TVA's effort to encourage sustainable economic growth in the region. Strong public support for various options, such as demand-side management, also was considered.

Overall the key recommendations of Energy Vision 2020 are:

- Invest in up to 3,000 megawatts of flexible purchases of power
- Convert Bellefonte to an alternative fuel source such as natural gas or coal
- Implement up to 1,450 megawatts of energy efficiency and load management
- Research and develop renewable energy resources—wind, biomass, solar photovoltaics

Additional recommendations, which the TVA Board of Directors has asked the staff to include, are:

- Begin additional flexible demand-side management programs with a potential of 750 megawatts
- Investigate the development of a flexible wind project, a biomass refinery, and a combined garbage and biomass energy facility

Because TVA has a unique mission to supply electric power and encourage sustainable economic development in its service region, Energy Vision 2020 has the flexibility to shift priorities as the marketplace evolves and changes influence the viability of power supply options. When changes in energy options are necessary, TVA will remain focused on making economical and environmentally sound energy choices.

A Brief Description of TVA

The Tennessee Valley Authority (TVA) was established by an act of Congress in 1933 as a federal corporation to develop the natural resources of the Tennessee Valley region and to improve the lives of the region's population, which was being ravaged by the Great Depression, flooding along the Tennessee River, and erosion of the region's natural resources. From its beginning, TVA's challenge has been to look at economic development and natural resource issues in a comprehensive fashion. TVA has also been expected to demonstrate the unique strengths of "a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise." TVA is managed by a three-member Board of Directors appointed by the President.

BUILDING A POWER SYSTEM

By harnessing the destructive potential of the Tennessee River, TVA created a major tool for improving the quality of life in the Tennessee Valley region—abundant and inexpensive electricity. In 1933, only 3 out of 100 farms in the area had electric lights. During its early years, TVA met the demand for power through its series of hydroelectric dams and completed 12 hydroelectric dams during World War II to provide a massive supply of electricity to meet critical wartime industries' demand, such as aluminum production.

By the early 1950s, however, TVA discovered that demand was quickly outstripping the capacity of its dams and its Watts Bar Fossil Plant, which was completed in 1945. During the next 20 years, TVA built 11 large coal-fired generating plants to meet the region's growing needs. TVA advanced technology by building the largest, first-of-a-kind coal-fired units in the world. The decade of the 1960s brought even greater growth to the region. To meet this anticipated need for more power, TVA expanded its generating resources through an ambitious program of nuclear plant construction.

Despite this growth program, TVA's electric rates remained among the lowest in the nation throughout the 1960s. However, the 1970s brought unprecedented change to the entire utility industry's ability to control costs and rates charged to customers. The change was slow at first—starting with the oil embargo in 1973—and then accelerated during the late 1970s. Coal costs and the costs of constructing nuclear units skyrocketed, forcing TVA and most other electric utilities to increase their rates.

As energy costs across the nation continued to climb in the late 1970s and early 1980s, TVA introduced programs to encourage customers to reduce their demand for electricity. These programs, focusing on energy conservation and reducing peak electric loads, worked in concert with TVA's existing generating resources to meet consumer energy needs.

TODAY'S POWER SYSTEM

Today, TVA is one of the largest producers of electricity in the United States, generating 4 to 5 percent of all the electricity in the nation. TVA's power system serves almost 8 million people in a 7-state region encompassing some 80,000 square miles *(Figure 1-1)*.

With a generating capacity of 28,000 megawatts, TVA's electricity is distributed to homes and businesses through a network of 160 power distributors, including municipally owned utilities and electric cooperatives. In addition, TVA sells power directly to about 60 large industrial customers and government installations.

TVA's power system includes 5 nuclear generating units, 12 coal-fired plants (1 mothballed), 29 hydroelectric dams, 48 combustion turbine units, and 1 pumped-storage facility. The system is linked by approximately 16,000 miles of transmission lines throughout the 7-state region. TVA's electric system is self-financed, as are other electric utility systems.

Today, TVA is looking ahead to the 21st century, to answer the questions necessary to best serve the future needs of Valley residents: How much electricity will the Tennessee Valley need in coming years? What is the most economical and environmentally acceptable way to provide that power?

One way TVA is answering these questions is by developing this integrated resource plan, called Energy Vision 2020. This integrated resource plan identifies resources to meet the electricity and energy service needs of TVA's customers during the next 25 years, through the year 2020.

FIGURE 1-1. **TVA's Power System**

TVA's power system covers some 80,000 square miles in a 7-state region.

Purpose of and Need for Integrated Resource Planning

As with any business, it makes good sense for TVA to do long-range planning. Integrated resource planning helps electric utilities choose the best resource options to generate electricity and other options to meet customer expectations for energy services. Increasing competition, changing technologies, and environmental concerns are among the many issues utilities must consider when developing their plans.

The size of TVA's power system and its influence on the Tennessee Valley's economy make integrated

resource planning especially important. The decisions TVA makes will significantly affect the quality of life for millions of residents, as well as the competitive success of businesses and industries in the Valley.

The National Energy Policy Act of 1992 established requirements that TVA must meet in performing least-cost planning. The focus of a least-cost plan is to provide energy services to customers at the lowest total cost over the long run. TVA's integrated resource planning process, however, goes well beyond conventional least-cost planning. Energy Vision 2020 evaluates the effects of resource options on the Tennessee Valley's environment and its economy, as well as on TVA's future prices of electric energy and future level of debt.

This Act also requires TVA to provide distributors of TVA power an opportunity to participate in the integrated resource planning process. Furthermore, the public must have an opportunity to comment before TVA selects major new energy resources. Thus, Energy Vision 2020 reflects the results of customer participation and extensive public involvement, including the preparation of an environmental impact statement under the National Environmental Policy Act.

TVA has integrated the components of a programmatic environmental impact statement into the overall integrated resource planning process and preferred plan. A programmatic level environmental impact statement was developed as opposed to a project or site-specific environmental impact statement because of the broad strategic nature of integrated resource planning.

TVA used the National Environmental Policy Act guidelines and integrated an environmental impact statement into Energy Vision 2020 in several ways. First, TVA used multi-attribute trade-off analysis, which is recognized as an effective way of quantitatively comparing resource planning issues.

Second, TVA has involved the public extensively in determining the scope of the analysis for Energy Vision 2020. TVA also obtained wide response on its draft energy resource plan. In developing the public participation process, TVA began with the National Environmental Policy Act guidelines, but TVA's public involvement process goes well beyond the minimum requirements of this Act.

Incorporating a programmatic environmental impact statement into Energy Vision 2020 provides TVA with a broad analytical foundation to assist in the development of project-specific environmental reviews. Appropriate project-specific reviews will be conducted for energy resource options that TVA may eventually put in place under its selected strategy.

Energy Vision 2020 Objectives

The ultimate objective of Energy Vision 2020 is to develop a resource plan that will enhance TVA's competitiveness in a manner that meets or exceeds its customers' expectations. This objective is consistent with TVA's four broad strategic goals set by the TVA Board of Directors in 1995: being customer driven, environmentally responsible, growth oriented, and employee sensitive. The Board also established a new vision for TVA that calls for the corporation

to be the recognized world leader in providing energy and related services, independently and in alliances with others, for society's global needs.

Competitiveness, as defined in Energy Vision 2020, goes beyond being the lowest-cost electricity producer. It also means that TVA must be competitive in the quality and value of its electric services delivered to its customers. Competitiveness is also measured in terms of TVA's contribution to economic development in the region and the region's environmental quality.

TVA modified the typical integrated resource planning process to better address the implications of an increasingly competitive environment. TVA also incorporated many more opportunities for public involvement that included regular meetings with a group of stakeholders who worked closely with TVA in reviewing and developing the plan. (Stakeholders are customers, consumers, members of government, and any others who may have an interest in, or be affected by, a utility's resource decisions.)

The Changing Electric Utility Industry

Consumer, legislative, and utility actions are changing the electric utility industry from a regulated monopoly to a more competitive industry. Similar changes have taken place in the airline, natural gas, and telecommunications industries over the past decade. In Energy Vision 2020, TVA considers four key elements of this changing structure:

1. The characteristics of a more competitive environment
2. TVA's current position in the market
3. The uncertainty in future power markets
4. Planning alternative energy resources for the future market

THE COMPETITIVE CHANGES IN THE ELECTRIC UTILITY INDUSTRY

The initial step toward fostering competition in the electric utility industry is focused on changing the ground rules on access to the national grid of independent transmission systems that connects utilities with their customers and with each other. The proposed change would provide what is referred to in the industry as "open access."

Historically, TVA and regulated electric utilities have had well-defined, protected markets or service areas. Such markets also brought the responsibility of meeting the demands for electricity within utility service areas. Utilities have had primary control over their transmission systems, choosing whose power they purchase for resale to their customers, whose power they will transport (or "wheel") through their service area, and how much they will charge for such "wheeling" services.

Open access is defined by the provisions of the National Energy Policy Act of 1992 and by the proposed implementing regulations currently under review by the Federal Energy Regulatory Commission. The initial thrust of the proposed open access provisions is to provide wholesale customers and suppliers access to virtually any part of the nation's transmission system. It is believed

that under open access, competing utilities will be able to make better use of existing generating facilities, bring more cost-effective options to the market, and provide electric utilities and their customers with lower cost electricity.

Implementation of wholesale open access is unfolding throughout the nation. Utilities that own transmission systems are starting to restructure their rates and service agreements to allow open access, while protecting the best interests of their existing customers. Utilities with and without transmission facilities are searching for opportunities to make short- and long-term power supply arrangements with the lowest-cost suppliers to meet their existing and future customer electricity service requirements.

The Potential Impacts on TVA

To understand the potential impacts of open access on TVA, it is important to understand the "fence." In 1959, Congress amended the TVA Act to allow TVA to use power revenues to finance future expansion of its generation and transmission facilities. Although the amendment passed, there was significant resistance from investor-owned electric utilities that feared the competitive threat of TVA. To resolve this concern, Congress limited TVA's market to its existing service area at that time and restricted TVA's power exchange arrangements to 13 other utilities. These restrictions are generally known as the "fence."

The authors of the National Energy Policy Act of 1992 recognized that the intent of the wholesale access provisions could have a uniquely negative impact on TVA and its customers. TVA sells approximately 80 percent of the power it generates to wholesale customers (e.g., municipal utilities and cooperatives), compared to an average of 3 to 4 percent for other U.S. electric utilities. Because of this and TVA's limited ability to sell power outside its existing service area, the National Energy Policy Act of 1992 gave special protection to TVA through an arrangement called an "anti-cherry picking" amendment.

The anti-cherry picking provision exempts TVA from being required to transport power from another utility to TVA's wholesale customers. This reduces the risk of other power suppliers "cherry-picking" selected wholesale customers, who are relatively inexpensive to serve, and leaving TVA's remaining distributors and directly served customers with the large financial burden of supporting an underutilized power system.

TVA also recognizes that many of its customers may want the choice of shopping for energy services in a competitive marketplace. TVA has recently completed a study of the potential ramifications of eliminating the fence. This study, "The Ties That Bind: TVA in a Competitive Electric Market", has concluded that the fence provisions should be changed in two phases. Phase 1 would allow TVA to conduct all conventional types of wholesale business with utilities bordering TVA and beyond. During Phase 1, TVA would not be allowed unbalanced access to traditional non-profit wholesale customers of neighboring utilities with which TVA's relationship has been severely restricted since 1959 and which cannot serve in the TVA territory under the TVA Act. Phase 2 would remove the fence entirely, giving TVA's current wholesale cus-

FIGURE 1-2. **1993 Residential Rate Comparison**

Kentucky Utilities	4.4 ¢/kWh
Kentucky Power	4.9
Kingsport Power	5.1
Appalachian Power (VA)	5.7
Public Service of Indiana	5.8
TVA	**5.9**
Louisville Gas & Electric	6.0
Mississippi Power	6.2
Ohio Power	6.3
East Kentucky Power	6.4 [1]
Gulf Power	6.6
Big Rivers	6.9
South Carolina Elec & Gas	7.1
Alabama Power	7.2
Duke Power	7.3
Union Electric	7.5
Georgia Power	7.8
Louisiana P&L	7.8
Florida Power	7.9
New Orleans Pub Ser	7.9
Florida P&L	8.1
Gulf States Utilities	8.2
Carolina P&L	8.3
Virginia Power	8.6
Mississippi P&L	8.6
Arkansas P&L	9.3
Illinois Power	10.2

[1] Using South Kentucky REC Corp. as representative of East Kentucky Power Coop

TVA residential rates are in the lowest quartile when compared to surrounding utilities' rates.

Source: DOE 826, REA Forms 7 & 12, and TVA Electric Sales Statistics

tomers in the Valley free market access and, at the same time, permitting TVA to seek markets outside the Valley on the same basis that competitors could enter the Valley to provide service.

TVA's Competitive Position in the Market

The 1995 report "The Ties that Bind" found that TVA's electric power production and operating costs are in the lower end of the range of utilities in the huge regional market. TVA's electric rates are very competitive with those of other utilities. Comparisons of TVA's rates with surrounding utilities' rates for residential, commercial, and industrial customers are shown in *Figures 1-2, 1-3,* and *1-4*.

Overall, TVA is ranked 30 in a comparison of 130 utilities in the nation from the standpoint of lowest average rates. On a regional basis, TVA's residential electric rates are lower than most surrounding utilities' residential rates. Of the 27 Southeastern utilities listed in *Figure 1-2*, TVA's residential rates rank as the sixth lowest. Likewise, TVA's commercial and industrial rates are below the median level of other utilities' rates, as shown in *Figures 1-3* and *1-4*. TVA's rates compare even more favorably on a national basis. The inte-

FIGURE 1-3. **1993 Commercial Rate Comparison**

Kentucky Utilities	4.3 ¢/kWh
Public Service of Indiana	4.6
Kingsport Power	5.1
Kentucky Power	5.2
Appalachian Power (VA)	5.3
Ohio Power	5.5
Louisville Gas & Electric	5.6
Gulf Power	5.6
South Carolina Elec. & Gas	5.6
Florida Power	5.8
TVA	**5.9**
Mississippi Power	6.0
Duke Power	6.0
Virginia Power	6.2
Union Electric	6.3
Florida P&L	6.8
East Kentucky Power	6.8 [1]
Big Rivers	6.9
Carolina P&L	6.9
Alabama Power	6.9
Gulf States Utilities	7.3
Georgia Power	7.4
Arkansas P&L	7.6
Louisiana P&L	7.8
Illinois Power	8.3
New Orleans Pub Ser	8.4
Mississippi P&L	8.6

[1] Using South Kentucky REC Corp. as representative of East Kentucky Power Coop

TVA commercial rates are lower than those for more than half the surrounding utilities.

Source: DOE 826, REA Forms 7 & 12, and TVA Electric Sales Statistics

grated resource plan proposed in this report is intended to improve TVA's competitive position with regard to rates in the future.

THE UNCERTAINTY IN FUTURE POWER MARKETS

As regulatory changes occur, the impacts on different parts of TVA's business will probably vary significantly. The generation system is likely to enter an era of tough price competition in which electricity will be bought and sold like other commodities, such as wheat, corn, and natural gas. The transmission system most likely will be a regulated common carrier providing open access under published tariffs or rates. Distributors of TVA power may find themselves in a market similar to the long distance telephone industry, with competition based both on price and value added services.

In an open access environment, TVA generating plants will compete primarily on a price basis. In any time period, plants with lower costs will operate, and those with higher costs will sit idle, earning no revenue. In the current regulated environment, prices are set by a fairly standard analysis of a utility's invested capital costs and operating expenses. In contrast, the price of electricity in an open market will be set by the balance between supply and demand,

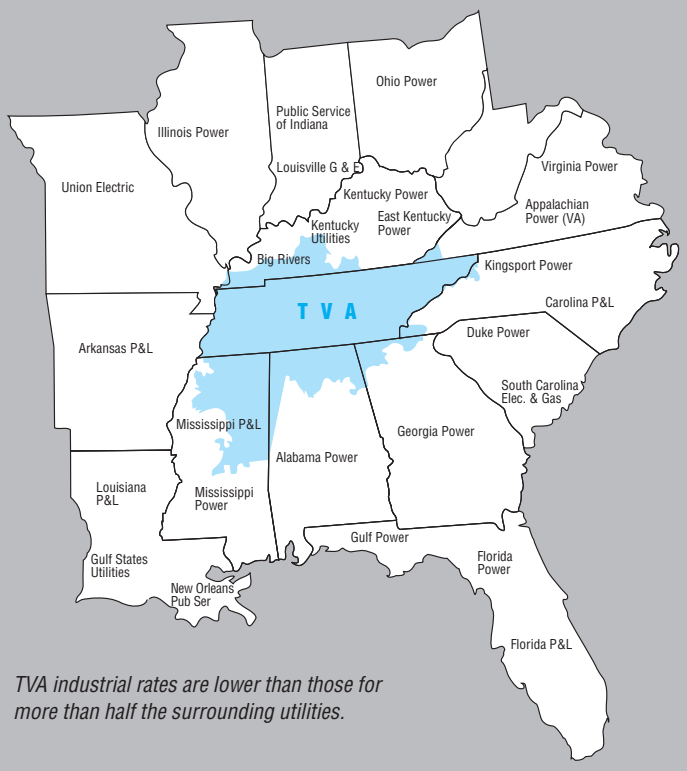
FIGURE 1-4. **1993 Industrial Rate Comparison**

Big Rivers	3.0 ¢/kWh [1]
Ohio Power	3.2
Kentucky Utilities	3.3
Kentucky Power	3.3
Public Service of Indiana	3.4
Kingsport Power	3.5
Mississippi Power	3.6
Louisville Gas & Electric	3.8
Appalachian Power (VA)	3.8
South Carolina Elec. & Gas	3.9
TVA	**3.9** [2]
Louisiana P&L	4.1
Duke Power	4.3
Gulf Power	4.3
Illinois Power	4.4
Virginia Power	4.4
Alabama Power	4.5
Gulf States Utilities	4.6
Georgia Power	4.7
Florida Power	4.8
Union Electric	5.2
New Orleans Pub Ser	5.3
Florida P&L	5.4
Carolina P&L	5.5
East Kentucky Power Coop	5.5 [3]
Arkansas P&L	6.0
Mississippi P&L	6.6

1 Non-Aluminum Industrial is 3.9 cents/kWh

2 TVA's directly served industrial cost is 3.0 cents/kWh and the distributor served industrial cost is 4.6 cents/kWh

3 Using South Kentucky REC Corp. as representative of East Kentucky Power Coop



TVA industrial rates are lower than those for more than half the surrounding utilities.

Source: DOE 826, REA Forms 7 & 12, and TVA Electric Sales Statistics

given transmission constraints. Market prices will vary by hour, day, and season as electricity demand, plant availability, and costs vary across the nation.

In such an environment, a utility's decision to invest in generating facilities, or other services, will depend on whether the utility has the ability to bring the resource to market and make a profit. In an openly competitive environment, a utility's market for generation will no longer be within a well-defined service territory, but will be as large as the transmission cost of electricity will allow.

With retail open access, which is being evaluated as part of electric industry restructuring proposals by state regulatory commissions in some states, such as California, retail consumers will be allowed to choose from whom they will purchase electricity. This will create additional uncertainty in the power markets.

TVA has incorporated assumptions about competition into its electricity demand forecasts. In the range of load forecasts, TVA has identified the potential for the gain or loss of both wholesale and retail customers. These gains or losses are somewhat dependent on changes in future industry regulations such as open access, legislation on the TVA "fence," and potential competition among power suppliers. For more detailed information about TVA's load forecasts, see Chapter 6 and Volume 2, Technical Document 5, Load Forecast.

PLANNING ALTERNATIVE ENERGY RESOURCES FOR A COMPETITIVE MARKET

The increasingly competitive nature of the electric utility industry requires all utilities to consider more carefully the full range of resource alternatives. Sales projections may no longer be based on a load forecast for a protected territory or a given geographic area. Future resources no longer will be built and operated only by a designated utility. A quickly changing marketplace with non-traditional participants will offer a broader range of choices to utility customers.

In Energy Vision 2020, TVA has identified three different types of resource options well suited to address competition: (1) bulk power purchases and sales from other utilities, (2) purchases of power from cogenerators and independent power producers, and (3) market-based alternatives, such as call options on future capacity additions. These resource options are discussed in more detail in Chapter 7.

Public Participation in Energy Vision 2020

In addition to using state-of-the-art methods for analyzing energy resource options, Energy Vision 2020 provided significant opportunities for public participation. TVA purposefully sought to incorporate a broad base of public input into the scope of the planning process. Key analytical elements such as evaluation criteria, resource options, and uncertainties were drawn from public comments during the scoping period. This effort to obtain widespread public review and input was continued after release of the draft plan and environmental impact statement on July 26, 1995.

TECHNIQUES FOR COLLECTING PUBLIC INPUT DURING SCOPING PERIOD

TVA used four techniques to collect public input during the scoping period: (1) "opinion leader" interviews, (2) public meetings, (3) a stakeholders' review group, and (4) written comments.

Opinion Leader Interviews

During the summer of 1994, TVA conducted one-on-one interviews with 96 opinion leaders in the Tennessee Valley. These included elected officials, TVA customers, and other individuals who occupy leadership positions in Valley communities, industries, businesses, and organizations. They were asked to share their views on goals and issues they believe should be important to TVA as it plans to provide future energy services.

Public Meetings During Scoping

From July 28 through November 3, 1994, TVA held 12 public meetings throughout the Tennessee Valley. Notice of these meetings was announced

in local and regional newspapers and other media. The meetings were held in the following cities:

Knoxville, TN	Bristol, TN	Bowling Green, KY
Paducah, KY	Nashville, TN	Jackson, TN
Memphis, TN	Tupelo, MS	Columbus, MS
Muscle Shoals, AL	Huntsville, AL	Chattanooga, TN

At each of these meetings, interactive computer-video displays were available that addressed key issues related to the development of Energy Vision 2020. TVA technical experts also attended every meeting to discuss issues, respond to questions, and help record people's comments. While the meetings were primarily designed as an informal, open-house format, four meetings were supplemented to give participants an opportunity to make public statements about their concerns. Rigorous attendance counts were not kept at the meetings, but TVA estimates that approximately 300 people attended and, of these, approximately 115 individuals provided comments.

Stakeholders' Review Group

Although TVA sought input from the general public and key opinion leaders, it recognized that it would be difficult to get specific and continuous guidance from these audiences as the plan developed. To obtain more in-depth, ongoing discussion and input from different stakeholder viewpoints, TVA established a 17-member Energy Vision 2020 Review Group. The interests represented by the Review Group included business and industry, distributors of TVA power, minority businesses, environmental organizations, state agencies, academia, and civic organizations.

The members of the Energy Vision 2020 Review Group and their affiliations are as follows:

Mike Dalen	Alabama Sierra Club
Ron Fogel	Associated Valley Industries
Jim Navolio	Kentucky Economic Development Cabinet
Susan Gawarecki	League of Women Voters
Carol Crawley	Mid-South Minority Purchasing Council
Chester Smith	Mississippi Department of Economic and Community Development
Eric Hirst	Oak Ridge National Laboratory
Carter Witt	Tennessee Association of Business
Anne Murray	Tennessee Conservation League
Elizabeth Owen	Tennessee Consumer Affairs Division
Stephen Smith	Tennessee Valley Energy Reform Coalition
Allen Cunningham	Tennessee Valley Industrial Committee
Mike Browder	Tennessee Valley Public Power Association
Quentis Fuqua	Tennessee Valley Public Power Association
Bill Pippin	Tennessee Valley Public Power Association
Jim White	Tennessee Valley Public Power Association
Mary English	UT Center for Energy, Environment and Resources

Alternates

Sheila Holbrook-White	Alabama Sierra Club
Sharon Fidler	League of Women Voters
Josh Ellis	Tennessee Association of Business
Ed Passerini	Tennessee Valley Energy Reform Coalition
Darrell Anderson	Tennessee Valley Industrial Committee

The Review Group met monthly with TVA from June 1994 through March 1995 and in June 1995. These meetings were held at various locations throughout the Valley and were open to the public. Opportunities were provided for the public who attended to submit written comments on the topics of discussions or other associated concerns.

At each meeting, TVA facilitated discussions among Review Group members on the issues they believed were important to a successful integrated resource plan. Review Group members' views were collected on the entire range of assumptions, analytical techniques, and proposed energy resource options and strategies.

Given the diversity of the makeup of the Review Group, there were at times a wide range of views on specific issues, such as the value of energy conservation programs, environmental concerns, and the appropriateness of some new technologies. In some cases, open discussions among the members and TVA staff, supported by additional data, brought closer understanding and agreement on particular issues. On some issues, however, members of the Review Group and TVA staff agree that the objective was not consensus, and differing views were honored.

TVA retained several outside consultants to advise Review Group members on their primary issues of concern. These included the accuracy of TVA's load forecast, the cost and operating assumptions about its nuclear generating facilities, and the results obtained from the resource integration portion of TVA's planning process. Review Group members also met with TVA staff in small groups to discuss special areas of interest such as demand-side management and renewable energy options. This provided an opportunity to exchange more detailed information and develop a better understanding of concerns among Review Group members and with TVA staff. During the course of 12 months of meetings, many bridges of understanding and guidance were built that make this a better plan.

Written Comments During Scoping

TVA began the public comment period on the scope of Energy Vision 2020 on February 8, 1994. In addition to publishing an official notice in the Federal Register, TVA announced the start of the process in newspapers, television reports, and other communication media throughout the Tennessee Valley. TVA compiled written comments on concerns and recommendations from the public for approximately nine months (until December 5, 1994). These comments were used by TVA to better define the full scope of its integrated resource

planning analysis. During this period, TVA received approximately 600 written comments from more than 100 people and organizations.

TECHNIQUES FOR COLLECTING PUBLIC INPUT DURING DRAFT DOCUMENT STAGE

TVA primarily used two techniques to collect public input during the draft document stage: (1) public meetings, and (2) written comments.

Public Meetings

From August 28 through October 2, 1995, TVA held nine public meetings throughout the Tennessee Valley. Notice of these meetings was announced in local and regional newspapers and other media. The meetings were held in the following cities:

Muscle Shoals, AL	Huntsville, AL	Knoxville, TN
Bristol, TN	Paducah, KY	Nashville, TN
Starkville, MS	Memphis, TN	Chattanooga, TN

At each of these meetings, TVA technical experts were available to respond to questions, discuss issues, and help members of the public understand Energy Vision 2020. Two mechanisms were used to record public comments: (1) a "hearing" room in which those choosing to comment could address a TVA "hearing" officer and have his or her comments recorded by a court reporter; or (2) a "speed" room in which those choosing to make comments but not wanting to speak in front of others could have their comments recorded by a TVA employee.

At the request of a representative of the Tennessee Energy Valley Reform Coalition, TVA commenced these public meetings in late August (August 28) after the release of Energy Vision 2020 on July 26, 1995, in order to provide the public an ample opportunity to review the draft document before the public meeting process began. The last public meeting was held on October 2. The public comment period formally closed on October 15. Rigorous attendance counts were not kept at these public meetings, but TVA estimates that approximately 350 people attended. Approximately 160 people provided about 1,200 oral comments at these meetings.

Written Comments

TVA provided approximately 80 days for receipt of written comments. This is almost 80 percent longer than the minimum time period required by applicable procedures which implement the National Environmental Policy Act. TVA received approximately 800 written comments. These were either mailed or faxed to TVA, or were provided at one of the public meetings.

INTEGRATION OF PUBLIC SCOPING COMMENTS INTO ENERGY VISION 2020

Overall, TVA received more than 1,300 comments from approximately 375 individuals and organizations either in writing or verbally. All of these comments were collected, categorized, and consolidated into scoping comments for TVA's integrated resource plan and environmental impact statement—Energy Vision 2020.

The comments included a broad range of concerns and issues. Many recommended that TVA consider—or not consider—specific resource options such as renewable energy resources or nuclear plants. Others expressed views on the values that TVA should consider in weighing its options and strategies. People urged TVA to maintain competitive rates, to reduce its debt, and to protect the environment. Some respondents expressed concerns about future uncertainties that TVA should consider in developing strategies. These included loss of customers and electric load due to competition, more stringent environmental regulations, and future fuel prices. TVA also received a number of comments about its mission, organizational structure, workforce, and other activities. All of the comments TVA received were categorized into five broad areas as listed in *Figure 1-5*.

Through this process, TVA was able to incorporate most of the comments into its analysis. For example, the wide array of resource options evaluated during the integrated resource planning process includes either specific public recommendations for resource options or generic variations of resource options. Recommended values were incorporated into TVA's evaluation criteria to compare resource options and strategies. The uncertainties (or possible future events) used in the process capture concerns identified by the public

RESPONSES TO PUBLIC COMMENTS ON DRAFT DOCUMENT

The introduction to Volume 3 of Energy Vision 2020 explains how TVA responded to the comments that it received during the draft document stage. Volume 3 contains TVA's responses to the comments it received. When appropriate, Energy Vision 2020 was changed. Typically this was done to clarify discussions or to correct errors in the presentation of information. Some comments asked that TVA conduct additional analyses or to analyze issues differently. As appropriate, the results of such analyses were either included in the Energy Vision 2020 long- and short-term plans or in Volume 3, Responses to Public Comments.

FIGURE 1-5. **Scoping Categories**

Evaluation Criteria	Total Cost/Customer Value, Rates, Financial, Environment, Economic Development, Risk Mitigation, Reliability, Equity
Options	Supply: Nuclear Conversion to Alternative Fuels, Coal, Clean Coal, Natural Gas, Renewables, IPP/Cogeneration/Purchased Power, Peaking/Storage, Other Customer Service: Energy Efficiency, Load Management, Beneficial Electrification, Self-Generation, Rates, Other New Technology Environment Other
Uncertainties	Market/Load Forecast, Fuel Process Regulatory: Environment, Competition, Other Technology/Option-Related: Cost, Performance
Process	Format of Public Meetings, Input from National Organizations, Outside Review, etc.
Miscellaneous	TVA Administration, TVA Mission, Social Equity, etc.

All of the public comments received during scoping were categorized into five broad areas.

PUBLIC ISSUES NOT TREATED IN ENERGY VISION 2020

Below are a number of public recommendations made that TVA did not address specifically in Energy Vision 2020.

Site-Specific Impacts

TVA received a number of comments recommending that it address potential environmental impacts that may vary from one location to the next. These included the likely impact of energy resource development on endangered species or wetlands, the conversion of prime farmland, or aesthetic impacts. While these potential impacts are very important to consider in the actual siting or deployment of energy resource alternatives, it would be impossible, however, to analyze them at the programmatic or strategy level. Prior to deployment of any option, TVA will conduct an appropriate site-level environmental review.

Monetization of Environmental Externalities

An "externality" is a cost or benefit that results from the production or consumption of goods and services that is not reflected in the prices of those goods or services. For example, driving a car or generating electricity may produce various forms of pollution that can damage vegetation. If such pollution is not controlled at the source such that the cost of control is included in production costs, it is an environmental externality or a cost borne by society. TVA and other federal agencies have long assessed potential environmental externalities in the context of the National Environmental Policy Act reviews they perform.

Several commenters asked TVA to monetize the environmental externalities that may result from the strategies or options in Energy Vision 2020. Monetization involves directly adding the cost of externalities to other costs, such as construction and fuel costs. Given the many difficulties in monetizing externalities, and the lack of a consistent position in the utility industry on the values to be used, TVA has decided to address externalities by using a multi-attribute trade-off approach. More information about various treatments of externalities can be found in Volume 2, Technical Document 4, Evaluation Criteria. In addition, all appropriate environmental issues have been addressed qualitatively as a part of the environmental impact statement component of this plan. A more detailed discussion of these issues is located in Volume 2, Technical Document 1, Comprehensive Affected Environment, and in Volume 2, Technical Document 2, Environmental Consequences.

Unbundling of Services

Many of the functions necessary to ultimately deliver electricity to a home or place of business are generally provided by one company or utility. For some utilities, these functions include the process of generating, transmitting, and distributing electricity to the customer (end user). Utility service also may include specialized energy services that enhance the use of electricity. These may range from personalized energy management services to specialized metering and

billing. The costs for these services are most often consolidated into a standard rate for kilowatt-hours consumed that reflect generalized cost of service estimates among different classes of customers.

The experience with deregulation of electric utilities in other countries and of other industries in the United States, most notably the telecommunications industry, suggests that utilities may need to "unbundle" their operations to be more competitive in the future. Several commenters asked TVA to assess the ramifications of possibly unbundling its services. For TVA, this would largely amount to pricing and offering power generation and transmission as separate services. Since this is predominantly a rate-making issue, it is not addressed directly in Energy Vision 2020. The question of how unbundling services might affect TVA is being studied in a separate analysis that will use results from Energy Vision 2020.

Treatment of Watts Bar Nuclear Plant Unit 1 and Browns Ferry Nuclear Plant Unit 3

Several commenters asked TVA to include Watts Bar Nuclear Plant (WBN) Unit 1 and Browns Ferry Nuclear Plant (BFN) Unit 3 as resource options in Energy Vision 2020. However, TVA included these units as existing generating resources since these units were important for meeting TVA's near term load requirements and were essentially complete at the start of the Energy Vision 2020 process. Watts Bar Nuclear Plant Unit 1 was granted a license to load fuel and perform low power testing in November 1995. Fuel loading was completed in November, and Watts Bar Nuclear Plant Unit 1 is expected to begin commercial operation in spring 1996. Browns Ferry Nuclear Plant Unit 3 fuel load was completed in October and is scheduled to return to service in early 1996. As with other operating TVA resources, Energy Vision 2020 evaluated the impacts of these units on electric rates, debt, and the environment. For further explanation of the need and economics of Watts Bar Nuclear Plant Unit 1, see the comments and responses on this unit in Volume 3.

Privatization of TVA

Since the purpose of Energy Vision 2020 is to identify the long- and short-term actions TVA can take to meet its existing and future customer energy resource needs, the issue of privatization of TVA's utility operations is not addressed.