

REPORTING GUIDANCE FOR FY 2001 FEDERAL AGENCY ANNUAL REPORT ON ENERGY MANAGEMENT

This guidance document provides an outline for each agency's annual report on energy management and conservation programs, and it describes briefly the information that should be included in each section of the report. The report that agencies produce in accordance with this guidance will fulfill agencies' reporting requirements for both the Annual Report to DOE required under the National Energy Conservation Policy Act (NECPA) (as amended by the Energy Policy Act of 1992 [EPACT]) and the Annual Report to the President required under Executive Order 13123.

The main purpose of this report is to provide narrative information in support of the quantitative results and qualitative strategies related to energy use reduction and energy efficiency. Much of the quantitative information required for this report will be calculated by agencies for (1) OMB Circular A-11 to fulfill the energy data requirements in agency budget requests, and (2) Energy Scorecards. The A-11 Annual Energy Management Data Report and Energy Scorecard should be included in Section IV of agencies' Annual Reports and can be referenced where appropriate.

At the end of this guidance is a tabular summary of goals of Executive Order 13123 and NECPA/EPACT. The table may be submitted with agencies Annual Reports as a reference for readers unfamiliar with these mandates.

A FY 2002 Agency Energy Implementation Plan should be submitted as an attachment to each agency's FY 2001 Annual Report. DOE and OMB have prepared a separate guidance document for preparation of an Implementation Plan. The outline for the Implementation Plan follows closely the outline for the Annual Report. This will enable DOE to evaluate in future years each agency's progress in implementing energy management strategies that were identified in the previous year's Implementation Plan.

OUTLINE AND INSTRUCTIONS FOR THE ANNUAL REPORT

- I. Management and Administration.** This section will describe (1) the agency's establishment of an energy management infrastructure and (2) the agency's use of management tools to implement Executive Order 13123.

A. Energy Management Infrastructure

- 1. Senior Agency Official.** Identify the agency's senior energy official and describe the official's role and responsibilities.

LeAnne Stribley is the designated senior energy official and Executive Vice President of Administration.

Terrell M. Burkhart is the senior energy manager and Vice President of Facilities Management in the Administration organization.

Stephen L. Brothers is the manager of the TVA Internal Energy Management Program (IEMP) located within Facilities Management.

- 2. Agency Energy Team.** Identify the members of the team and describe the team's responsibilities.

TVA formed the Agency Energy Management Committee (AEMC) to facilitate compliance with federal statutes, Executive Orders, federal regulations, TVA energy and related environmental management objectives, and obligations under the Environmental Protection Agency's (EPA) Green Lights Program (GL), EPA's Energy Star Buildings Program (ESB) and EPA's Energy Star Program (ESP). The AEMC serves as the agency energy team. This committee is comprised of representatives from each TVA organization responsible for energy management and associated environmental considerations in facility and general operations inside the agency. The AEMC provides an avenue for sharing lessons learned and replicating success. The members are:

- Stephen L. Brothers, chairperson for the AEMC and manager of TVA's IEMP;**
- William H. Lehman, Fleet Management;**
- David R. Zimmerman, Sustainable Design;**
- David W. Stewart, Fossil;**
- Darlene Keller, Facilities Management Environmental;**
- W. Richard King, Nuclear;**
- Kent W. Brown, Nuclear alternate;**
- Teresa S. Wampler, River System Operations and Environment;**
- David R. Dinse, Public Power Institute;**
- Tommy K. McEntyre, Hydro;**

- Carolyn B. Marvel, Fossil alternate;
- David A. Gordon, Heavy Equipment;
- Thomas M. Alford, Chief Financial Officer representative;
- Robert E. Henning, Transmission and Power Supply;
- V. Edward Hudson, Demand Side Management Program;
- David R. Chamberlain, Customer Service and Marketing;
- Thomas A. Wojtalik, Transmission and Power Supply; and
- Mary H. Moore, General Counsel.

B. Management Tools

1. **Awards (Employee Incentive Programs).** Describe the agency's use of employee incentive programs to reward exceptional performance in implementing Executive Order 13123.

TVA utilizes pay for performance as one method to reward employees' efforts toward meeting Agency Goals. One of the benefits to TVA's agency goals is savings attributed to the implementation of cost effective energy and related environmental projects. The AEMC is investigating the potential to further reward employees for their energy management contributions.

2. **Performance Evaluations.** Describe agency efforts to include successful implementation of provisions of Executive Order 13123 in the position descriptions and performance evaluations of senior energy officials, members of the agency energy team, heads of field offices, and facility/energy managers.

To the extent to which employees are responsible for activities that are related to the objectives of Executive Order 13123 (E.O. 13123), their job descriptions contain reflective line items and their performance is evaluated in terms of the extent to which they accomplish such goals.

3. **Training, Education and Outreach.** Describe activities undertaken to ensure that all appropriate personnel receive training for energy management requirements. (Note: The number of employees trained will be reported on the agency's A-11 Data Report and Energy Scorecard. Expenditures on training will also be reported on the A-11 Data Report). Describe agency outreach programs that include education, training, and promotion of ENERGY STAR⁷ and other energy efficient products for Federal purchase card users.

TVA trains employees to accomplish objectives of the IEMP. Updates are provided on current federal requirements and regulations to employees, managers, and TVA customers upon request. Energy management and associated environmental training is provided to managers and employees as needed. Employee awareness activities are used to educate employees on how they impact energy consumption and the environment through their daily activities at work and home. TVA also educates staff in energy and environmental related topics through the TVA University.

INDUSTRIAL INITIATIVES

TVA provides an initiative for its direct-served and distributor-served industrial customers, which focuses on providing solutions to energy-related problems in the manufacturing environment. TVA works with clients to help them identify and solve problems related to their use of energy, manufacturing processes, environmental issues, and plant operations. The targeted segments, such as the textile and food processing industries, are selected because of the large presence of such industries in the TVA service area, high energy usage, or the availability of solutions for their existing problems. The TVA industrial marketing managers rely on in-house expertise or bring in consultants to assist these industrial clients. As a prime example of TVA energy assistance to a major industrial customer, TVA representatives developed and co-chaired an in house energy conservation team to identify and implement energy cost savings opportunities at the Saturn Spring Hill automobile assembly plant. The team achieved savings in excess of \$1.0 million in energy costs for the year.

COMMERCIAL INITIATIVES

TVA works with Tennessee Valley commercial and institutional customers to provide solutions to their energy-related problems and to encourage the selection of energy efficient equipment. For example, TVA is working with schools, governments, offices, retail, healthcare, and other commercial segments to provide information on the various energy options available to them. As part of that effort, TVA provides feasibility studies conducted by independent private sector professional engineers, to compare different types of systems on a life-cycle-cost basis. Also, if the customer is interested in closed loop geothermal heat pumps, TVA will provide test bores and thermal conductivity tests at the proposed project site to assist with the design of the ground heat exchanger. Furthermore, TVA sponsors continuing education for Tennessee Valley architects and engineers on the proper design and application of geothermal heat pumps. In the TVA service area, there are approximately 124 geothermal systems installed or in design as the result of TVA's promotion of this energy efficient technology. Demand for TVA assistance to commercial customers on energy-related problems continues to grow.

RESIDENTIAL INITIATIVES

energy right[®] Residential NEW HOMES PROGRAM

The *energy right*[®] Residential New Homes Program promotes comfort, quality, value, and savings in new home construction. Incentives are available to home builders who satisfy the Program's criteria and energy efficiency rating

requirements. Builders may also qualify for volume builder contracts and promotional/advertising incentives.

TVA assisted in the development of the Homes Energy Rating System (HERS) software which computes a rating of how energy efficient a given home is, using a rating scale of 0 to 100. This software has been provided to TVA and power distributor technicians in TVA's service area. Homes must meet a minimum rating of 80 points to participate in the Program. Builders and homeowners are encouraged to build homes with ratings of 83 or higher and meet *energy right*[®] Gold Program criteria. Homes built *energy right*[®] meet or exceed the energy efficiency standards set by the National Model Energy Code.

energy right[®] RESIDENTIAL PROGRAM WATER HEATER PLAN

The *energy right*[®] Water Heater Plan encourages installation of energy efficient water heaters in homes. It is a distributor program benefiting customers, contractors, and distributors. The plan provides for TVA-reimbursed matching funds to match distributor-funded incentives paid to program participants. The matching funds are limited to 50-percent of the value of the distributor incentive up to a maximum of \$60 per standard and \$150 per advanced electric water heater installed.

PUBLIC POWER INSTITUTE

A national leader in demonstrating the value of public power, TVA created the Public Power Institute (PPI) to explore solutions for energy, environmental and economic issues through 21st century technologies.

The technology focus areas for PPI are: Biomass and Renewables; Clean and Advanced Energy; Environmental Impacts and Reduction; and Energy Use and Industrial Ecology.

TVA's Public Power Institute promotes the value of public power in a competitive marketplace by:

- Using TVA facilities as a living laboratory to test new energy technologies;
- Showcasing technologies that benefit the public; and
- Providing scientific input on regulatory and public policy issues.

The institute serves both as a research laboratory seeking new ways to achieve sustainable power production and as a public policy clearinghouse for energy and environmental issues. PPI represents the vision and ultimate mission of public power: to put the public good first and to emphasize long-term benefits over short-

term gains.

PPI helps TVA fulfill its commitment to provide competitively-priced and reliable power while promoting environmental stewardship and economic development. The PPI is positioned today to help develop, demonstrate, and deploy new energy-related technologies for a better tomorrow.

PARTNERSHIPS

Recognizing that the PPI's ability to accomplish its mission is largely dependent upon partners, PPI collaborates with others, including federal, state, local, private, not-for-profit, and educational entities. This collaboration allows for the development of technologies for power production, power delivery, and power use. These partnerships leverage external expertise and promote cooperation between the public and private sectors.

Utility-Related Organizations:

- **Tennessee Valley Public Power Association (TVPPA);**
- **American Public Power Association (APPA); and**
- **National Rural Electric Cooperative Association (NRECA).**

Research Organizations and Partnerships:

- **Environmental and Energy Study Institute;**
- **Electric Power Research Institute (EPRI);**
- **Environmental Technology Evaluation Center (EvTEC);**
- **Oak Ridge National Laboratory (ORNL);**
- **U.S. Department of Energy(DOE);**
- **U.S. Department of Agriculture;**
- **U.S. Department of Defense;**
- **Geothermal Heat Pump Consortium;**
- **Southern Coalition for Advanced Transportation;**
- **Electric Vehicles Association of America;**
- **U.S. Department of Transportation; and**
- **American Society of Heating, Refrigerating, and Air-Conditioning Engineers.**

PPI helps TVA fulfill its commitment to provide competitively-priced and reliable power while promoting environmental stewardship and economic development. The PPI is positioned today to help develop, demonstrate, and deploy new energy-related technologies for a better tomorrow.

MARKET TEST FOR GREEN POWER SWITCH (GPS)

TVA and twelve public power companies launched GPS on Earth Day,

April 22, 2000. GPS, the first green power program of its kind offered in the Southeast, provides consumers with the opportunity to participate economically in TVA's development of green power, including electricity generated by wind, solar and landfill gas.

Under the GPS program, residential, commercial, and industrial consumers sign up for green power blocks of 150 kilowatt hours each, which represent approximately 12-percent of a typical home's monthly energy use. The associated reduction of atmospheric carbon dioxide is equivalent to the reduction produced by planting an acre of trees.

Ten solar generating facilities are presently operating in Tennessee, Kentucky, Alabama and Virginia. Three additional solar installations are scheduled to be completed in the Tennessee Valley by the end of FY 2002. One commercial scale wind power generation site has also been operational since October 2000, with an expansion planned to be completed in FY 2003. A landfill gas generation site has been operating since May 2001, with expansion planned by the end of FY 2002. The pilot project was turned over to the Customer Services and Marketing group in August 2000 to become part of their program offering package, with the construction and generation responsibilities remaining with the PPI.

ADDITIONAL HIGHLIGHTS/ACCOMPLISHMENTS

- Developed TVA's Demand-Side Management Strategy in consideration of TVA demand side activities.**
- Demonstrated Ultraviolet Germicidal Irradiation (UVGI) technology to kill airborne tuberculosis (TB) and other bacteria at Shelby County Jail.**

- **Demonstrated the uses of an ozone washing process for cleaning fresh cut vegetables to reduce water consumption, eliminate chemicals, and improve product quality.**
 - **Partnered with ORNL, DOE and others to develop a revolutionary hybrid lighting concept that integrates light from both solar and electric sources.**
 - **Developed TVA's Renewable Energy Policy in consideration of TVA renewable energy activities.**
 - **Demonstrated passive treatment of high-acidity and high-iron coal ash leachate at a TVA fossil plant.**
 - **Developed public and private partnerships to evaluate alternative fueled vehicle (AVF) options for the Great Smoky Mountain National Park and other national parks.**
 - **Completed a 16-year performance evaluation and a survey of TVA constructed wetlands for acid drainage treatment.**
 - **Characterized fate and form of ammonia in ash sluice water derived from Selective Catalytic Reduction systems at a fossil plant.**
 - **Continued microturbine testing/demonstration program (30kW Capstone and 75kW Honeywell).**
 - **Completed computer simulation phase of novel, low temperature power cycle technology development, submitted patent, and began engineering design of demonstration pilot plant.**
 - **Began construction of the United States' first large scale (12mW) energy storage facility using Regenesys Technology.**
 - **Cooperated with Voith Hydro, Inc., in establishing and operating Hydro Resource Solutions, LLC, a Tennessee limited liability company which develops and markets energy efficiency enhancing hardware and software for the hydro power industry.**
 - **Initiated a joint DOE, EPRI, and TVA project, the Carbon Capture and Water Emissions Treatment System (CCWESTRS). The project which will demonstrate integration of fossil power plant operations with terrestrial carbon sequestration technologies.**
4. **Showcase Facilities.** Highlight exemplary new or existing facilities that the agency has designated Showcase Facilities in FY 2001. Describe why the facilities are considered Showcase Facilities (i.e., discuss the facility design, the improvements made in energy or water efficiency, the use of renewable energy, etc.).

The TVA Chattanooga Office Complex (COC) continues to be TVA's designated showcase facility. The COC was completed in 1986 and encloses approximately 1.2 million square feet of floor area. It integrates the use of passive energy strategies, energy management practices, and environmental programs and activities. Occupants' daily activities have been recognized as a major component in facility performance. Energy and environmental awareness programs have been established to inform the occupants of the impacts their actions have on this performance. The combination of original design elements, energy and

environmental activities, and aggressive energy reduction operation and maintenance efforts have resulted in the COC becoming a model facility.

ENERGY MANAGEMENT AND ASSOCIATED ENVIRONMENTAL EFFORTS

Energy consumption in the COC exceeds TVA's target for facility design and the FY 2010 building energy reduction goal established in E.O. 13123. This low energy consumption rate supports the reduction of CO₂ and other environmental impacts at the source.

Since initial construction, additional energy and environmental improvements have been implemented in the COC. One of these improvements was the design and installation of a chilled and hot water storage system for the COC and Monteagle Place (MP) buildings. The system allows the two buildings, through a symbiotic relationship, to better use site energy and reduce the need for source energy.

COC Original Design Features

- VAV air handlers with full economizer capabilities.
- Energy Management and Control System (HVAC, Lighting, Fire).
- Heat recovery from MP chillers.
- Approximately 30 fc of ambient lighting supplemented with task lighting.
- Renewable energy attributes such as daylighting.
- Thermal storage through structural and fluid mass.

Additional Improvements

- Chilled water crossover piping allows the COC and adjacent facility to share chilled water and run the most efficient mix of chillers.
- Water fountains are heated and cooled through heat exchangers to better manage temperature and humidity in the building.
- Motion sensors and timers have been installed in the COC (i.e., conference rooms, restrooms, enclosed offices, closets, etc.).
- LED exit lights have been installed.
- Energy efficient lighting has been added.
- COC storage tanks are used for chilled and hot water storage (3 x 19,000 gallons).
- Heat exchangers and chilled water were used to cool the secondary water loop allowing the abandonment of rooftop evaporative coolers and associated fans, motors, and sump heaters.
- Equipment (i.e., fixtures, motors, ballasts, etc.) was upgraded to energy efficient models as failures occurred.
- VFDs and energy efficient motors have been installed on all large air-handling units.

- The energy management system has been upgraded to be more user friendly.
- Chiller efficiencies have been evaluated so the most energy efficient mix of chillers can be run for operating conditions.
- Upgrading to more energy efficient equipment is evaluated during modifications (fixtures with T-8 lamps and electronic ballasts, etc.).
- Energy efficient motors are installed where applicable.
- During purchase of replacement parts, energy efficient and environmentally friendly materials were ordered and stocked.
- Chillers have been retrofitted to accept non-CFC refrigerant.
- Energy Star equipment was installed where applicable.
- Building entry air locks have been installed to reduce the infiltration of outside air.

ENVIRONMENTAL PROGRAMS AND ACTIVITIES

TVA demonstrates a commitment to environmental stewardship through the implementation of its environmental programs and activities at the COC. Examples of these efforts include, but are not limited to, toxic reduction, affirmative procurement, waste minimization, and recycling.

Toxic Reduction

TVA continues its efforts to reduce the amount of toxic chemicals used in its operation and maintenance activities for the building. The volume of toxic chemicals purchased in corporate office buildings has been reduced by over 90-percent since 1994. The COC is the largest single contributor to this effort.

Affirmative Procurement

TVA reduces environmental impacts at the COC and other corporate facilities through affirmative procurement. During FY 2001 TVA purchased \$2.2 million of materials that met requirements of the Resource Conservation and Recovery Act (RCRA) and \$15.5 million of other recycled content materials. This is a substantial increase over last year's purchases. The purchases of these non-toxic materials have recycled content, and their creation, use, and disposal do not damage the environment.

Waste Minimization and Recycling Programs

TVA signed on as a Federal Charter Partner in the EPA “WasteWise Program” in FY 2001. Through this program, TVA has made a commitment to achieve results in three areas:

- 1) Waste prevention;**
- 2) Collection of recyclables; and**
- 3) Use of recycled materials.**

This aligns with TVA’s mission of stimulating economic growth by protecting the Tennessee Valley’s natural resources and building partnerships for the public good. TVA has established the Solid Waste Leverage Team and a Solid & Hazardous Waste Regulatory Policy Team to support the “WasteWise Program.”

TVA partners with a nonprofit organization which trains and develops work skills in mentally and physically challenged clients. These clients, in conjunction with their respective organizations, collect, sort, and market the recycled material. During FY 2001 1,666 tons of office-related solid waste was generated in TVA’s corporate facilities which include the COC. Through this program, 702 tons (42-percent) of the total waste was recycled. In addition to the typical office waste recycling, TVA continues its efforts in recycling used batteries, fluorescent light tubes, oil, scrap metals, building materials, wood waste, and ballasts.

TVA utilizes a redeployment program which collects and redeploys used equipment and materials. TVA achieved a cost avoidance of \$359,320 through this effort in FY 2001.

Sustainable carpet is used throughout the COC. This carpet contains and uses high performance backing made from 100-percent recycled content. TVA has an agreement with the carpet manufacturer to recycle carpet removed from the COC which has kept used TVA facility carpet out of the landfill while saving an equivalent amount in raw materials.

II. Energy Efficiency Performance. This section will highlight data calculated for reporting on the A-11 Data Report and the Energy Scorecard. The purpose of the section is to provide narrative information in support of these data.

A. Energy Reduction Performance

The factors used for converting the reporting units to Btu have a significant impact on how performance toward the energy efficiency goals and other goals of E.O. 13123 are measured. Energy use is defined as the energy that is used at a building or facility and measured in terms of energy delivered to the building or facility. Recognizing this, OMB and DOE will use Btu based on the site conversion factors (see Attachment 5) for both electricity and steam as the primary measure of performance. However, because carbon emissions are generally proportional to source energy use, reductions in source Btu will also be considered more seriously than in the past.

The conversion factor for electricity of 3,412 Btu per kilowatt hour, the rate of consumption by the end-user on site, will be used for measuring performance. The difference between the site conversion rate and the estimated source conversion rate of 10,346 Btu per kilowatt hour is attributable to transmission and conversion losses associated with electric generation. The site conversion factor for purchased steam is 1,000 Btu per pound. Generation inefficiencies and distribution losses are included in the source conversion factor of 1,390 Btu per pound. Separate tables showing agency consumption using the source conversion factors for electricity and steam, along with estimated carbon emissions, will be included in DOE's Annual Report to Congress.

TVA Facility Operations

TVA's facility inventory and the type of activities these facilities are used for continue to evolve as the Agency faces new challenges. This facility information is updated through the AEMC. The AEMC remains the focal point for disseminating energy and related environmental information to TVA organizations and employees and implementing TVA's Energy Plan (see Attachment 7). The AEMC allows representatives to voice problems in meeting regulations and goals and share success stories which can then be applied throughout TVA.

OPERATION AND MAINTENANCE ACTIVITIES FOR BUILDINGS

TVA continues to improve its energy efficiency and environmental stewardship through operation and maintenance activities. The following is a list of operation and maintenance practices and activities for FY 2001:

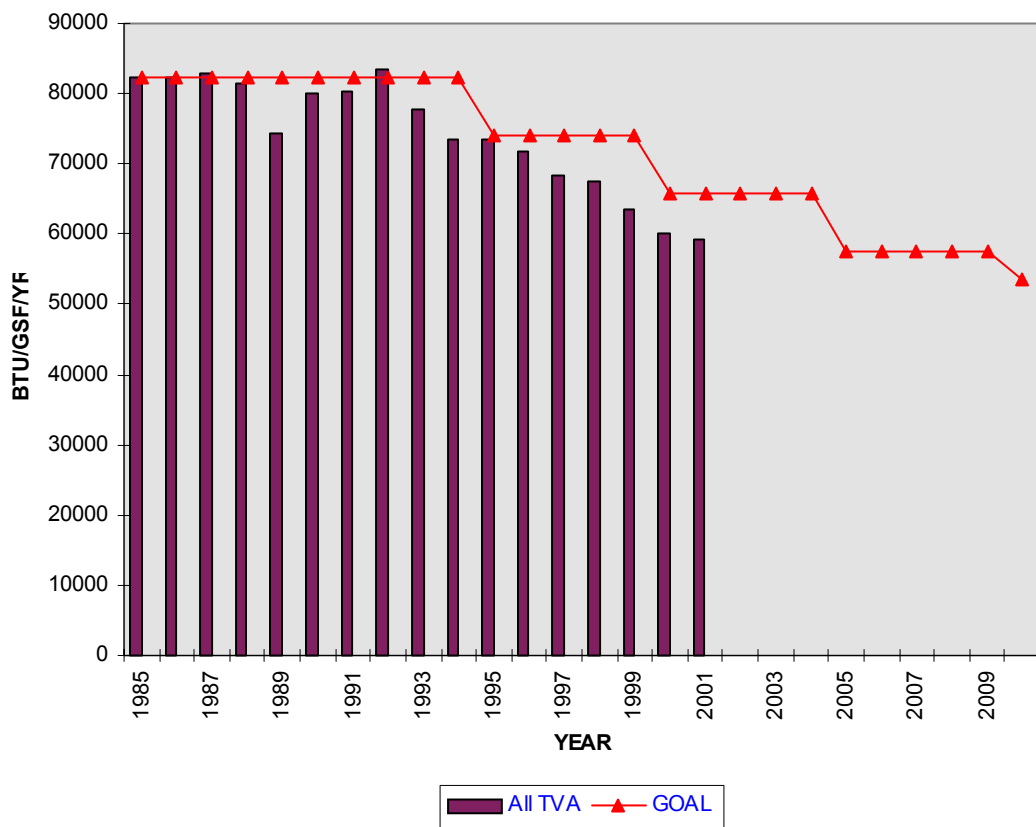
- **Recycle expired fluorescent lamps;**
- **Recycle or reuse waste material when feasible;**
- **Educate employees on energy efficiency;**
- **Encourage employees to implement energy efficient ideas and practices;**
- **Turn off equipment when not needed;**
- **Have custodians turn off building equipment after cleaning;**
- **Clean lamps, fixtures, and diffusers;**
- **Use the most efficient lamps available (i.e., screw-in fluorescent, screw-in halogen, screw-in high pressure sodium, energy efficient fluorescent lamps, etc.);**
- **Reduce lighting levels where light output exceeds requirements for the space;**
- **Install motion sensors to control lighting in rooms where economical (offices, restrooms, conference rooms, etc.);**
- **Install light switches or motion sensors in areas not currently controlled;**
- **Disconnect unnecessary lamps and ballasts;**

- **Disconnect unnecessary transformers;**
- **Install energy efficient electronic ballasts;**
- **Perform group relamping;**
- **Install photocell control on outdoor lighting;**
- **Rewire lamps to permit shutoff of unneeded lights;**
- **Minimize the number of ballasts installed (use a four-lamp ballast for two adjacent two-lamp fixtures);**
- **Revise building operating procedures for efficiency and cost;**
- **Install programmable thermostats and use the night and weekend setback features to reduce energy use during unoccupied periods;**
- **Set thermostats in mechanical rooms and unoccupied areas so the least amount of energy will be used without causing the equipment to deteriorate;**
- **Verify and calibrate all controls periodically, including time clocks;**
- **Keep all outside doors and windows closed when heating or cooling, using vestibules properly;**
- **Keep garage and warehouse doors closed as much as possible while heating or cooling;**
- **Replace broken windows;**
- **Replace missing insulation;**
- **Add caulking where necessary;**
- **Replace worn weather-stripping on windows and doors;**
- **Reduce the amount of infiltration air where possible but always meet fresh air requirements;**
- **Eliminate ventilation during unoccupied hours;**
- **Operate exhaust fans only when required;**
- **Verify that all outside air dampers are operating properly;**
- **Operate HVAC in economizer mode when conditions are favorable;**
- **Eliminate ductwork leaks;**
- **Reduce ductwork and piping resistance where possible;**
- **Avoid heating and cooling at the same time;**
- **Change filters as recommended;**
- **Clean HVAC coils;**
- **Test and balance HVAC systems;**
- **Optimize chiller operation;**
- **Recycle waste heat when feasible;**
- **Lower domestic hot water temperature;**
- **Repair hot, chilled, or domestic water leaks;**
- **Cut off nonessential gas to buildings during the summertime;**
- **When replacing motors, use properly sized energy efficient motors;**
- **Balance three-phase loads;**
- **Use cog-type belts for higher efficiency;**
- **Eliminate steam trap leaks; and**
- **Properly insulate hot water and steam lines to reduce energy loss.**

1. Standard Buildings. Report energy use for standard buildings in units of Btu-per-gross-square-foot (Btu/GSF) for FY 1985 (the Base Year) and FY 2001. Report the percent change from FY 1985 and from the FY 2000. (Note: This information will be reported on the agency's Energy Scorecard). Discuss any extenuating factors that may be skewing the accuracy of this performance measure.

TVA continues to reduce energy use in its facilities through the coordination of energy management efforts. TVA has ended FY 2001 with a Btu/GSF of 59,516 which is a 1-percent reduction from FY 2000 and a 28-percent reduction from FY 1985. TVA is on track for meeting the 30-percent reduction goal of E.O. 13123 for FY 2005.

TVA STANDARD BUILDING ENERGY PERFORMANCE



Each agency that controls its Federally-owned building space or directly pays the utilities in its leased space will report to DOE the agency's aggregate energy consumption for various fuel types (see the A-11 Data Report instructions). Reporting on leased buildings may pose some difficulty depending on the nature of the lease (partially serviced, fully serviced). In cases where an agency is responsible for paying utility bills for space that is leased, the agency is expected to report energy consumption for the leased space to DOE. If an agency is leasing from the General Services Administration, GSA is responsible for reporting. Agencies that have been delegated responsibility by GSA for operation and maintenance of buildings they occupy are required to report, to DOE, energy consumption for these buildings during the years the buildings are under their control. An agency should *not* adjust the FY 1985 baseline to reflect the addition of buildings delegated by GSA if those buildings were not under the agency's control during the base year period. The FY 1985 consumption and square footage of any building delegated after FY 1985 is included in GSA's FY 1985 baseline. To also include this square footage and consumption in the agency's baseline would result in double reporting. The impact of delegation activity on the Btu/GSF rates of most agencies should be minimal. In cases where building delegations account for a large increase in the percentage of an agency's building inventory and its Btu/GSF is greatly impacted, this situation will be documented in the text of DOE's Annual Report to Congress.

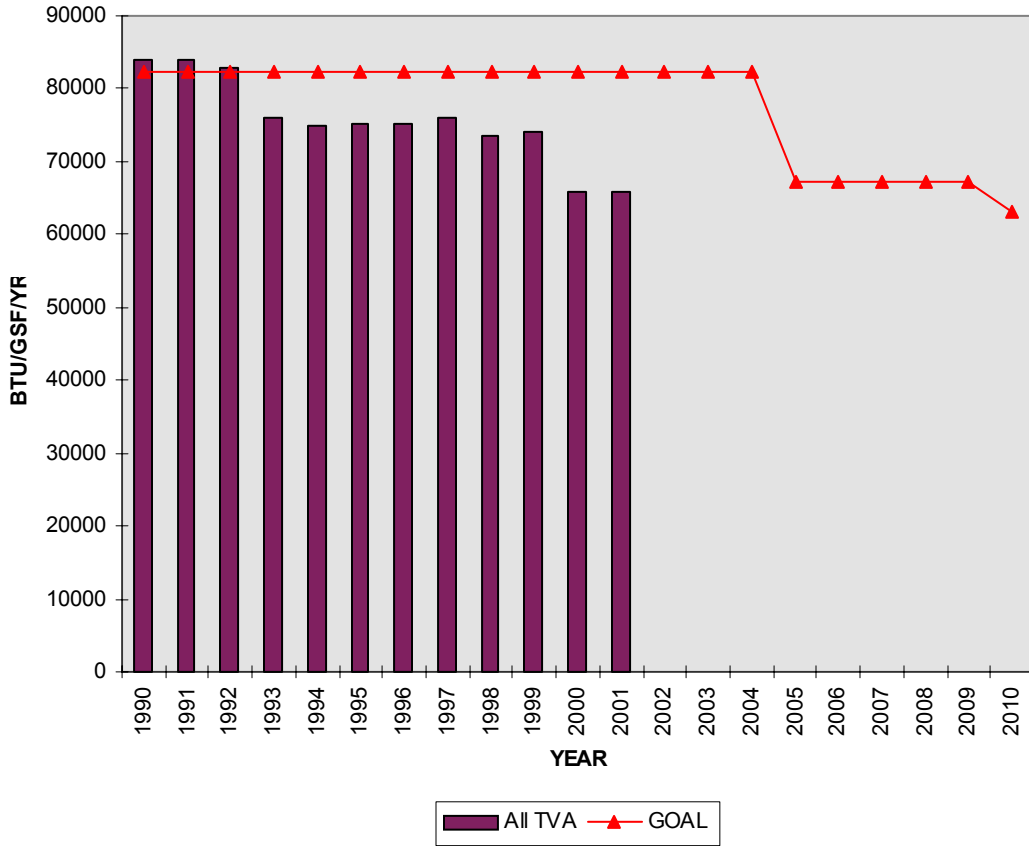
Comparisons to a FY 1985 base year will not be possible for agencies that had no buildings under their control during the base year. Where comparisons to the FY 1985 base year are not possible, that specific item in the data table will be footnoted as A not applicable@ in the report. In order to maintain accurate data and comply with the legislation, FEMP will work with relevant agencies to determine alternative approaches that would minimize double counting, but provide comparative information on Btu per GSF consumption.

- 2. Industrial and Laboratory Facilities.** Identify the facility inventory subject to this goal, referencing Section IV D that lists the buildings included. Describe the performance measure(s) used (Btu/square foot, Btu/production unit, etc.). (Refer to FEMP Web site for the guidance document *Section 203 Performance Goals for Industrial, Laboratory, Research, and Other Energy-Intensive Facilities* [www.eren.doe.gov/femp/resources/guidances.html]).

Report energy use for industrial and laboratory facilities for FY 1990 (the Base Year) and FY 2001. Report the percent change from FY 1990 and from the FY 2000. (Note: This information will be reported on the agency's Energy Scorecard). Discuss any extenuating factors that may be skewing the accuracy of this performance measure.

TVA has ended FY 2001 with a Btu/GSF of 65,989 which is a 21-percent reduction from FY 1990.

TVA INDUSTRIAL BUILDING ENERGY PERFORMANCE



- 3. Exempt Facilities.** Refer to Section IV EBa list of exempt facilities and an explanation of why they were exempted. (Refer to DOE’s *Criteria for Exempting Facilities from the Goals of Executive Order 13123 and Guidance for Reporting Exemptions* [www.eren.doe.gov/femp/resources/guidances.html]).

Although buildings found exempt according to the criteria are not subject to the requirements of Sections 202 and 203 of Executive Order 13123, DOE will continue to collect energy consumption data for these buildings under the new reporting category of AExempt Buildings.® This ensures that accurate reporting on overall Federal energy consumption is maintained.

TVA has no facilities to report here.

- 4. Tactical Vehicle and Equipment Fuel Use.** Refer to the A-11 Data Report to identify the fuel use for tactical vehicles and other equipment. Discuss trends in the use of each type of fuel and methods employed to reduce fuel use.

To relieve reporting burdens on Federal agencies, GSA's Agency Report of Motor Vehicle Data (Form SF-82) was revised for collecting acquisition, fuel consumption, and fuel cost data for motor vehicles directly from vehicle fleet managers. The use of the SF-82 eliminated the need to report fuel consumption data for non-tactical motor vehicles to DOE. GSA now collects this data, including alternative fuel consumption data reported under Sections 303 and 308 of EPACT, and forwards this information to DOE for inclusion in the Annual Report to Congress. For more information on the SF-82, please contact Ms. Lois Mandell of GSA's Federal Vehicle Policy Division at (202) 501-2824.

VEHICLE FUEL EFFICIENCY OUTREACH PROGRAMS

TVA encourages employees to use mass transit systems, vans for group travel, and car pools when available and feasible. The use of coordinated TVA and vendor delivery, pickup routing schedules, and just-in-time delivery has been expanded throughout TVA. This coordinated effort avoids double handling, multiple trips to the same sites, and reduces deadheading.

HEAVY EQUIPMENT

Utilization of the Total Base Number (TBN - measure of oil's alkaline) value of 30-percent of original value as an oil indicator has resulted in a reduction in our oil consumption due to extended oil drain intervals. Accordingly, the oil change interval in some of the smaller diesel engines has changed to 320 hours or 10,000 miles to protect our equipment. Turbo pre-cleaners are being used on Tractor Scrapers and Dozers to lengthen air filter life and extend oil change intervals. Air Filter Indicators used on our equipment have cut down on filter changes and provided additional engine protection.

We have expanded the Fuel Mag to small compressors to kill bacteria and spores that grow in fuel that is stored for long periods of time. This should decrease the amount of contaminated fuel of which must be disposed. These units can also eliminate down time due to filter and fuel injector plugging.

Our maintenance shops are using filter crushers to extract all possible oil from filters before disposal. The three maintenance facilities are using oil burners to heat their facilities using our generated used oil.

These projects provide TVA with the benefits of reduced potential of adverse environmental impacts from spillage of waste oil and fuel, increased operational efficiency, increased availability of units, and decreased cost due to reduction in oil consumption.

FEDERAL VEHICLE FUEL EFFICIENCY

The following tables show a comparison of TVA's annual mileage and miles per gallon (mpg) performance for sedans and light trucks from FY 1975 through FY 2001.

ANNUAL MILEAGE

FY	Miles Driven		Percent Increase/(Decrease)	
	Sedans	Light Trucks	Sedans Base Yr. 75	Light Trucks Base Yr.79
75	12,222,850	N/A	0	N/A
76	14,698,600	N/A	20	N/A
77	14,331,650	N/A	17	N/A
78	14,101,300	N/A	15	N/A
79	13,779,900	25,947,000	13	0.0
80	14,788,300	25,989,000	21	0.2
81	14,922,450	27,655,000	22	7
82	24,714,480	24,878,000	4	(4)
83	12,125,848	25,122,699	(1)	(3)
84	11,760,288	24,947,558	(4)	(4)
85	11,958,251	21,237,202	(2)	(18)
86	12,359,000	24,954,488	1	(4)
87	12,905,706	24,064,000	6	(7)
88	12,650,124	24,008,436	3	(7)
89	11,312,417	22,599,061	(7)	(13)
90	15,665,480	23,516,512	28	(9)
91	19,175,027	24,120,233	57	(7)
92	23,264,550	24,318,622	91	(6)
93	25,557,833	25,702,300	109	(1)
94	29,766,173	23,947,797	144	(8)
95	30,096,968	23,996,720	146	(8)
96	28,388,572	24,998,289	132	(4)
97	20,298,902	24,343,292	66	(6)
98	7,124,589	26,623,769	(42)	3
99	7,939,345	21,335,796	(35)	(18)
00	9,723,679	27,701,582	(20)	5
01	9,290,949	25,242,686	(24)	(3)

MPG PERFORMANCE

FY	Annual MPG			Percent Increase/(Decrease)		
	Sedans Base Yr. 75	Light Trucks Base Yr. 79		Sedans Base Yr. 75	Light Trucks Base Yr. 79	
		4 x 2	4 x 4		4 x 2	4 x 4
75	15.1	N/A	N/A	0	N/A	N/A
76	15.0	N/A	N/A	(1)	N/A	N/A
77	15.6	N/A	N/A	3	N/A	N/A
78	16.2	N/A	N/A	7	N/A	N/A
79	16.3	11.6	8.2	8	0	0
80	17.9	12.0	8.3	19	3	1
81	19.2	13.2	7.9	27	14	(4)
82	22.7	14.2	8.5	50	22	4
83	26.2	16.0	9.8	74	38	20
84	27.5	16.4	9.5	82	41	16
85	26.9	16.1	10.2	78	39	24
86	27.6	18.2	10.8	83	57	32
87	26.6	17.5	11.4	76	51	39
88	24.6	15.3	11.0	63	32	34
89	28.3	15.9	13.1	87	37	60
90	28.4	15.7	11.6	88	35	41
91	29.6	18.2	15.7	96	57	91
92	27.7	21.2	12.4	84	83	52
93	31.9	17.3	13.6	105	49	66
94	29.8	15.5	12.9	97	34	57
95	31.2	14.5	13.4	107	25	63
96	29.1	13.2	12.7	66	14	44
97	28.3	14.2	12.7	87	22	44
98	26.6	15.4	14.4	76	33	76
99	25.4	12.8	11.9	68	10	45
00	26.3	13.7	12.8	74	18	56
01	26.6	13.9	13.2	76	20	61

PROCUREMENT OF ALTERNATIVE FUELED VEHICLES

As a major supplier of electricity, TVA is particularly interested in supporting the use of electric vehicles (EVs). TVA has incorporated EVs into its fleet operations and supports power distributors and local communities with EV technology demonstrations.

TVA currently has 19 EVs in its fleet which is comprised of the following: four U.S. Electricar Prism sedans, five U.S. Electricar S-10 pickup trucks, five Solectrica Ford sedans, and five Ford Ranger pickup trucks.

- B. Renewable Energy.** Discuss agency's policy and efforts to encourage purchase of electricity generated from renewable energy sources. (Note: The quantitative information related to this section [see below] will be reported on the agency's A-11 Data Report and Energy Scorecard. On the Energy Scorecard, self-generated renewable energy use and purchased renewable energy use will be aggregated into a single value).

GREEN POWER SWITCH

TVA and twelve public power companies launched GPS on Earth Day, April 22, 2000. GPS, the first program of its kind offered in the Southeast, provides consumers with the opportunity to participate economically in TVA's development of green power; in particular, the power generated by three wind turbines and 10 solar generating sites. GPS expanded the program in 2001 to include electricity generated from methane gas at a landfill in Murfreesboro, Tennessee and a waste water treatment plant in Memphis, Tennessee. Future expansion plans include additional solar installations at locations across the Tennessee Valley.

Under the GPS program, residential, commercial, and industrial customers sign up for green power blocks of 150 kilowatts each, which represent approximately 12-percent of a typical home's monthly energy use. The associated reduction of atmospheric carbon dioxide is equivalent to the reduction produced by planting an acre of trees. As of October 31, 2001, there are 4,699 residential customers purchasing 7,916 blocks and 207 business customers purchasing 5,627 blocks, for a total of 13,543 purchased blocks of green power.

Nine new power distributors are scheduled to launch the program in January 2002. These distributors are located in and around the Johnson City Customer Service Area in Northeast Tennessee. TVA plans to continue expanding the GPS program to additional power distributors as quickly as growth in generation supply allows.

WIND AND SOLAR TECHNOLOGY MONITORING

The purpose of the project is to follow the development of technologies for wind turbines, solar photovoltaics (PVs), and solar thermal and evaluate sites within the Tennessee Valley for potential wind farm siting.

The reasoning behind this project is the decrease in price for the implementation of wind and solar technologies across the United States. TVA has a need to know siting, costs, and technologies benefits for possible application. Clean, renewable energy may become a requirement of deregulation. Wind turbines and PVs are usual components for green pricing programs and are part of the offering by TVA for the green pricing market test.

The scope of the wind and solar technology monitoring project is to install PVs and wind turbines as needed to support the TVA green pricing market test. TVA may use power purchase agreements for this generation.

The wind monitoring program has been identifying and developing potential wind sites. Recommendations to conduct advanced monitoring are currently under consideration now. The solar technology following program will continue to assess technology advances and pricing trends. A PV installation to support green pricing will be a visible demonstration of this technology.

- 1. Self-generated renewable energy.** Identify/estimate energy use (in BBTu) from electricity self-generated from renewable sources (photovoltaics, wind) and renewable energy thermal projects (solar thermal, geothermal).

TVA is in the process of incorporating renewable energy options such as passive solar heating, geothermal heat pumps and day-lighting in its new Customer Service Center building design.

TVA has already installed photovoltaic panels and wind electric generators in many locations in its service area to provide renewable energy to its customers through its GPS program.

- 2. Purchased renewable energy.** Identify the renewable (i.e., wind, solar, geothermal, biomass) energy component of power purchases under competitive contract in megawatt-hours. (Note: Guidelines for counting renewable energy projects and purchases of electricity from renewable energy sources toward agency progress in reaching their goals are available on the FEMP Web site [www.eren.doe.gov/femp/resources/guidances.html]. Information on the Federal renewable energy goals is also available on the FEMP Web site).

TVA purchased 450 MWh from the TVA GPS program for use in its Knoxville Office Complex.

- 3. Million Solar Roofs (MSR).** Identify the total number of qualifying solar roofs, pool covers, etc. for entering into MSR on-line registry (www.eren.doe.gov/millionroofs/register.html). Discuss where the solar roofs were installed and/or challenges in installing solar roofs at certain facilities.

TVA's current efforts are directed toward large scale solar installations through its Green Power Switch Program, however individual building installations are currently being considered.

- C. Petroleum.** Identify petroleum-based fuels (fuel oil, LPG/propane) used in buildings in FY 1985 and in FY 2001 and the percentage change from FY 1985. (Note: This information will be reported on the A-11 Data Report and the Energy Scorecard).

TVA consumed 10,712 gallons of petroleum in building operations in FY 2001 which is a decrease of 51-percent from the FY 1985 baseline of 21,920 gallons.

- D. Water Conservation.** Identify/estimate water consumption and cost by the agency in FY 2001 and outline any agency-specific issues related to collection of water consumption data. (Note: This information will be reported on the A-11 data report and the energy scorecard). Refer to DOE's *Guidance to Federal Agencies for Determining Baseline Water Usage* and *Guidance to Establish Water Efficiency Improvement Goal for Federal Agencies* on the FEMP Web site (www.eren.doe.gov/femp/resources/guidances.html).

TVA consumed 376,635,000 gallons of potable water in FY 2001 with an estimated cost of \$800,940. This is a reduction of 1,065,000 gallons (0.3-percent) from FY 2000.

- III. Implementation Strategies.** The purpose of this section is to identify and describe the use of strategies to reduce energy consumption and improve energy efficiency. It is not expected that each agency will have employed every strategy; rather, each strategy identified in Executive Order 13123 is listed as a subsection to remind agency officials of the existence of these strategies and to encourage their use where practical and life-cycle cost effective.

In each of the following subsections, present highlights for each of the strategies that were used. If certain strategies were not used, explain why not. Please provide narrative where strategies that were identified as focal points in the previous year's Implementation Plan were successful, where challenges existed in implementing strategies, and how challenges were overcome.

TVA has implemented many energy management measures through its operation and maintenance activities and building retrofits. For example, through TVA's SWAP program, controls are placed on lighting and other energy consuming equipment, and inefficient lighting is replaced when these actions are determined to be life-cycle cost effective. This program is implemented through the operation and maintenance staff as part of its daily activities. TVA has also installed energy management control systems (EMCSs) in the majority of its corporate facility space and considers the use of EMCSs for all facilities when their use is life-cycle cost effective.

As part of its operation and maintenance function, TVA has an emergency curtailment procedure which reduces energy use in its buildings during energy emergencies.

- A. Life-Cycle Cost Analysis.** Outline procedures in place to ensure the use of life-cycle cost analysis in making investment decisions about in products, services, construction, and other projects to lower the Federal Government's costs and to reduce energy and water consumption. Highlight examples where life-cycle cost analysis was used in capital budgeting decisions concerning energy efficiency. Report on the successes and challenges of implementing life-cycle cost effective projects. (Under EPACT, energy conservation projects that will pay back investment costs within 10 years must be undertaken).

TVA's Energy Plan provides that life-cycle analysis will be used in making investment decisions regarding energy conservation measures.

- B. Facility Energy Audits.** Describe the number/percentage of agency facilities audited for energy and water efficiency during FY 2001, and the total percentage of facilities audited to date. (In accordance with EPACT and Executive Order 13123, approximately 10% of facilities should be audited each year).

TVA has evaluated building inventory for potential energy conservation measures. These facilities are being re-evaluated in accordance with E.O. 13123 and TVA's Memorandum Of Understanding with the EPA. This past summer, TVA revisited most of its fossil facilities to update building inventory information and uncover potential energy-saving opportunities. These facilities were previously surveyed in FY 1998.

- C. **Financing Mechanisms.** Provide narrative information related to the use of Energy-Savings Performance Contracts (ESPCs) and Utility Energy Services Contracts (UESCs). (Note: Quantitative information related to ESPCs and UESCs will be reported on the A-11 Data Report and the Energy Scorecard). Report funding requested and received for FY 2001 and funding requested for FY 2002 for the performance of energy surveys/audits and for applied energy conservation measures (Note: This information will be reported on the A-11 Data Report).

Funding procedures for energy management and related environmental projects are reviewed through the IEMP and the AEMC. Recommendations and comments are submitted to proper organizations. Projects for facilities are primarily funded through renovation, operation, maintenance, and modernization efforts. Projects covered under general operations are ranked for economic benefit compared to other TVA projects to determine funding availability and implementation status and are funded mainly through the capital budgeting process.

- D. **ENERGY STAR⁷ and Other Energy-Efficient Products.** Describe steps taken to promote the purchase of ENERGY STAR⁷ products and/or products that are in the upper 25 percent of energy efficiency as designated by FEMP. Note whether energy efficient criteria have been incorporated into all guide specifications and product specifications developed for new construction and renovation. Also note whether such criteria have been incorporated into product specification language. (See the ENERGY STAR⁷ products and Agree@ products web sites by GSA [www.fss.gsa.gov/environ], DOE [www.eren.doe.gov/femp/procurement/begin.html], and EPA [www.epa.gov/uiseerko/index.html])

TVA's Energy Plan provides that TVA will strive, where cost-effective, "to meet the Energy Star Building criteria for energy performance and indoor environmental quality in eligible facilities to the maximum extent practicable by the end of 2002," as described by section 403(c) of E.O. 13123. This includes purchasing Energy Star and other energy efficient products when feasible.

TVA continues its efforts to buy materials which have positive environmental qualities including soy ink, rechargeable batteries, low mercury lamps, and non-toxic supplies. TVA also purchases materials which meet sustainable architecture criteria. These are non-toxic building materials which are, have recycled content, and their creation, use, and disposal do not damage the environment.

- E. ENERGY STAR⁷ Buildings.** Report the number and percentage of buildings that have met the ENERGY STAR⁷ Building criteria and have officially been designated ENERGY STAR⁷ Buildings. (Buildings must rank in the top 25 percent in energy efficiency relative to comparable commercial and Federal buildings to be eligible for the ENERGY STAR⁷ Buildings designation. See www.epa.gov/buildings/label).

TVA's Edney building received an Energy Star Building Label during FY 2001. This building incorporates an energy efficient water source heat pump system, energy management system, energy efficient lighting with occupancy sensors, along with other energy and environmentally friendly systems. This brings the percentage of TVA buildings meeting the Energy Star criteria to approximately 11-percent of TVA's overall corporate square footage.

- F. Sustainable Building Design.** Report whether sustainable building design principles have been incorporated into the siting, design, and construction of new facilities. (See www.wbdg.org for a description of sustainable building design principles).

TVA is building on past sustainable efforts by incorporating sustainable design criteria into renovation and new construction efforts. A "Sustainable Design Guideline" along with a "Sustainable Process" have been written and are currently being reviewed. All of these efforts are being incorporated into an agency sustainable program under TVA's IEMP.

TVA continues to buy materials that have positive environmental qualities and include those that meet RCRA requirements and other recycled content materials. Examples of environmental products purchased include soy ink, rechargeable batteries, low mercury lamps, and non-toxic supplies. TVA also purchases materials which meet sustainable architecture criteria. These non-toxic building materials have recycled content, and their creation, use, and disposal minimize environmental impacts.

- G. Energy Efficiency in Lease Provisions.** Describe how energy and water efficiency are considered when agencies enter into new leases or renegotiate/extend existing leases (e.g., preference for buildings with sustainable design and development, preference for certified ENERGY STAR⁷ Buildings, etc.)

Where applicable, TVA uses model lease provisions based on those recommended by the General Services Administration (GSA) and such provisions will be incorporated into new and renewed leases provided they are cost-effective. The model lease provisions address energy and water efficiency.

- H. Industrial Facility Efficiency Improvements.** Highlight activities undertaken to explore efficiency opportunities in energy-intensive facilities. This may include activity in the following areas: steam systems, boiler operation, air compressor systems, industrial processes, fuel switching, cogeneration, and other efficiency and renewable energy technologies.

HYDRO ENERGY REDUCTION

Hydro Power considers energy efficiency and environmental impacts for each project and activity. TVA has cooperated with Voith Hydro, Inc., in establishing and operating Hydro Resource Solutions, LLC, a Tennessee limited liability company, which develops and markets energy efficiency enhancing hardware and software for the hydro power industry. Many energy management and related environmental projects were completed at TVA Hydro plants during FY 2001. Benefits from these projects include maintaining plant availability, reducing energy consumption, lowering maintenance costs, increasing overall efficiency, and supporting environmental stewardship. The following table contains a list of projects for FY 2001:

Plant Name	Project Name	Cost (000's)	Category
Appalachia	Replace Raw Water System	250	Performance
Blue Ridge	Waterways Replacement	550	Performance
Chickamauga	Hydrologic Modification to Dam	900	Environmental
Chickamauga	Power House Roof Replacement	560	Performance
Fort Loudon	Unit 1: Replace Generator Air Coolers & Ring HDR	169	Performance
Great Falls	New Design Generator Lube Oil	165	Performance
Guntersville	Replace 480V Main Boards	425	Performance
Guntersville	Lock Electrical Service System Upgrade	50	Performance
Guntersville	Unwatering Pump	120	Performance
Guntersville	Replace Office & Control Building HVAC	183	Performance
Hydro System	Hydro Efficiency Monitoring System	316	Performance
Hydro System	Remoting and Automation	9,890	Performance
Hydro System	Unwatering Pump Program	495	Performance
Plant Name	Project Name	Cost (000's)	Category

Hydro System	Modernization Program	39,319	Performance
Melton Hill	Unit 2: Replace Stator Winding	405	Performance
Melton Hill	Unit 1: Replace Generator Leads	153	Performance
Melton Hill	Unit 2: Replace Generator Leads	180	Performance
Ocoee	Unit 3: Replace Stator Winding	305	Performance
Pickwick	Unit 4: Replace Generator Stator Winding	725	Performance
Raccoon Mountain	Units 1-4: Capacity Upgrade	15,456	Performance
Tims Ford	Replace Power House Roof	150	Performance
Upper Bear Creek	Dam Aeration System	200	Environmental
Watts Bar	Lock Electrical Service System Upgrade	450	Performance
Wheeler	Units 1-8: Generator Breaker Replacement	70	Performance
Wheeler	Upgrade and Replace ERCW Piping System	190	Performance
Wilson	Unit 19: Replace Generator Stator Winding	1,000	Performance
Upgrade Hydro Plant	Battery System	546	Performance
	TOTAL ALL PROJECTS	73,222	

NUCLEAR ENERGY REDUCTION PROJECTS IN FY 2001

Plant Name	Project Name	Cost (000'S)	Category
Brown's Ferry	Replace Turbine Electro-Hydraulic Control System	3499	Environmental
Sequoyah	Removed Temporary Office Trailers	(6)	Performance
Watts Bar	Renovated Plant Office Building	757	Performance
Watts Bar	Replace Moisture Separator Reheater High Pressure Operating Vent Line	2126	Performance
Watts Bar	Correct Excessive Steam Generator Blow Down	279	Performance
	TOTAL ALL PROJECTS	6,655	

NUCLEAR ENERGY FUTURE PROJECTS

Plant Name	Project Name	Cost (000'S)	Implement Year	Category
Brown's Ferry	Eliminate 80k Square Feet of Inefficient Space, & Replace with Efficient Structures	2500/yr	2002-2005	Performance
Brown's Ferry	Unit 2: Install a Recirculating Variable Speed Drive	3938	2003	Performance
Brown's Ferry	Unit 3: Install a Recirculating Variable Speed Drive	3490	2002	Performance
Brown's Ferry	Unit 3: Replace Turbine Electro-Hydraulic Control System	3257	2002	Environmental
Sequoyah	Unit 1: Replace Steam Generator	152129	2003	Performance
Sequoyah	Unit 1: Install Steam Generator Feed Water Flow Instrumentation	2776	2002	Performance
Sequoyah	Unit 1: Replace High Pressure Turbine Rotor	8055	2003	Performance
Sequoyah	Unit 2: Install Steam Generator Feed Water Flow Instrumentation	2421	2003	Performance
Brown's Ferry	Reduce PCB's In Transformers	3189	2003	Environmental

FOSSIL ENERGY REDUCTION

Many energy management and related environmental projects were completed at TVA Fossil plants during FY 2001. We support these projects which include heat rate improvements, maintaining plant availability, reducing energy consumption, lowering maintenance costs, environmental stewardship, and increasing overall efficiency. The following is a list of projects for FY 2001:

Plant	Description	Cost (000's)	Category
Allen	Unit 3: Low Pressure Double Feed Turbine L-0 and L-1 Rotor	827	System Requirement
Allen	Unit 3: Replace Control Room Air Conditioner	182	System Requirement
Allen	Units 1-2: Replace Control Room Air Conditioner	365	System Requirement
Allen	Bio-Gas Supplemental Fuel	2,970	Environmental
Allen	Unit 3: Refurbish Intermediate Pressure Rotor	359	System Requirement
Allen	Units 1-3: Add Water Cannons	1,494	System Requirement
Allen	Units 1-3: Replace Sootblowers & Add Electric Drives	1,253	Controls
Allen	Exciter System Control Voltage Regulator	432	Controls
Allen	Units 1-3: Control Room Consolidation	44	Econ/Revenue
Bull Run	Retube Main Condenser	(2)	System Requirement
Bull Run	Replace Opacity Monitors	141	Controls
Bull Run	Unit 1: High Pressure Turbine Rotor and Cylinder	1,134	System Requirement
Bull Run	Waterwall Replacement	74	System Requirement
Bull Run	UNIT 1: Air compressor Capacity Upgrade	1	System Requirement
Bull Run	Replace Service Building Plaza Roof	101	Commitment
Colbert	Unit 2: Air Preheater	2,274	System Requirement
Colbert	Fire Protection Water Supply Upgrade	(26)	Safety
Colbert	Unit 3: Air Preheater	669	System Requirement
Colbert	Replace Lighting Off Transfer Line	29	System Requirement
Colbert	Unit 2: Full Flow Turbine Oil Filter	398	System Requirement
Colbert	Unit 3: Full Flow Turbine Oil Filter	164	System Requirement
Plant	Description	Cost (000's)	Category

Colbert	Unit 5: Secondary Super Heater Replacement	1,248	System Requirement
Colbert	Unit 1: Sootblower Retrofit	214	System Requirement
Colbert	Unit 2: Sootblower Retrofit	256	System Requirement
Colbert	Unit 3: Sootblower Retrofit	316	System Requirement
Colbert	Unit 4: Sootblower Retrofit	177	System Requirement
Colbert	Unit 5: Sootblower Retrofit	316	System Requirement
Colbert	Units 1-4: Damper Drive Replacement	456	System Requirement
Colbert	PCB Transformer Replacement Projects	12	Environmental
Cumberland	Unit 1: High Pressure Feedwater Heaters 2A & 2B	6	System Requirement
Cumberland	Unit 1: Replace Fisher/Porter Plant Computer	4	Controls
Cumberland	Unit 2: Turbine Controls Upgrade	(4)	Controls
Gallatin	Unit 4: Turbine Oil System Upgrade	336	System Requirement
Gallatin	New Chiller for Electrical Control	166	System Requirement
John Sevier	Unit 4: Upgrade Generator Hydrogen Cooler	165	System Requirement
John Sevier	Replace PCB Containing Transformers	8	Environmental
John Sevier	Units 1-4: Replace Plant Computer	6	Controls
Johnsonville	Unit 6: Replace Economizer	834	System Requirement
Johnsonville	Unit 9: Primary Air Flow Measurement Device	46	Controls
Johnsonville	Unit 4: Stator Rewind	1,300	Econ/Revenue
Johnsonville	Replace PCB Containing Transformers	787	Environmental
Johnsonville	Replace Utility Building Roof	121	Commitment
Kingston	Unit 1-8: Control Room Consolidation	3,326	Econ/Revenue
Plant	Description	Cost (000's)	Category

Kingston	Unit 1: Refurbish High Pressure Diaphragms	502	System Requirement
Kingston	Replace #1 250V DC Station Battery	148	System Requirement
Kingston	Unit 5: Replace Hydrogen Coolers	3	System Requirement
Kingston	Unit 6: Replace Hydrogen Coolers	3	System Requirement
Kingston	Unit 7: Replace Hydrogen Coolers	3	System Requirement
Kingston	Unit 9: Replace Hydrogen Coolers	205	System Requirement
Kingston	Replace PCB Transformers	193	Environmental
Kingston	Replace Service & Electrical Control Roof	65	Commitment
Kingston	Replace Air Plenum Roof	2	Commitment
Paradise	Upgrade Makeup Water Supply	502	Water
Paradise	Unit 1: High Pressure Capacity Increase	10	Capacity Growth
Paradise	Unit 2: High Pressure Capacity Increase	31	Capacity Growth
Paradise	Unit 3: High Pressure Capacity Increase	2	Capacity Growth
Paradise	Units 1,2&3: Upgrade Cooling Tower 1	22	System Requirement
Paradise	Unit 1: Replace Powerhouse Coal Feeders	28	System Requirement
Paradise	Unit 1: Replace Generator Current Transformer	15	System Requirement
Paradise	Unit 2: Replace Generator Current Transformer	46	System Requirement
Paradise	Unit 2: 2B Unit Station Service Transform	6	System Requirement
Paradise	Unit 3: Install Lube Oil Purification System	64	Environmental
Paradise	Unit 2: Scrubber 2 Main Transformer Rewind	142	Econ/Revenue
Paradise	Unit 3: Combustion & Ignition Controls Upgrade	416	Controls
Plant	Description	Cost (000's)	Category
Paradise	Replace PCB Containing Transformers	1,017	Environmental

Shawnee	Units1-8: Control Room Consolidation	7	Econ/Revenue
Shawnee	Fire Protection Water Supply Upgrade	213	Safety
Shawnee	Unit 6: Rewind Generator Stator	838	Econ/Revenue
Shawnee	Units 1-4: Replace Sootblowers & Controls	180	Controls
Shawnee	Unit 1: Replace High Pressure Turbine Impulse Wheel & Bearing	20	System Requirement
Shawnee	Unit 1: Replace Upper Deflection Arch Tubes	7	System Requirement
Shawnee	Replace Stack Lights	174	Econ/Revenue
Widows Creek	Units1-6: Replace Ignition Ignitor	1,489	System Requirement
Widows Creek	OSHA-Coal Handling HVAC	19	Safety
Widows Creek	Plant A: Replace PCB Containing Transformers	38	Environmental
Widows Creek	Plant B: Replace PCB Containing Transformers	459	Environmental
Widows Creek	Replace Roof 1-6: Office, Livewell, etc	94	Commitment
Widows Creek	Unit 8: Upgrade Boiler Feed Pump Turbine Safety Controls	169	Controls
Widows Creek	Replace #1 Feedwater Heater	463	System Requirement
Widows Creek	Replace #1 Feedwater Heater	477	System Requirement
Widows Creek	Replace 7D Booster Fan Rotor & Inlet Guide	170	System Requirement
Widows Creek	Unit 8: Boiler Circulator Water Pump Upgrade/Module	1,073	System Requirement
Widows Creek	Unit 7: Replace Excitation System - Generator	2,046	System Requirement
Widows Creek	Unit 3: Replace ESP Heater Blower System	220	System Requirement
	TOTAL ALL PROJECTS	34,375	

- I. **Highly Efficient Systems.** Describe new construction and/or retrofit projects for which combined cooling, heating, and power systems were installed. Report whether local natural resources were surveyed to optimize use of available biomass, geothermal, or other naturally occurring energy sources.

TVA considers the implementation of high efficiency systems as mentioned above when life-cycle cost effective, as mentioned above.

- J. Off-Grid Generation.** Describe the installation of new solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives.

TVA is currently researching, testing, and demonstrating the use of green power technologies.

- K. Electrical Load Reduction Measures.** Describe agency activities undertaken to reduce electricity load during power emergencies. These activities are required under the President's Memorandum of May 3, 2001 on Energy Conservation at Federal Facilities. (See www.eren.doe.gov/femp/resources/presidential_direct.html for information on electrical load reduction measures.)

Attachment 1 (the electronic file, "Emergency Load Reduction") contains emergency building energy reduction information.

- L. Water Conservation.** Highlight activities undertaken to improve water efficiency. Discuss progress in developing and implementing Water Management Plans and Best Management Practices for efficient use of water (See the guidance document, *Water Efficiency Improvement Goal for Federal Agencies* on FEMP's Web site [www.eren.doe.gov/femp/resources/guidances.html]).

The AEMC evaluates the best management practices for application to TVA facilities. Facilities were evaluated for water usage during the summer and high use areas were noted. At present, TVA has already implemented certain BMPs in some of its corporate facilities and in some of its public use areas.

Water-conservation Best Management Practices at the COC include the following:

- 1. Public Information and Education Programs.**

TVA's AEMC presents an annual energy management exhibit which includes information on how to conserve energy and water usage. The exhibit is presented during October (Federal Energy Awareness Month) each year at various TVA locations.

- 2. Distribution System Audits, Leak Detection and Repair.**

TVA facilities have preventative and corrective maintenance programs. Routine preventative maintenance is performed on a host of different pieces of equipment including water systems such as cooling towers, water coolers, fountains, urinals, commodes, and water weirs. Preventative maintenance helps to assure proper operation, including the reduction of potential leaks or breaks. When a leak or break occurs, corrective maintenance promotes the repair or

replacement of failed components quickly and effectively.

3. Water Efficient Landscaping.

TVA is aware of the importance of proper watering of exterior landscaping. Irrigation systems have been upgraded in several areas to an above ground PVC irrigation system allowing for better monitoring of water usage and prevention of over watering. Past use of soaker hoses was found to be inefficient due to difficulty in finding leaks and clogging over time. Watering is typically performed in the early morning hours to minimize evaporation.

Climate appropriate turf, trees, shrubs and ground cover which are typically used minimize maintenance and water consumption.

4. Toilets and Urinals.

TVA's preventative maintenance program allows TVA to correct leaking seals or gaskets when needed to prevent excess water usage.

Infrared sensors for automatic flushing have been installed in certain areas, and are being considered in other areas when it is determined that manual valves need replacement. Consideration is given to low gpf model commodes and urinals which need to be replaced it is cost effective.

5. Faucets and Shower Heads.

Low flow shower heads and infrared sensors for automatic faucet shutoff were installed during replacement or renovations, where cost effective.

IV Data Tables and Inventories. Include the items listed below in the order given.

- A. OMB Circular A-11, Exhibit 55.** A blank Exhibit 55 form and instructions for completing the form was issued by DOE.

Attachment 2 (electronic file “Exhibit_55_2001.xls”) contains the draft OMB Circular a-11, Exhibit 55 as requested.

- B. Energy Scorecard for FY 2001.** A blank scorecard was issued by DOE.

Attachment 3 (electronic file “Scorecard_2001.doc”) contains the energy scorecard information as requested by DOE.

- C. Goals of Executive Order 13123 and NECPA/EPACT (optional).** This table was prepared by OMB/DOE and is attached to this guidance document. Agencies may wish to include this table in their Annual Reports for reference.

Attachment 1 (electronic file “EO_13123_Goals.doc” -Goals of Executive Order 13123 and NECPA/EPACT)

- D. Industrial and Laboratory Facilities Inventory.** This should include the following information: building name, building location (city and state), building classification last year.

Attachment 6 (electronic file “Industrial_&_Lab_2001.xls”) contains industrial and lab building information.

- E. Exempt Facilities Inventory.** This should include the following information: building name, building location (city and state), building classification last year, justification for exempt status.

TVA has no exempt facilities to report.

- V. Attachments.** Attach a FY 2002 Implementation Plan to this FY 2001 Annual Report. Consult the FEMP document *Guidance for Preparing the Federal Agency Implementation Plan for FY 2002*.

- 1) **Goals of Executive Order 13123 and NECPA/EPACT (electronic file “EO_13123_Goals.doc”)**
- 2) **OMB Circular A-11, Exhibit 55 (electronic file “Exhibit_55_2001.xls”)**
- 3) **Energy Scorecard for FY 2001 (electronic file “Scorecard_2001.doc”)**
- 4) **Guidance for Preparing the Federal Agency Energy Management Implementation Plan for FY 2002 (electronic file “Implementation_Plan_02.doc”)**
- 5) **Reporting Units and Conversion Factors for Federal Energy Management Reporting (electronic file “Conversion_Factors_01.doc”)**
- 6) **Industrial & Lab Buildings (electronic file “Industrial_&_Lab_2001.xls”)**
- 7) **TVA Energy Plan 12-26-01 Final (electronic file “TVA_Energy_Plan_12-26-01_Final.doc”)**

Attachment 1

Goals of Executive Order 13123 and NECPA/EPACT

Executive Order 13123

Category	Goal	Comments
Greenhouse Gas Emissions	30% reduction by 2010	Base year is 1990. DOE will calculate agencies' progress toward this goal and report it on agencies' annual energy scorecards
Energy Efficiency		
Standard Buildings	\$ 30% improvement by 2005 \$ 35% improvement by 2010	Base year is 1985
Industrial and Laboratory Facilities	\$ 20% improvement by 2005 \$ 25% improvement by 2010	Base year is 1990
Exempt Facilities	N/A	Despite lack of quantitative goal, agencies should implement strategies to improve energy efficiency at these facilities.
Renewable Energy	\$ Implement renewable energy projects \$ Purchase electricity from renewable energy sources \$ Install 2,000 solar energy systems at Federal facilities by 2000 \$ Install 20,000 solar energy systems at Federal facilities by 2010	Installation of Federal solar energy systems will help support the Million Solar Roofs initiative
Petroleum	Reduce petroleum use	Switches to alternative energy sources should be life-cycle cost effective
Source Energy	Reduce use of source energy	Accomplish by undertaking projects that are life-cycle cost effective
Water Conservation	Reduce water consumption*	Accomplish via life-cycle cost effective measures, energy-savings performance contracts, or other financing mechanism

NECPA/EPACT

Energy Efficiency	20% improvement by 2000	Base year is 1985
Financing	Undertake all energy efficiency improvement projects that have a simple payback period of 10 years or less by 2005	E.O. 13123 expands this goal by mandating that any energy efficiency project that is life-cycle cost effective be undertaken
Audits	Conduct audits for energy efficiency on 10% of facilities annually	E.O. 13123 includes language supporting this goal

* FEMP has established water efficiency improvement goals as directed by the Executive Order. Agencies must implement Water Management Plans and Best Management Practices according to the following schedule: 05% of facilities by 2002, 15% of facilities by 2004, 30% of facilities by 2006, 50% of facilities by 2008, 80% of facilities by 2010.

For more detail, see the FEMP guidance document Water Efficiency Improvement Goal for Federal Agencies

Annual Energy Management Data Report

Agency Tennessee Valley Authority
Date: Dec

Prepared by:
Phone:

Stephen Brothers
(423) 751-7369

PART 1: ENERGY CONSUMPTION AND COST DATA

1-1. Standard Buildings/Facilities

Entry	Consumption units	FY 2001		FY 2002		FY 2003		
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	
1101	Electricity	MWH	181969.114	8188.61	181969.114	8188.61	181969.114	8188.61
1102	Fuel oil	thou. gal.	10.71	10.28	10.71	10.28	10.71	10.28
1103	Natural gas	thou. cu. ft.	3691.7	36.54	3691.7	36.54	3691.7	36.54
1104	LPG/propane	thou. gal.						
1105	Estimated life-c	s. ton						
1106	Purch. steam	BBtu						
1107	Other	BBtu						
1108	Total cost			8235.43		8235.43		8235.43
1109	Standard Buildings/Facilities (thou. gross square feet)		10521.12		10521.12		10521.12	

1-2. Industrial, Laboratory, Research, and Other Energy-Intensive Facilities

Entry	Consumption units	FY 2001		FY 2002		FY 2003		
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	
1201	Electricity	MWH	434030.4	19531.37	434030.4	19531.37	434030.4	19531.37
1202	Fuel oil	thou. gal.						
1203	Natural gas	thou. cu. ft.						
1204	LPG/propane	thou. gal.						
1205	Coal	s. ton						
1206	Purch. steam	BBtu						
1207	Other	BBtu						
1208	Total cost			19531.37		19531.37		19531.37
1209	Energy-Intensive Facilities (thou. gross square feet)		22440.51		22440.51		22440.51	

1-3. Exempt Facilities (no facilities to report)

Entry	Consumption units	FY 2001		FY 2002		FY 2003	
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)
1301	Electricity	MWH					
1302	Fuel oil	thou. gal.					
1303	Natural gas	thou. cu. ft.					
1304	LPG/propane	thou. gal.					
1305	Coal	s. ton					
1306	Purch. steam	BBtu					
1307	Other	BBtu					
1308	Total cost						
1309	Exempt Facilities (thou. gross square feet)						

Annual Energy Management Data Report -- Continued

Agency: Tennessee Valley Authority
 Date: Dec

Prepared by: Stephen Brothers
 Phone: (423) 751-7369

1-4. Tactical Vehicles and Other Equipment

Entry	Consumption units	FY 2001		FY 2002		FY 2003		
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	
1401	Auto gasoline	thou. gal.	2294.97	2979.69	2294.97	2979.69	2294.97	2979.69
1402	Diesel-distillate	thou. gal.	1101.05	1420.35	1101.05	1420.35	1101.05	1420.35
1403	LPG/propane	thou. gal.						
1404	Aviation gasoline	thou. gal.						
1405	Jet fuel	thou. gal.	133.66	262.34	133.66	262.34	133.66	262.34
1406	Navy special	thou. gal.						
1407	Estimated life-cycl	billion Btu						
1408	Purch. steam	Total cost		4662.38		4662.38		4662.38

1-5. Water Consumption and Cost

Entry	Consumption units	FY 2001		FY 2002		FY 2003		
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	
1501	Water	million gal.	376.64	800.92	376.64	800.92	376.64	800.92

1-6. Renewable Green Energy Purchases (Note: Direct expenditures on green energy products)

Entry	Consumption units	FY 2001		FY 2002		FY 2003		
		Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	Annual consumption	Annual cost (thou. \$)	
1601	Electricity from renewables	MWH	480	12.80	480	12.80	480	12.80
1602	Natural gas from landfill/biomass	thou. cu. ft.						
1603	Thermal energy	MMBTU						
1604	Average annual savings/costs anticipated from expenditures (show costs as negative)							

PART 2: ENERGY EFFICIENCY IMPROVEMENTS

2-1. Direct Agency Obligations

Entry	FY 2001		FY 2002		FY 2003		
	Annual savings		Annual savings		Annual savings		
	(MMBTU)	(thou. \$)	(MMBTU)	(thou. \$)	(MMBTU)	(thou. \$)	
2101	Average annual savings anticipated from obligations	3.93	69.12	3.93	69.12	3.93	69.12
2102	Direct obligations for facility energy efficiency improvements, including facility surveys/audits		299.81		299.81		299.81

Annual Energy Management Data Report -- Continued

Agency: Tennessee Valley Authority
 Date: Dec

Prepared by: Stephen Brothers
 Phone: (423) 751-7369

2-2. Energy-Savings Performance Contracts (ESPCs) (we have no ESPCs to report)

Entry	FY 2001		FY 2002		FY 2003	
	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)
2201						
2202						
2203						
2204						
2205						

2-3. Utility Energy Services Contracts (UESCs) (TVA is a utility)

Entry	FY 2001		FY 2002		FY 2003	
	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)
2301						
2302						
2303						
2304						
2305						

2-4. Utility Incentives (Rebates) (TVA is a utility)

Entry	FY 2001		FY 2002		FY 2003	
	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)	Annual savings (MMBTU)	Amount (number/thou. \$)
2401						
2402						

Annual Energy Management Data Report -- Continued

Agency: Tennessee Valley Authority
 Date: Dec

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2-5. **Training** (this includes employees trained not defined in the guidance)

	FY 2001		FY 2002		FY 2003	
	Number	(thou. \$)	Number	(thou. \$)	Number	(thou. \$)
2501 Number of personnel trained/ expenditure	2370	2.00	2370	2.00	2370	2.00

2-6. **Identification of Funds**

Estimated life-cycle cost savings of **(not applicable, TVA uses Power Funds)**
 Purch. steam

	Efficiency activity	Amount	Account	Program	Annual cost (thou. \$)	Line item	Page in budget request
2601	ESPC or utility service contracts negotiation/management						
2602	Direct spending on efficiency						
2603	Direct spending on training						
2604	Energy Star building design/ construction incremental costs						
2605	"Green Power" purchases						
2606	On-site generation and renewable energy						

Attachment 3

FY 2001 Federal Agency Energy Scorecard

Department/Agency Name	Contact Name and Phone
Tennessee Valley Authority	Steve Brothers (423) 751-7369
Name of Senior Energy Official	Signature of Senior Energy Official
LeAnne Stribley	

Did your agency . . .	Yes	No	Anticipated Submittal Date
Submit its FY 2001 energy report to OMB and DOE by January 1, 2002 (Sec. 303)?	X		12-27-2001
Submit a FY 2002 Implementation Plan by January 1, 2002 (Sec. 302)?	X		12-27-2001
Did your agency . . .	Yes	No	Comments
Implement renewable energy projects at Federal installations or facilitate the siting of renewable generation on Federal land in FY 2001 (Sec. 204)?	X		If yes, how many projects and how much energy generated? Solar <u> 1 </u> <u> 30 </u> MWH Wind <u> </u> <u> </u> MWH Geothermal <u> </u> <u> </u> MWH Biomass <u> </u> <u> </u> MWH Other RE <u> </u> <u> </u> MWH
Purchase energy generated from new renewable energy sources in FY 2001 (Sec. 204)? ¹	X		If yes, how much: <u> 450 </u> MWH
Invest direct FY 2001 appropriations in projects contributing to the goals of the Order (Sec. 301)? (1)		X	If yes, how much: <u> \$ </u>
Specifically request funding necessary to achieve the goals of the Order in its FY 2003 budget request to OMB (Sec. 301)? (1)		X	If yes, how much: <u> \$ </u>
Perform energy audits of 10% of its facility space during the fiscal year (Sec. 402)? As buildings are added to the portfolio, they will be evaluated for energy efficiency (2)	X		What percentage of facility space was audited during the fiscal year? <u> </u> % How much facility space has been audited since 1992? <u> 100 </u> %
Issue to private-sector energy service companies (ESCOs) any energy savings performance contract (ESPC) task orders (Sec. 403(a))? (3)		X	How many? Total construction value: <u> \$ </u> Est. life-cycle cost savings: ESCO share <u> \$ </u> Gov=t share <u> \$ </u>
Issue any utility energy services contract (UESC) task orders (Sec. 403(a))? (4)		X	How many? Total construction value: <u> \$ </u> Est. life-cycle cost savings: Utility share <u> \$ </u> Gov=t share <u> \$ </u>
Incorporate energy efficiency requirements into relevant acquisitions (Sec. 403(b)(3))? (5)		X	

¹ "New" renewable energy means sources developed after 1990.

Did your agency . . .	Yes	No	Comments
Adopt and apply the sustainable design principles (e.g., Whole Building Design Guide, Leadership in Energy and Environmental Design) to the siting, design, and construction of new facilities or major renovations begun in FY 2001(Sec. 403(d))? (6)		X	Number of new building design/construction projects in FY 2001 Number of these projects that incorporated sustainable design principles
Provide training to appropriate personnel ² on energy management (Sec. 406(d))? (7)	X		Number of appropriate personnel trained <u>2370</u> Total number of appropriate personnel <u>2480</u>
Implement any additional management tools (Sec. 406)?	X		Check all that apply: Awards Performance Evaluations <u>X</u> Showcase Facilities <u>X</u> Number of Showcase Facilities <u>1</u>
Establish Water Management Plans for its facilities and implement at least four water conservation Best Management Practices?	X		Number of facilities with Water Management Plans <u>1</u>

NOTE: Provide additional information if a An@ reply is used for any of the questions above.

Please enter data from annual energy report pertinent to performance toward the goals of Executive Order 13123	Base Year	Previous Year (2000)	Current Year (2001)	% Change (Current vs. Base)
Site Energy Efficiency Improvement Goals (Sec. 202). 1985 Base Year	82,357 Btu/Ft ²	60,046 Btu/Ft ²	59,516 Btu/Ft ²	(28) %
Source Energy Use (Sec. 206). 1985 Base Year	402.4 BBtu	617.7 BBtu	620.88 BBtu	54%
Industrial/Energy Intensive Facilities Goals (Sec. 203). 1990 Base Year	83,970 Btu/unit	65,960 Btu/unit	65,989 Btu/unit	(21) %
Water Conservation Goal (Sec. 207). 2000 Base Year	377.7 MGal	377.7 MGal	376.6 MGal	(0.3) %
Renewable Energy (Sec. 204). Energy used from self-generation and RE power purchases (8)	N/A	.001827 BBtu	.005568 BBtu	N/A

Abbreviation Key: Btu/Ft² = British thermal units per gross square foot
 Btu/unit = British thermal units per unit of productivity (or gross square foot when such a unit is inappropriate or unavailable)
 MGal = Million gallons
 BBtu = Billion British Thermal Units
 RE = Renewable energy
 N/A = Not applicable

² Appropriate personnel include Federal employees and on-site contractors who are energy or facility managers, operations and maintenance workers, design personnel, procurement and budget staff, and legal counsel.

- (1) TVA is self funded through its power operations and does not request appropriations to support its statutory mission; therefore, TVA has not submitted any such requests.
- (2) Since 1992, TVA has evaluated 100-percent of its buildings, and plans to reevaluate facilities as needed to implement cost effective energy management objectives and/or update portfolio information.
- (3) TVA considers the use of ESCOs where cost effective and in the best interest of the agency and its customers.
- (4) TVA is a utility.
- (5) TVA incorporates energy efficiency language where appropriate.
- (6) TVA is in the process of developing a sustainable design process.
- (7) This includes employees not specified under sec. 406(d) since all employees play an important part in energy management.
- (8) The source conversion factor was used for this value (11600 Btu/kWh).

Attachment 4

Guidance for Preparing the Federal Agency Energy Management Implementation Plan for FY 2002

The Implementation Plan should be formatted as described below. The format generally follows the outline for the Annual Report. Although the Implementation Plan will be submitted as an attachment to the Annual Report, the Plan should be considered a stand-alone document. Therefore, please do not refer to the Annual Report for Section I, Part A, or for any other part of the Plan that you feel may be redundant with the Annual Report. This Plan should be brief and should describe only activities planned for the next fiscal year.

- I. Management and Administration.** This section will describe (1) the agency's establishment of an energy management infrastructure and (2) the agency's plans to use management tools in implementing Executive Order 13123.

The TVA Energy Policy (Policy) was approved by the TVA Board on April 19, 1995. The Policy describes TVA's commitment to achieving leadership in efficient and environmentally sound energy management. The Policy also facilitates TVA's compliance with legal and regulatory energy use reduction policies and associated environmental goals and procedures. TVA's Energy Plan (Attachment 7) was written to implement the Policy. TVA is in the process of developing, evaluating, and updating performance goals and measures in strategic plans such as the Energy Plan.

TVA formed the Agency Energy Management Committee (AEMC) to facilitate compliance with Federal statutes, Executive Orders, Federal regulations, TVA energy and related environmental management objectives, and obligations under the Environmental Protection Agency (EPA) Green Lights Program (GL), EPA Energy Star Buildings Program (ESB), and Energy Star Program (ES). This AEMC is comprised of representatives from each TVA organization responsible for energy management and associated environmental considerations in facility and general operations inside the agency. The AEMC will continue to provide an avenue for sharing lessons learned and replicating success. The AEMC will continue to meet every other month during FY 2002.

TVA will continue to evaluate energy efficiency in its facilities through assessments and surveys carried out through each responsible organization and under the strategy of the Energy Plan. TVA has developed an evaluation sheet to record energy conservation measures. These measures are then loaded into the agency energy management database for automated retrieval and analysis. During FY 2002 TVA plans to evaluate facilities, when necessary, in accordance with Executive Order 13123.

A. Energy Management Infrastructure

1. **Senior Agency Official.** Identify the agency's senior energy official and describe the official's role and responsibilities.

LeAnne Stribley is the designated senior energy official and Executive Vice President of Administration.

Terrell M. Burkhart is the senior energy manager and Vice President of Facilities Management in the Administration organization.

Stephen L. Brothers is the manager of the TVA Internal Energy Management Program (IEMP) located within Facilities Management.

2. **Agency Energy Team.** Identify the members of the team and describe the team's responsibilities.

TVA formed the AEMC to facilitate compliance with federal statutes, Executive Orders, federal regulations, TVA energy and related environmental management objectives, and obligations under the EPA's GL program, EPA's ESB program and EPA's ES program. The AEMC serves as the agency energy team. This committee is comprised of representatives from each TVA organization responsible for energy management and associated environmental considerations in facility and general operations inside the agency. The AEMC provides an avenue for sharing lessons learned and replicating success. The members are:

- **Stephen L. Brothers, chairperson for the AEMC and manager of TVA's IEMP;**
- **William H. Lehman, Fleet Management;**
- **David R. Zimmerman, Sustainable Design;**
- **David W. Stewart, Fossil;**
- **Darlene Keller, Facilities Management Environmental;**
- **W. Richard King, Nuclear;**
- **Kent W. Brown, Nuclear alternate;**
- **Teresa S. Wampler, River System Operations and Environment;**
- **David R. Dinse, Public Power Institute;**
- **Tommy K. McEntyre, Hydro;**
- **Carolyn B. Marvel, Fossil alternate;**
- **David A. Gordon, Heavy Equipment;**
- **Thomas M. Alford, Chief Financial Officer representative;**
- **Robert E. Henning, Transmission and Power Supply;**
- **V. Edward Hudson, Demand Side Management Program;**
- **David R. Chamberlain, Customer Service and Marketing;**
- **Thomas A. Wojtalik, Transmission and Power Supply; and**
- **Mary H. Moore, General Counsel.**

B. Management Tools

- 1. Awards (Employee Incentive Programs).** Describe the agency's plans to use employee incentive programs to reward exceptional performance in implementing Executive Order 13123.

TVA is evaluating ways to award employees for energy accomplishments.

- 2. Performance Evaluations.** Describe agency plans to include successful implementation of provisions of Executive Order 13123 in the position descriptions and performance evaluations of members of the agency energy team and facility/energy managers.

To the extent employees are responsible for activities that are related to the objectives of Executive Order 13123, their job descriptions contain reflective line items and their performance is evaluated in terms of the extent to which they accomplish such goals.

- 3. Training and Education.** Describe plans to ensure that all appropriate personnel receive training for energy management requirements. Describe plans to develop and implement agency outreach programs that include education, training, and promotion of ENERGY STAR⁷ and other energy efficient products for Federal purchase card users.

The AEMC continues to work on ways to inform TVA employees of how their daily activities influence energy and associated environmental impacts in TVA. The AEMC had its annual employee awareness display on tour during October. In conjunction with the tour, an energy-related article was published in TVA's newspaper, "Inside TVA."

TVA trains employees to accomplish objectives of the IEMP. Updates are provided on current federal requirements and regulations to employees, managers, and TVA customers when requested. Energy management and associated environmental training is provided to managers and employees as needed. Employee awareness activities are used to educate employees on how they impact energy and the environment through their daily activities at work and home. TVA also educates staff in both energy and environmental related topics through the TVA University.

4. **Showcase Facilities.** Describe plans to construct or renovate exemplary facilities that the agency plans to designate as Showcase Facilities. Discuss why the facilities will be considered Showcase Facilities (i.e., discuss the facility design, the improvements made in energy or water efficiency, the use of renewable energy, etc.).

The TVA Chattanooga Office Complex (COC) continues to be TVA's designated showcase facility. The COC was completed in 1986 and encloses approximately 1.2 million square feet of floor area. It integrates the use of passive energy strategies, energy management practices, and environmental programs and activities. Occupants' daily activities have been recognized as a major component in facility performance. Energy and environmental awareness programs have been established to inform the occupants of the impacts their actions have on this performance. The combination of original design elements, energy and environmental activities, and aggressive energy reduction operation and maintenance efforts have resulted in the COC becoming a model facility. TVA plans to continue with the COC as its designated showcase facility for FY 2002.

- II. **Implementation Strategies.** The purpose of this section is to describe plans to use strategies to reduce energy consumption and improve energy efficiency. It is not expected that each agency will employ every strategy; rather, each strategy identified in Executive Order 13123 is listed as a subsection to remind agency officials of the existence of these strategies and to encourage their use where practical and life-cycle cost effective. If certain strategies will not be used, please explain why not.

TVA has implemented numerous energy management measures through its operation and maintenance activities and building retrofits. Through TVA's SWAP program, controls are placed on lighting and other energy consuming equipment, and inefficient lighting is replaced when these actions are determined to be life-cycle cost effective. This program is implemented through the operations and maintenance staff as part of its daily activities. TVA has also installed energy management control systems (EMCSs) in the majority of its corporate facility space and considers the use of EMCSs for all facilities when their use is life-cycle cost effective. Energy management measures will be implemented through operations and maintenance activities and through the capital budget process during FY 2002.

As part of its operations and maintenance function, TVA has an emergency curtailment procedure which reduces energy use in its buildings during energy emergencies.

- A. **Life-Cycle Cost Analysis.** Outline plans to institute procedures to ensure the use of life-cycle cost analysis in making investment decisions about in products, services, construction, and other projects to lower the Federal Government's costs and to reduce energy and water consumption. Report on plans to implement the 10-Year Simple Payback Rule. (Under EPACKT, energy conservation projects that will pay back investment costs within 10 years must be undertaken).

TVA's Energy Plan provides that life-cycle analysis will be used in making investment decisions regarding energy conservation measures.

- B. Facility Energy Audits.** Describe the number/percentage of agency facilities that will be audited for energy and water efficiency during the next fiscal year. (Approximately 10% of facilities should be audited each year). Describe the prioritization criteria for audits (e.g., oldest facilities, most energy intensive facilities, etc.).

TVA has currently evaluated its building inventory for potential energy conservation measures. These facilities will be re-evaluated in accordance with the Executive Order 13123 and TVA's Memorandum of Understanding with the EPA. Energy surveys and building assessments are planned for FY 2002.

- C. Financing Mechanisms.** Provide narrative information related to the planned use of Energy-Savings Performance Contracts (ESPCs) and Utility Energy Services Contracts (UESCs).

Funding procedures for energy management and related environmental projects are reviewed through the IEMP and the AEMC. Recommendations and comments are submitted to the proper organizations. Projects for facilities are primarily funded through renovation, operation, maintenance, and modernization efforts. Projects covered under general operations are ranked for economic benefit compared to other TVA projects to determine funding availability and implementation status and are funded mainly through the capital budgeting process.

- D. ENERGY STAR⁷ and Other Energy-Efficient Products.** Describe steps to be taken to promote the purchase of ENERGY STAR⁷ products and/or products that are in the upper 25 percent of energy efficiency as designated by FEMP. Note whether energy efficient criteria will be incorporated into all guide specifications and product specifications developed for new construction and renovation. Also note whether such criteria will be incorporated into product specification language. (See the ENERGY STAR⁷ products and Agreen@ products web sites by GSA [www.fss.gsa.gov/environ], DOE [www.eren.doe.gov/femp/procurement/begin.html], and EPA [www.epa.gov/uiseerko/index.html])

TVA's Energy Plan provides that TVA will strive, when cost-effective, "to meet the Energy Star Building criteria for energy performance and indoor environmental quality in its eligible facilities to the maximum extent practicable by the end of 2002," as described by section 403(c) of Executive Order 13123. This necessarily includes purchasing Energy Star and other energy efficient products whenever feasible. TVA continues its efforts to buy materials that have positive environmental qualities.

- E. ENERGY STAR⁷ Buildings.** Report the number and percentage of buildings that, in the next fiscal year, are expected to meet the ENERGY STAR⁷ Building criteria and to be officially designated ENERGY STAR⁷ Buildings. (Buildings must rank in the top 25 percent in energy efficiency relative to comparable commercial and Federal buildings to be eligible for the ENERGY STAR⁷ Buildings designation. See www.epa.gov/buildings/label).

TVA will continue to evaluate its buildings for compliance with Energy Star Building criteria. During FY 2002, TVA has plans to evaluate multiple facilities for energy efficiency and, where applicable, compliance with Energy Star Building criteria.

- F. Sustainable Building Design.** Report whether sustainable building design principles will be incorporated into the siting, design, and construction of new facilities. (See www.wbdg.org for a description of sustainable building design principles).

TVA is building on past sustainable efforts by incorporating sustainable design criteria into renovation and new construction efforts. A “Sustainable Design Guideline” along with a “Sustainable Process” have been written and are currently being reviewed. All of these efforts are being incorporated into an agency sustainable program under TVA’s IEMP. The guideline and process should be completed during FY 2002.

- G. Energy Efficiency in Lease Provisions.** Describe how energy and water efficiency will be considered when agencies enter into new leases or renegotiate/extend existing leases (e.g., preference for buildings with sustainable design and development, preference for certified ENERGY STAR⁷ Buildings, etc.)

Where applicable, TVA will use model lease provisions based on those recommended by the GSA, and such provisions will be incorporated into new and renewed leases provided they are cost-effective. The model lease provisions address energy and water efficiency.

- H. Industrial Facility Efficiency Improvements.** Highlight planned activities to explore efficiency opportunities in energy-intensive facilities. This may include activity in the following areas: steam systems, boiler operation, air compressor systems, industrial processes, fuel switching, cogeneration, and other efficiency and renewable energy technologies.

TVA will continue its current activities and will continue to investigate areas to improve industrial facility efficiency through FY 2002.

- I. Highly Efficient Systems.** Describe plans for new construction and/or retrofit projects for which combined cooling, heating, and power systems will be installed. Report whether local natural resources will be surveyed to optimize use of available biomass, geothermal, or other naturally occurring energy sources.

TVA will continue to investigate ways to improve system efficiency and will look for options which include biomass through FY 2002.

- J. Off-Grid Generation.** Describe plans for installing new solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives.

TVA is a utility; hence, it generally does not engage in off-grid generation. However, TVA does consider such facilities when life-cycle cost effective.

- K. Electrical Load Reduction Measures.** Describe agency plans for implementing electrical load reduction measures to be taken during power emergencies to cut electricity consumption in buildings and facilities. (See www.eren.doe.gov/femp/resources/presidential_direct.html for information on electrical load reduction measures.)

As part of its operation and maintenance function, TVA has an emergency curtailment procedure which reduces energy use in its buildings during energy emergencies.

- L. Water Conservation.** Highlight activities to be undertaken to improve water efficiency. Discuss plans to develop and implement Water Management Plans and Best Management Practices for efficient use of water (Note: See the guidance document entitled *Water Efficiency Improvement Goal for Federal Agencies* on FEMP's Web site [www.eren.doe.gov/femp/resources/guidances.html]).

TVA will continue to implement best management practices in FY 2002 when life-cycle cost effective. Some of the buildings not yet surveyed for the application of best management practices will be evaluated in FY 2002.

Attachment 5

Reporting Units and Conversion Factors for Federal Energy Management Reporting

Standard Buildings/Facilities

Industrial, Laboratory, and Other Energy-Intensive Facilities

Exempt Facilities

<i>Fuel Type</i>	<i>Reporting Units</i>	<i>BTUs per Reporting Unit</i>	<i>Joules per Reporting Unit</i>	<i>GigaJoules (GJ) per Reporting Unit</i>
Electricity	Megawatt Hour (MWH)	3,412,000	3,599,660,000	3.59966
Fuel Oil	1,000 Gallons	138,700,000	146,328,500,000	146.3285
Natural Gas	1,000 Cubic Feet	1,031,000	1,087,705,000	1.087705
LPG/Propane	1,000 Gallons	95,500,000	100,752,500,000	100.7525
Coal	Short Ton	24,580,000	25,931,900,000	25.9319
Purchased Steam	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.0
Other	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.0

Vehicles/Equipment

<i>Fuel Type</i>	<i>Reporting Units</i>	<i>BTUs per Reporting Unit</i>	<i>Joules per Reporting Unit</i>	<i>GigaJoules (GJ) per Reporting Unit</i>
Auto Gas	1,000 Gallons	125,000,000	131,875,000,000	131.875
Diesel	1,000 Gallons	138,700,000	146,328,500,000	146.3285
LPG/Propane	1,000 Gallons	95,500,000	100,752,500,000	100.7525
Aviation Gas	1,000 Gallons	125,000,000	131,875,000,000	131.875
Jet Fuel	1,000 Gallons	130,000,000	137,150,000,000	137.150
Navy Special	1,000 Gallons	138,700,000	146,328,500,000	146.3285
Other	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.0

Other Conversion Factors

100 Cubic Feet(Ccf) = 748 Gallons 1 Liter = 0.264 Gallons
 1 Acre-Foot = 325,851 Gallons 1 Cubic Meter = 264 Gallons

Industrial & Lab Buildings

TVA_FACILITY_NAME	FACILITY_TYPE_CD	GROSS_SQUARE_FOOTAGE_QT
Bandy, R. H. 115 kV Switch House	SUBS	5
O2H Water Level Gauge House	PRCS	16
Engineering Labs Building P	LAB	30
Grandview Radio/Microwave	MICR	36
Columbia 161 Well House	PRCS	40
Brindley 46 kV Switch House	SUBS	42
Sebastopole Radio Repeater	MICR	48
Estill Springs 46 kV Switch House	SUBS	48
Hillsboro 46 kV Switch House	SUBS	48
Salem Carpet Mills 46 kV Switch House	SUBS	48
Unionville 46 kV Switch House	SUBS	48
Cerulean 69 kV Switch House	SUBS	48
Haletown 69 kV Switch House	SUBS	48
Peedee 69 kV Switch House	SUBS	48
Adairville 69 kV Switch House	SUBS	48
Pembroke 69 kV Switch House	SUBS	48
Etowah Switch House 69 kV Switch House	SUBS	48
Williamsport 46 kV Switch House	SUBS	52
Cornersville 46 kV Switch House	SUBS	52
Wellhouse	PRCS	54
Kirkmansville 69 kV Switch House	SUBS	54
Marble 69 kV Switch House	SUBS	54
Rienzi 46 Switch House	SUBS	55
Bluff City 161 kV Pump House	SUBS	56
Tuscumbia Microwave	MICR	64
Brawley Mtn Microwave/Radio	MICR	64
Hopkinsville Microwave	MICR	64
Nickajack FTC Elec Sim Control	SUBS	64
Centerville Microwave	MICR	72
Columbia 161 kV Pump House	SUBS	72
Waynesboro Radio Repeater	MICR	75
Great Falls Microwave	MICR	75
Courtland 46 kV Switch House	SUBS	75
Wellhouse (Watauga Dam)	PRCS	76
Broadview Microwave	MICR	80
Hornbeak Radio/Microwave	MICR	80
Lena Radio/Microwave	MICR	80
Wauchecha Bald Radio	MICR	80
Fort Mountain Radio Station	MICR	80
White Oak Mountain Radio	MICR	80
Bruce Radio Station	MICR	80
Clarksville Water Tower/COMM	SUBS	80
Weyerhauser 161 kV Switch House	SUBS	80
Bryant 161 kV Switch House	SUBS	80
Grove Oak 46 kV Switch House	SUBS	80
Section 46 kV Switch House	SUBS	80
South Macon 161 kV Switch House	SUBS	80
House	SUBS	80
Cowan 46 kV Switch House	SUBS	80
Sewanee 69 kV Switch House	SUBS	80
Middale 69 kV Switch House	SUBS	80
Hopkinsville 161 Well House	SUBS	80
Falling Water 161 kV Switch House	SUBS	80
Weyerhaeuser Co. 161 kV Switch House	SUBS	80
Lebanon 161 kV Pump House	SUBS	80
South Calvert 161 kV Switch House	SUBS	80
Clarksburg 161 kV Switch House	SUBS	80
Martin Radio	MICR	84
Russellville District 69 kV Switch House	SUBS	84
Culleoka 46 kV Switch House	SUBS	85
Kirkville 46 kV Switch House	SUBS	85

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Charlotte 69 kV Switch House	SUBS	85
Dupont 69 kV Switch House	SUBS	85
Hendersonville 161 kV Switch House	SUBS	85
Jersey Miniere Zinc-Elmwood House	SUBS	85
Greenville Ind Park 161 kV Switch House	SUBS	86
Holston Mountain Load	LMGT	87
Roane Mountain Microwave	MICR	88
Dunmor 69 kV Switch House	SUBS	88
Roane Mountain 161 kV Switch House	SUBS	88
Bonicord 69 kV Switch House	SWTH	88
North Sardis 161 kV Switch House	SUBS	92
Terrapin Mtn Radio	MICR	96
Booneville District 46 kV Switch House	SUBS	96
Ludlow 46 kV Switch House	SUBS	96
Belfast 161 kV Pump House	SUBS	96
Hickory Valley 161 kV Pump House	SUBS	99
TFH Spillway Emergency Generator Building	GENR	100
GFH Intake House	PRCS	100
Ridgedale 161 kV Switch House	SUBS	100
Sherwood 46 kV Switch House	SUBS	100
SHF Coal Yard Lighting	CLHN	110
Hinze Radio/Microwave	MICR	112
WTH Electrical Equipment Building	PRCS	114
Burney Mountain Microwave	MICR	116
Holston Mountain Microwave	MICR	128
Scottsboro Pump House	PRCS	140
RPS Discharge Structure Pumping Station	PWRH	140
Nickajack FTC New Pump House	PRCS	143
Kerr-Mcgee Inc. 161 kV Switch House	SUBS	143
Elkton Hill Radio/Microwave	MICR	144
O1H Diesel Generator Building	PRCS	144
Old Pump House	PRCS	144
Big Sandy Pumphouse - Heat/Ltg	PRCS	150
Big Sandy Pumphouse - Motor	PRCS	150
Camden 161 kV Pump House	PRCS	150
Lexington Water Pump (Temporary)	PRCS	150
West Sandy Pump House	PRCS	150
West Sandy Pump House (Lts/Ht)	PRCS	150
APH Diesel Generator Building	PRCS	154
O2H Trash Rack House	PRCS	160
O2H Water Treatment Plant	PRCS	160
South Jackson 161 kV Generator Bldg	PRCS	165
West Point 500 kV Pump House	SUBS	169
Lightfoot 69 kV Switch House	SUBS	170
Fultondale Battery Building	PRCS	180
O2H Penstock Valve House	PRCS	200
Saulsbury 46 kV Switch House	SUBS	200
COF Gas Turbine Switchgear 1	SWTH	200
TFH Diesel Generator Building	GENR	210
MHH Diesel Generator Bldg	GENR	220
NJH Diesel Generator Building	GENR	220
Bonicord	SUBS	225
O2H Well Pump House	PRCS	230
TLH Emergency Generator Building	GENR	240
Dandridge Pump Sta. (Doug Dam)	PRCS	240
FNH Diesel Generator Building	PRCS	240
Hardwick Clothes Inc	SUBS	240
Lynchburg 46 kV Switch House	SUBS	240
Brownsville 161 kV Switch House	SUBS	240
Dry Creek Primary 161 kV Switch House	SUBS	240
Moscow 161 kV Switch House	SUBS	240
Sardis 161 kV Switch House	SUBS	240
Russellville 161 kV Switch House	SUBS	240
Huntsville 161 kV Storage	SUBS	240
Guntersville 161 Kv Switch House	SUBS	240

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Guntown 161 kV Switch House	SUBS	240
Red Bay 161 kV Switch House	SUBS	240
Collinsville 161 kV Switch House	SUBS	240
Casky 69 kV Switch House	SUBS	241
GAF Breaker Switchgear Bldg	SWTH	250
Volunteer 500 kV Pump House	PRCS	256
Fultondale 115 kV Switch House	SUBS	259
Sequoyah Training Radio	MICR	268
Bristow	SUBS	272
DAYTON 161KV	SUBS	273
Ellis Mountain Microwave	MICR	275
Aberdeen	SUBS	275
Savannah 161 kV Switch House	SUBS	276
Water Valley 161 kV Switch House	SUBS	280
Glasgow 161 kV Switch House	SUBS	284
Aberdeen 161 kV Switch House	SUBS	287
Hickman Microwave	MICR	288
Shawnee Repeater Station	MICR	288
Franklin 161 kV Switch House	SUBS	288
Logan Aluminum	SUBS	288
Bolivar District 46 kV Switch House	SUBS	288
Elkton 69 kV Switch House	SUBS	288
Penchem 69 kV Switch House	SUBS	288
Hopson 69 kV Switch House	SUBS	288
Fultondale AL 115kv Switch House	SUBS	288
Waynesboro 161 kV Switch House	SUBS	288
Erin 161 kV Switch House	SUBS	288
Livingston 161 kV Switch House	SUBS	288
Alamo 161 kV Switch House	SUBS	288
Braytown 161 kV Switch House	SUBS	288
Scott 115 kV Switch House	SUBS	294
Green Top Mountain Microwave	MICR	300
JSF Sample Bldg.	PRCS	300
O2H Oil Purification Building	PRCS	300
Rollins 46 kV Switch House	SUBS	300
Sequatchie Valley Radio Station	MICR	310
Fain Mountain Microwave	MICR	310
Trace Park Microwave	MICR	312
Rock Springs Microwave	MICR	312
Lynn Grove Microwave	MICR	312
Anderson Microwave	MICR	312
Russell Hill Microwave	MICR	312
Fabius Microwave	MICR	320
Phipps Bend 500 Pump House	PRCS	320
Starkville (New) 161 kV Switch House	SUBS	320
Cranberry 161 kV Switch House	SUBS	320
Lewisburg 161 kV Switch House	SUBS	320
Winger Microwave	MICR	326
Smithville Radio	MICR	328
Monte Sano VHF	MICR	328
Signal Mountain Microwave	MICR	328
Lambert Chapel Microwave	MICR	330
Pickwick Microwave	MICR	336
New Castle Microwave	MICR	336
Beech Grove Microwave	MICR	341
Donelson Microwave	MICR	341
Monsanto Microwave	MICR	341
Beech Grove Microwave	MICR	341
Nickajack FTC Ventilator Building	PRCS	345
CHH Diesel Generator Building	GENR	350
GAF Hydrogen Trailer Port A	PRCS	350
Finger	MICR	352
Norton Hill Microwave	MICR	352
McEwen Microwave	MICR	352
Church Hill Microwave	MICR	360
Combs Knob Microwave	MICR	360

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Rockhouse, Buckeye, Bagwell Pump House	PRCS	360
WCF Coal Sampling Bldg.	PRCS	362
Sewanee Microwave	MICR	375
Bunker Hill Microwave	MICR	375
Van Vleet Radio/Microwave	MICR	375
Sharps Ridge Microwave	MICR	375
Pump Station (Watts Bar Res)	PRCS	376
Woodall Mountain Microwave	MICR	381
Lamar Microwave	MICR	381
Graham Microwave	MICR	381
Morristown District 69 kV Switch House	SUBS	384
Morristown Microwave	MICR	390
Hollis Chapel Microwave	MICR	390
Bowling Green Microwave	MICR	390
Stephensville Microwave	MICR	390
Johnsonville Microwave	MICR	391
Spring Hill Microwave	MICR	391
New Johnsonville Microwave	MICR	391
Singleton Compressor/Phone Bldg	PRCS	392
CUF Coal Sample Bldg	CLHN	400
Duck River Ltg/Heat	PRCS	400
Bolivar	SUBS	400
Clinton 161 kV Switch House	SUBS	400
Monsanto Chemical 161 kV Switch House	SUBS	400
Solutia Switch House	SWTH	400
Hiwassee Microwave	MICR	405
Morristown 161 kV Switch House	SUBS	405
Vanleer Microwave	MICR	411
Cottonport Radio	MICR	416
Grand River Radio/Microwave	MICR	416
Rogersville Microwave	MICR	416
Germantown Microwave	MICR	428
KIF Transfer Station D	CLHN	430
UTILITIES	MICR	432
Oak Ridge Microwave	MICR	462
Thorton Town Microwave	MICR	462
Oswald Dome Microwave	MICR	476
Nance 161 kV Switch House	SUBS	480
Olive Branch 161 kV Switch House	SUBS	480
Stevenson 161 kV Switch House	SUBS	480
Casky 161 kV Switch House	SUBS	480
Davidson 500 kV Pump House	SUBS	480
Roosevelt Mt Microwave	MICR	487
Jackson 500 kV Switch House	SUBS	500
Moulton 161 kV Switch House	SUBS	500
Monte Sano Microwave	MICR	510
Montlake Microwave	MICR	510
Eaves Bluff Microwave/Radio	MICR	525
Sturgis 161 kV Switch House	SUBS	540
TFH Aeration and Compressor Building	PRCS	560
Henegar 161 kV Switch House	SUBS	560
Martin Pump House	PRCS	572
Pump House	PRCS	572
Weakley 500 kV Pump House	PRCS	572
Roane 500 kV Pump House	PRCS	572
Cordova 500 kV Pump House	SUBS	572
Madison 500 kV Pump House	SUBS	572
Sullivan 500 kV Pump House	SUBS	572
Wilson 500 kV Pump House	SUBS	572
Shelby 500 kV Pump House	SUBS	572
Montgomery 500-kV-Pump House	SUBS	572
Trinity 500 kV Pump House	SUBS	572
KIF Transfer Station C	CLHN	575
WTH Oil Purification Building	PRCS	576
Louisville 161 kV Switch House	SUBS	576
BRH Small Turbine Generator	GENR	580

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
N Maintenance Building	LAB	589
NTH Compressor and Blower Building	PRCS	600
Manchester 161 kV Switch House	SUBS	600
Bolivar 161 kV Switch House	SUBS	609
Marshall Pump House	PRCS	621
Louisville 161 kV Switch House	SUBS	625
State Line Microwave	MICR	640
Coffeeville 161 kV Switch House	SUBS	640
Boiler Building	PRCS	660
Raccoon Mtn Microwave	MICR	665
WBF Plant 161 kV Switch House	SUBS	665
Copper Basin 161 kV Switch House	SUBS	665
BRH Spillway Equipment Building	PRCS	680
WEH Oil Purification Building	PRCS	680
East Bowling Green 161 kV Switch House	SUBS	696
WBN Diesel Generator Building Dg-2	GENR	700
GAF Transfer Station C	CLHN	713
FTL Modular Unit	LMGT	720
Glasgow Modular Unit	LMGT	720
Nickajack Modular Unit	MICR	720
WBH Modular Unit	MICR	720
O3H Valve House	PRCS	720
Whiteside Pump House	PRCS	720
Meredith Microwave	MICR	722
Dekalb 161 kV Switch House	SUBS	735
Leake 161 kV Switch House	SUBS	740
Booneville 161 kV Switch House	SUBS	756
Lewisburg 46 kV Switch House	SUBS	763
Shelbyville 46 kV Switch House	SUBS	768
Raccoon Mtn Pump House	MICR	806
Newport 161 kV Switch House	SUBS	806
Centerville Fallout Shelter	SUBS	816
Centerville 161 kV Switch House	SUBS	851
Aquatic Biology Lab-Hatchery	LAB	861
North Huntsville 161 kV Switch House	SUBS	864
Selmer 161kV Switch House	SUBS	864
Carthage 161 kV Switch House	SUBS	864
Arab 161 kV Switch House	SUBS	864
Oakland 161 kV Switch House	SUBS	864
Tusculum 161 kV Switch House	SUBS	864
Springfield 161 kV Switch House	SUBS	864
Holly Springs 161 kV Switch House	SUBS	864
Pigeon Forge 161 kV Switch House	SUBS	882
Elizabethton 161 kV Switch House	SUBS	885
Edgoten 161 kV Switch House	SUBS	912
Nixon Road 161 kV Switch House	SUBS	918
GFH Rock House	PRCS	930
Loudon 161 kV Switch House	SUBS	952
Murphy 161 kV Switch House	SUBS	960
Hartsville N.P. 161kV Switch House	SUBS	962
Chl/Dc/Msc Coal Laboratory	LAB	1,000
BRF Sewage Treatment Plant	PRCS	1,000
GAF Hopper Bldg	PRCS	1,000
JOF Draft System Electrical Bldg.	PRCS	1,000
Albertville District 46 kV Switch House	SUBS	1,000
Highway 412 Switch House	SUBS	1,008
Calhoun City 161 kV Switch House	SUBS	1,008
Portland 161 kV Switch House	SUBS	1,008
Pin Hook 161 kV Switch House	SUBS	1,008
FTL Plant 161 kV Switch House	SUBS	1,008
Tri State 161KV Switch House	SUBS	1,008
McGregor Chapel 161 kV Switch House	SUBS	1,008
Smyrna 161 kV Switch House	SUBS	1,008
Corinth 161 kV Switch House	SUBS	1,008
Cadiz 161 kV Switch House	SUBS	1,008
Huntsville 161 kV Switch House	SUBS	1,008

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Double Bridges 161 kV Switch House	SUBS	1,008
NASA 161 kV Switch House	SUBS	1,008
Columbus District 46 kV Switch House	SUBS	1,018
SQN Node Bldg	PRCS	1,040
Miller 161 kV Switch House	SUBS	1,053
Dickson 161 kV Switch House	SUBS	1,056
Oxford 161 kV Switch House	SUBS	1,056
Knoxville 161 kV Switch House	SUBS	1,066
N Engineering Lab Bldg H	LAB	1,080
East Shelbyville 161 kV Switch House	SUBS	1,092
Goose Pond 161 kV Switch House	SUBS	1,100
Columbia District 46 kV Switch House	SUBS	1,101
Ardmore 161 kV Switch House	SUBS	1,120
North Pigeon Forge 161 kV Switch House	SUBS	1,152
Valley Creek 115 kV Switch House	SUBS	1,152
Farley 161 kV Switch House	SUBS	1,152
Murfreesboro 161 kV Switch House	SUBS	1,184
GAF Oil Pumping Station	PRCS	1,200
TFH Intake Structure	PRCS	1,200
Burnsville 161 kV Switch House	SUBS	1,200
Concord 161 kV Switch House	SUBS	1,280
Concord 161 kV Switch House	SUBS	1,280
East McMinnville 161 kV Switch House	SUBS	1,290
McMinnville 161 kV Switch House	SUBS	1,290
BRF Aux Hopper	PRCS	1,300
GAF 161 kV Switch House	SUBS	1,319
COF Transfer Station E	CLHN	1,320
Lowland 69 kV Switch House	SUBS	1,320
Alpha 69 kV Switch House	SUBS	1,344
West Ringgold 230kV Switch House	SUBS	1,344
Columbia Primary 161 kV Switch House	SUBS	1,350
KIF Truck Sample Prep Bldg.	PRCS	1,360
Union City 161 kV Switch House	SUBS	1,360
Mt. Pleasant 161 kV Switch House	SUBS	1,380
BRF Breaker Bldg	CLHN	1,400
National Carbide 161 kV Switch House	SUBS	1,400
BRF Electrical Switchgear Bldg	SWTH	1,400
Freeport Abandoned Switch House	SWTH	1,404
WCF Sample Prep Bldg	LAB	1,425
Backwater Protection	PRCS	1,450
Asbury Microwave	MICR	1,452
APH Valve House	PRCS	1,480
PDW Pumping Station	PRCS	1,512
BFN Telephone Node Bldg. (W-19)	PRCS	1,524
JSF Transfer Station B	CLHN	1,525
Cullman 161 kV Switch House	SUBS	1,526
Athens 161 kV Switch House	SUBS	1,540
APH Dam	PRCS	1,550
Fort Payne 161 kV Switch House	SUBS	1,550
West Cookeville 161 kV Switch House	SUBS	1,555
Reynolds 161 kV Switch House	SUBS	1,560
Spring City 161 kV Switch House	SUBS	1,568
Starkville (Old) 161 kV Switch House	SUBS	1,578
Finley 161 kV Switch House	SUBS	1,578
Brownsville District 161 kV Switch House	SUBS	1,578
Humboldt 161 kV Switch House	SUBS	1,578
Batesville 161 kV Switch House	SUBS	1,584
CUF PPTR Control Bldg 1A	PRCS	1,596
GAF Coal Sample Collection Bldg	CLHN	1,600
BRF Hydrogen Trailer Port	PRCS	1,600
KIF Fly Ash Reclaim	PRCS	1,600
Columbia 161 kV Shelter	SUBS	1,600
GAF Conveyor Control Bldg	PRCS	1,612
Murfreesboro Maintenance Building	SUBS	1,632
CUF Accessory Bldg.	PRCS	1,650
Franklin 500 kV Switch House	SUBS	1,660

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Martin 161 kV Switch House	SUBS	1,691
Monsanto 161 kV Switch House	SUBS	1,700
JSF Reclaim Hoppers	CLHN	1,788
COF Transfer Stations C & D	CLHN	1,800
Jetport 161 kV Switch House	SUBS	1,800
Counce 161 kV Switch House	SUBS	1,800
Bluff City 161 kV Switch House	SUBS	1,800
Engineering Labs Building A	LAB	1,808
North Bristol 161 kV Switch House	SUBS	1,820
WPM Philadelphia	SUBS	1,834
Philadelphia 161 kV Switch House	SUBS	1,834
BFN Toxicity Testing Lab	LAB	1,837
KIF Chlorination Bldg	PRCS	1,900
Hartsville HTSE Warehouse	SUBS	1,920
Mayfield 161 kV Switch House	SUBS	1,925
Lebanon 161 kV Switch House	SUBS	1,939
Fleet Harbor Pumping Station	PRCS	1,944
Dyersburg 161 kV Switch House	SUBS	1,944
Lawrenceburg 161 kV Switch House	SUBS	1,945
Smithville 161 kV Switch House	SUBS	1,945
GAF Transfer Station D	CLHN	1,964
BRF Pptr Control Bldg	PRCS	2,000
Tupelo 161 kV Switch House	SUBS	2,000
JSF Chlorination Bldg	PRCS	2,025
Calvert 161 kV Switch House	SUBS	2,043
Decatur 161 kV Switch House	SUBS	2,045
Norris Modular Unit	MICR	2,118
Melton Hill Modular Unit	SUBS	2,118
KIF Transfer Station B	CLHN	2,240
SHF Demineralizer Bldg 1	PRCS	2,250
Shoals 161 kV Switch House	SUBS	2,250
Aquatic Biology Lab-Tractor Shed	LAB	2,264
ALF Switchgear Bldg.	SWTH	2,303
SHH Intake and Access Tunnel	PRCS	2,360
SHF Railroad Hopper Bldg	CLHN	2,400
Pulaski Radio Tower	MICR	2,400
Pulaski Microwave	MICR	2,400
Wilson 500 kV Maintenance Bldg - M1	SUBS	2,424
JSF Breaker Structure	CLHN	2,440
North Knoxville 161 kV Switch House	SUBS	2,448
DGH Modular	MICR	2,460
COF New Water Treatment Bldg.	PRCS	2,500
CUF Water Supply Pumping Station	PRCS	2,500
Moccasin 161 kV Switch House	SUBS	2,500
GAF Transfer Station B	CLHN	2,520
Aquatic Biology Lab.-Shed	LAB	2,550
JSF Conveyor Switchgear Bldg	PRCS	2,640
BFN Biothermal Research	LAB	2,658
Aquatic Biology Lab-Wet Lab	LAB	2,711
Okolona 161 kV Switch House	SUBS	2,714
Experimental Greenhouse	LAB	2,760
RPS Ventilation Fan Building	PWRH	2,800
Mount Pleasant 161 kV Switch House	SUBS	2,800
Scottsboro 161 kV Switch House	SUBS	2,860
Wartrace 161 kV Switch House	SUBS	2,928
Charleston 161 kV Switch House	SUBS	2,952
Catalyzer # 2 - Nitro Fertilization Lab	LAB	3,000
SQN Intake Pump.Stat.	PRCS	3,000
Clarksville 161 kV Switch House	SUBS	3,074
East Cleveland 161 kV Switch House	SUBS	3,080
Paducah 161 kV Switch House	SUBS	3,080
Columbus 161 kV Switch House	SUBS	3,090
CUF Reclaim Hopper	CLHN	3,098
North Nashville 161 kV Switch House	SUBS	3,109
Chesterfield 161 kV Switch House	SUBS	3,109
New Albany 161 kV Switch House	SUBS	3,109

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Rockwood 161 kV Switch House	SUBS	3,159
COF Transfer Station F	CLHN	3,186
White Pine 161 kV Switch House	SUBS	3,220
Lafayette 161 kV Switch House	SUBS	3,240
CUF Transfer Station F	CLHN	3,253
Franklin 161 kV Switch House	SUBS	3,273
Covington 161 kV Switch House	SUBS	3,304
Hickory Valley 161kV Switch House	SUBS	3,360
JSF Hopper Bldg	PRCS	3,361
Midway 161 kV Switch House	SUBS	3,368
Davidson 500 kV Switch House	SUBS	3,439
Milan 161 kV Switch House	SUBS	3,552
Fayetteville 161 kV Switch House	SUBS	3,552
Belfast 161 kV Switch House	SUBS	3,562
Sullivan 500 kV Switch House	SUBS	3,593
BRF Live Pile Hopper	PRCS	3,600
WBF Control Bldg	PRCS	3,600
WBF Hopper Bldg	PRCS	3,600
Oglethorpe 161 kV Switch House	SUBS	3,600
Bowling Green 161 kV Switch House	SUBS	3,640
Chemical Feed House	PRCS	3,686
BRF Transfer Sta C	CLHN	3,700
O3H Dam/Gallery	PRCS	3,700
Albertville 161 kV Switch House	SUBS	3,700
Hopkinsville 161 kV Switch House	SUBS	3,700
MSW Plant	PRCS	3,800
Huntsville 161 kV Switch House	SUBS	3,800
Summer Shade 161 kV Switch House	SUBS	3,882
Crossville 161 kV Switch House	SUBS	4,000
Winchester 161 kV Switch House	SUBS	4,032
Shelby 500 kV Switch House	SUBS	4,088
CUF Transfer Station A	CLHN	4,117
TLH Dam	PRCS	4,160
Athens 161 kV Switch House	SUBS	4,200
BRH Powerhouse	PWRH	4,216
West Nashville 161 Kv Switch House	SUBS	4,228
COF Water Supply Pumping Station	PRCS	4,230
West Point 500 kV Switch House	SUBS	4,345
Alcoa 161 kV Switch House	SUBS	4,389
CTH Powerhouse/Dam	PWRH	4,430
Baxter 161 kV Switch House Land	SUBS	4,452
Murfessboro Ind Park 161 kV Switch House	SUBS	4,468
JSF Fly Ash Silo	PRCS	4,500
Northeast Substation	SUBS	4,500
Sullivan Static Condensor	SUBS	4,500
PAF Scrubber Maintenance Bldg	PRCS	4,504
Weakley 500 kV Switch House	SUBS	4,536
BRF Transfer Sta B	CLHN	4,600
Truck Coal Sample Station	CLHN	4,600
COF Conveyor Control Bldg	PRCS	4,615
SHF Surge Hopper Bldg 1	PRCS	4,644
BFN Radwaste Evaporator Bldg	PWRH	4,680
BRF Transfer Sta A	CLHN	4,700
Well Houses	PRCS	4,726
COF Transfer Stations A & B	CLHN	4,740
Roane 500 kV Switch House	SUBS	4,760
Union 500 kV Switch House	SUBS	4,816
Engineering Labs Building D	LAB	4,826
CUF Surge Hopper Bldg	CLHN	4,980
ALF Transfer Tower	CLHN	4,992
ALF Water Intake Structure	PRCS	5,000
JOF Draft Sys. Electrical Building	PRCS	5,000
SHF Demineralization Bldg 2	PRCS	5,000
SHF Fly Ash Blower Bldg	PRCS	5,000
JOF Hopper Bldg	PRCS	5,127
WCF Hopper Bldg	PRCS	5,219

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
Wilson 500 kV Switch House	SUBS	5,297
House	SUBS	5,375
PAF Coal Wash Laboratory	LAB	5,554
Aquatic Biology Lab (Main)	LAB	5,619
Great Lakes SW Station	SUBS	5,625
Maury 500 kV Switch House	SUBS	5,689
Lowndes 500 kV Switch House	SUBS	5,720
NTH Powerhouse	PWRH	5,800
COF Barge Unloader Building 1	CLHN	6,000
ALF Combustion Turbine Maint Facility	PRCS	6,000
GAF Combustion Turbine Maintenance Bldg	PRCS	6,000
WBF Fuel Handling	PRCS	6,000
Madison 500 kV Switch House	SUBS	6,124
RPS Service Equipment Building	PWRH	6,200
RPS Power Storage Building	PWRH	6,230
Jackson 500 kV Switch House	SUBS	6,448
BRF Live Storage Silo	PRCS	6,500
Limestone 500 kV Switch House	SUBS	6,500
KIF Hopper Bldg No. 2	PRCS	6,528
Freeport 500 kV Switch House	SUBS	6,582
Trinity 500 kV Switch House	SUBS	6,700
WCF Breaker Bldg.	CLHN	6,739
SHF Hopper Bldg	PRCS	6,759
CUF Transfer Station C	CLHN	7,112
Lonsdale 161 kV Switch House	SUBS	7,128
COF Old Water Treatment Plant	PRCS	7,145
Phipps Bend 500 kV Switch House	SUBS	7,150
Powerhouse	GENR	7,200
Radnor 161 kV Switch House	SUBS	7,290
South Jackson 161 kV Switch House	SUBS	7,368
JSF Demineralizer Bldg	PRCS	7,500
JSF Water Treatment Plant	PRCS	7,704
WCF Forced Oxidation Blower Bldg.	PRCS	8,086
Boiler House	PRCS	8,100
KIF Sample & Hopper Bldg No. 1	PRCS	8,198
WBN Intake Pumping Station-Intake	PRCS	8,200
PAF Barge Unloader	PRCS	8,391
PAF Conditioner Bldg	PRCS	8,408
Marshall 500 kV Switch House	SUBS	8,418
GAF Water Treatment Plant	PRCS	8,632
Catalyzer # 1 - Mineral Lab	LAB	9,000
Catalyzer # 4 - Radio/High Pressure Lab	LAB	9,000
Catalyzer # 5 - Plant	LAB	9,000
Catalyzer # 6 - Nitro Fertilization Office	LAB	9,000
Catalyzer # 3 - Plant	PRCS	9,000
PAF Breaker Building N	PRCS	9,120
CUF Breaker Structure	CLHN	9,428
COF 161 kV Switch House	SUBS	9,549
COF Dry Fly Ash Eqpt Bldg	PRCS	9,590
BRF Pumping Station	PRCS	9,600
National Center For Emmissions Research	PRCS	9,660
GFH Powerhouse	PWRH	9,780
WTH Control Building	PRCS	9,827
CUF Transfer Station B	CLHN	9,977
WIH Powerhouse/Dam	PWRH	10,040
Raccoon Mtn Ps Plant 500 kV (161 kV)	SUBS	10,123
CUF Transfer Station D&E	CLHN	10,257
SHH Powerhouse	PWRH	11,130
SQN Diesel Gen. Bldg.	PRCS	11,200
South Jackson	SUBS	11,469
WCF Crusher Bldg	PRCS	11,697
O2H Powerhouse/Dam	PWRH	12,000
TFH Powerhouse/Dam	PWRH	12,200
SHF Ash Handling System	PRCS	12,402
Hartsville Admin # 1	SWTH	12,513
JOF Crusher Bldg	PRCS	12,858

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
CUF Live Storage Silos	CLHN	12,976
KIF Water Supply Pumping Station	PRCS	13,024
WBN Diesel Generator Building Dg-1	GENR	13,400
ALF Crusher Tower	CLHN	14,394
WCF Switchyard Control Bldg	PRCS	14,498
ADCC	SUBS	14,649
Nashville ADCC/Switch	SWTH	14,649
PAF Transfer Station A	PRCS	14,720
O3H Powerhouse/Control Bay	PWRH	14,900
KIF Water Treatment Plant	PRCS	15,405
WBN Makeup Water Treatment Plant Mwp	PRCS	16,000
Niles Ferry 69 kV Switch House	SUBS	16,000
JSF Control Bldg	PRCS	16,250
HIH Dam	PRCS	16,500
KIF Switchyard Control Bldg	PRCS	16,645
GAF Utility Bldg	PRCS	16,656
Vonore 69 kV Switch House	SUBS	16,737
KIF Crusher Bldg	PRCS	17,115
PAF Limestone Preparation Bldg	PRCS	17,134
BFN Unit 1 & 2 Dsl.Gen. Bldg	PWRH	17,285
PAF Scrubber Control Bldg	PRCS	17,711
BFN Unit 3 Diesel Generator Bldg	PWRH	17,850
Cable Tunnels	PRCS	18,240
BRF Control Wing	PRCS	18,500
Engineering Lab Annex	LAB	19,000
WTH Powerhouse	PWRH	19,854
Western Area Radiological Lab	LAB	19,970
BFN Low Lvl Rdwst Bldg. (E-32)	LAB	20,000
WBN Reactor Building Reac	PRCS	20,000
WBH Control Bldg	PWRH	20,370
JSF 161kV Switch House Structure	SUBS	20,520
N Engineering Lab Bldg N	LAB	20,710
N Engineering Lab Bldg B	LAB	21,059
FPH Powerhouse/Dam	PWRH	22,129
CUF Utility Bldg	PRCS	22,479
WCF Water Supply	PRCS	22,500
O1H Powerhouse/Dam	PWRH	22,926
BFN Unit 3 Restart	PRCS	23,100
HIH Powerhouse/Control Building	PWRH	25,100
SHF Limestone Conditioner Bldg	PRCS	26,244
JOF Water Supply Bldg	PRCS	26,504
APH Powerhouse	PWRH	27,500
RPS Surge Chamber and Tunnel	PWRH	28,500
WCF Scrubber Unit 8	PRCS	28,800
Prototype Operations Building, Plant	PRCS	29,100
Substation # 1 Plant	SUBS	30,176
WCF Scrubber Unit 7	PRCS	36,000
BFN Control Building	PWRH	36,000
BOH Powerhouse/Dam	PWRH	37,000
SQN Control Bldg.	PRCS	39,200
Chemical Engineering Building Lab	LAB	39,525
SHF AFBC Boiler Bay (Pilot Plant)	PRCS	40,000
Prototype Opers Bldg (Pilot Plant)	PRCS	40,482
BLN Control Bldg	PRCS	41,850
MHH Powerhouse/Dam	PWRH	44,400
WCF Service Bldg B	PRCS	44,520
WCF Fuel Handling System	CLHN	45,000
SQN Reactor Bldg.	PRCS	45,000
SHF Fuel Handling	CLHN	47,808
KIF Fuel Handling	CLHN	50,000
Ch/Dc/Msc Laboratory Bldg/Power Stores	LAB	56,682
L&N Building East, Plant	PRCS	57,033
WCF Service Bldg. A	PRCS	58,044
NJH Powerhouse/Dam	PWRH	63,900
KYH Powerhouse/Dam	PWRH	67,400
WBH Powerhouse/Dam	PWRH	68,970

TVA_FACILITY_NAME	FACILITY _TYPE_CD	GROSS_SQUARE_ _FOOTAGE_QT
BLN Reactor Bldg	PRCS	72,000
NOH Powerhouse/Dam	PWRH	73,900
GUH Powerhouse/Dam	PWRH	80,747
CRH Powerhouse/Dam	PWRH	83,100
DGH Powerhouse/Dam	PWRH	84,700
FLH Powerhouse/Dam	PWRH	92,540
GAF Fuel Handling	PRCS	100,000
CHH Powerhouse/Dam	PWRH	102,200
WBN Turbine Building Tb	PWRH	112,500
FNH Powerhouse/Dam	PWRH	118,414
SHF AFBC Boiler Bldg	PWRH	120,000
WBF Boiler Bay	PRCS	122,000
Monteagle Place	CMPT	149,000
WBF Service Bay	PRCS	175,824
PKH Powerhouse/Dam	PWRH	177,200
WEH Powerhouse/Dam	PWRH	200,200
BLN Auxiliary Bldg	PRCS	205,000
SQN Aux.Bldg	PRCS	217,500
WBN Auxillary Building Aux	PRCS	217,500
SHF Bag House	PRCS	230,000
RPS Powerplant Chamber and Tunnels	PWRH	244,200
PAF Coal Wash Plant	PRCS	300,000
SQN Turbine Bldg.	PRCS	325,542
BLN Turbine Bldg	PRCS	342,090
BFN Reactor Building	PWRH	361,944
ALF Powerhouse	PRCS	428,539
BFN Turbine Building	PWRH	468,442
CUF Absorber Building	PRCS	549,467
WCF Powerhouse Plant A	PWRH	637,603
GAF Powerhouse	PWRH	713,267
BRF Powerhouse	PWRH	720,636
JSF Powerhouse	PWRH	836,722
WCF Powerhouse Plant B	PWRH	868,255
SHF Powerhouse	PWRH	929,764
COF Powerhouse	PWRH	954,936
JOF Powerhouse	PWRH	1,069,704
KIF Powerhouse	PWRH	1,255,721
CUF Powerhouse	PWRH	1,564,438
PAF Powerhouse	PWRH	1,823,203
WBF Powerhouse	PRCS	2,322,244
		22,485,345

12/26/01

TVA ENERGY POLICY

TVA is committed to being a leader in the efficient and environmentally sound use of energy. Through the adoption of an energy plan TVA facilitates compliance with legally and regulatorily required energy reduction goals and procedures. Delegation of authority is given to the Chief Operating Officer or that official's designee to develop a plan to achieve the objectives of this Policy and subsequently to modify the Plan when necessary.

COVER PAGE FOR THE TVA AGENCY ENERGY PLAN

This Plan is coordinated through TVA's Internal Energy Management Program (IEMP).

Contact:

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REVISIONS, DATES and REASON:

Revision 1, May 27, 1997. Revisions were made to incorporate new regulations, the joining of the Energy Star Building Program and the Motor Challenge, and to facilitate the move of the IEMP from Customer Group under the COO to Facilities Services under the CAO.

Revision 2, September 10, 1998. Revisions were made to incorporate changes in organizational names and changes to regulations.

Revision 3, December 15, 1999. Revisions were made to incorporate changes in regulations.

Revision 4, October 23, 2000. Revisions were made to incorporate changes in regulations including Executive Order 13123 and Executive Order 13149.

Revision 5, December 26, 2001. Revisions were made to incorporate changes in organizational names and changes to regulations.

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ENERGY PLAN

I. Introduction/Background

The following plan (hereafter “the Plan”) has been established to meet Federal statutory and regulatory requirements and the requirements of TVA’s Green Lights agreement with the Environmental Protection Agency (hereafter “the EPA”), the Energy Star Building Program, the DOE Motor Challenge, and to comply with the annual implementation plan requirements of section 302 of Executive Order 13123 (the “E.O.”). Our intention is to make TVA a Federal agency role model and leader in the wise management and use of energy. This Plan will be implemented by Chief Officers and Vice presidents (heads of TVA major groups). The Vice President, Facilities Management, through the IEMP, will coordinate the implementation of the Plan. This Plan promotes, recommends, and outlines the wise use of energy in TVA’s operations and in energy intensive equipment purchased for use inside the Agency. The Plan covers all organizations which are responsible for use of energy or purchase of energy consuming equipment. The Plan and supporting organizational energy management plans are intended to meet or exceed the energy reduction goals required under Federal law, regulations, executive orders, and the voluntary goals TVA has established as a participant in EPA’s Green Lights, Energy Star Buildings, Energy Star and DOE’s Motor Challenge Programs.

II. Organization

A. Implementation of Plan and Dissemination of Information

The Agency Energy Management Committee (AEMC), under the sponsorship of Facilities Management, will be responsible for implementing this Plan and the clearing house for information regarding energy responsibility to the various TVA Groups. The AEMC shall be the team described in section 305 of the E.O.

B. Organizational Plans

Each Group shall establish its own plan to meet or exceed the goals and objectives described under the Plan. These plans shall be updated and maintained to show how each organization intends to accomplish its goals and objectives. Plans and updates will be submitted to the IEMP at least annually, or when revisions are made, for reporting to DOE. Reports will be made to the EPA as provided by the Green Lights Memorandum of Understanding.

III. Major Plan Components

A. Strategy

TVA has established the following goals and schedule to comply with Federal laws, memorandums of understanding (MOU), regulations, and executive orders to make TVA a more energy efficient and environmentally friendly agency:

A. Strategy (continued)

1. Goals and Schedule

- a) Through life-cycle cost-effective energy measures, reduce its greenhouse gas emissions attributed to subject facility energy use by 30 percent by 2010, as discussed in section 201 of Executive Order 13123 (the "E.O.")
- b) Reduce overall energy consumption in TVA owned and leased buildings subject to the National Energy Conservation Policy Act, as amended and implementing Executive Orders and regulations from FY 1985 to FY 2000 by 20 percent (BTU/SQ FT/YR), 30 percent by the year 2005, and 35 percent by the year 2010 to the extent to which this reduction by 2005 and 2010 is cost effective. Implement all cost-effective energy and water Energy Conservation Opportunities (ECOs) with a less than 10-year payback by the year 2005 for all subject TVA-owned buildings. A building is defined as: "any enclosed structure that consumes energy and is not on wheels."
- c) Reduce energy consumption of subject industrial and laboratory facilities by at least 20 percent by the year 2005 and 25 percent by 2010, as compared with 1990, to the extent that those measures are cost-effective, as noted by E.O. section 203.
- d) Design all new TVA buildings (those designed after July 31, 1989) to be energy efficient and in compliance with 10 C.F.R. Part 435. Have acquired buildings comply with 10 C.F.R. 435, if cost effective.
- e) Conduct lighting surveys on all TVA buildings and reduce lighting energy use at least 50 percent without compromising lighting quality as part of the EPA Green Lights Program. Implement appropriate lighting upgrades, with a 10-year payback or less, covering 90 percent of TVA's surveyed gross square footage by September 30, 2000, and 100 percent by 2005. This will not apply to those parts of TVA buildings which are exempt from the TVA/Green Lights agreement pursuant to Addendum 1 Section 1.B of the agreement.
- f) Strive to extend the use of renewable energy within its subject facilities and in its activities by implementing renewable energy projects and by obtaining electricity from renewable sources, as described in E.O. section 204.
- g) Through life-cycle cost-effective measures, reduce energy consumption and associated environmental impacts within its subject facilities, as described in E.O. section 205
- h) Strive to reduce total energy use and associated greenhouse gas and other air emissions, as measured at the source, as described in E.O. section 206.
- i) Implement best management practices to reduce water consumption and associated energy use in subject facilities to reach goals to be established under E.O. section 503 (f), to the extent that these measures are cost-effective, as

described in E.O. section 207.

A. Strategy (continued)

1. Goals and Schedule

- j) Annually report progress in meeting the goals and requirements of the E.O. to the President, as described in section 303 of the E.O.
- k) Applicable to those facilities which are covered by the National Energy Conservation Policy Act, as amended and E.O. 13123, enter and participate in a Federal Energy Star Buildings Program Partnership Memorandum of Understanding (MOU) as an attachment to the current Green Lights MOU with the Department of Energy and Environmental Protection Agency. Under the Federal Energy Star Buildings Program Partnership MOU, TVA will generally agree aggressively to pursue all life-cycle cost-effective energy efficient building systems upgrades in its existing facilities and will generally agree to design all new facilities in compliance with applicable codes and regulations, particularly 10 C.F.R. Part 435, subpart A or its successor.
- l) Join and participate in the DOE Motor Challenge program under which TVA will participate in a coordinated effort to encourage increased market penetration of more efficient electric motor systems. This will include TVA receiving reliable product and system information from DOE, customers and other Federal Agencies, helping develop new information based on communication with other organizations and experience in TVA facilities, and may entail TVA being recognized for developing more efficient and effective motor systems.
- m) Obtain, where applicable, alternative fuel vehicles (AFVs) and or hybrid vehicles as provided by the Energy Policy Act of 1992 (EPAAct 92) and E.O. 13149.
- n) Continue to conduct energy and water audits for its subject facilities each year, either independently or through Energy Savings Performance Contracts or utility energy-efficiency service contracts, as described in section 402 of the E.O.
- o) When entering and/or renewing leases, as provided by section 403 (e) of the E.O., to the extent wherever life-cycle cost-effective and legally permitted, seek to incorporate provisions in each lease that minimize the cost of energy and water, while maintaining occupant health and safety. Consideration shall be given to providing cost-effective preferences to buildings carrying the Energy Star Building label.
- p) Designate exemplary new and existing facilities with significant public access and exposure as showcase facilities to highlight energy or water efficiency and renewable energy improvements, as described in section 406 (e) of the E O.
- q) In accordance with section 304 of the E.O., designate a senior official to be responsible for achieving the goals of this policy. Such official shall be appointed to the Interagency Energy Policy Committee (656 Committee).

A. Strategy (continued)

1. Goals and Schedule

- r) Strive, where cost-effective, to meet the Energy Star criteria for energy performance and indoor environmental quality in its eligible facilities to the maximum extent practicable by the end of 2002, as described by E.O. section 403 (c).
- s) Re-survey appropriate buildings every 5 years.
- t) Explore efficiency opportunities in its subject industrial facilities for steam systems, boiler operation, air compressor systems, industrial processes, and fuel switching, including cogeneration and other efficiency and renewable energy technologies, as described in E.O. section 403 (f).
- u) Implement district energy systems, and other highly efficient systems, in new construction or retrofit projects when life-cycle cost-effective, as described in section 403 (g) of the E.O.
- v) Strive to improve the design, construction, and operation of its mobile equipment and implement all life-cycle cost-effective energy efficiency measures that result in cost savings while improving mission performance, as discussed in section 405 of the E.O.
- w) Strive to use management strategies, such as employee incentive programs, as described in section 406 of the E.O., to achieve the objectives of the E.O.

2. Building Design and Renovation

- a) Apply sustainable design principles developed by DOD and GSA pursuant to section 403 (d) of the E.O. to the siting, design, and construction of its subject new facilities. Apply these and other cost effective principals through the TVA Sustainable Design Program.
- b) **New Building Design.** All design firms doing building design work on TVA buildings must certify compliance at the contract execution. This statement shows that the firm will adhere as required to 10 C.F.R. 435 and any other energy regulation applicable to the particular building type under design. At the conclusion of the design, the responsible design organization will complete, sign, and submit 10 C.F.R. Part 435 Compliance Form to the IEMP.
- c) **Existing Building Renovation.** Energy and water surveys will be conducted to discover potential energy conservation opportunities (ECOs) and best management practices (BMPs) for water. The life-cycle cost-effective recommendations from these surveys will be implemented in existing buildings. Also, buildings will be evaluated for cost effective sustainable options.

III. Major Plan Components (continued)

B. Implementation

ECOs, BMPs, and sustainable options will be considered for implementation if after completion of the life-cycle cost analysis, the project is shown to be cost effective and has a less than 10-year payback.

To ensure effective Policy implementation, reports on progress toward energy reduction goals, BMPs, and sustainable options achieved are required to be submitted to the IEMP by all TVA organizations affected at least annually.

TVA will use all practical means to ensure its programs, projects, and activities protect and enhance the quality of the human and natural environment. At the earliest practicable time, when a proposed project has environmental impacts, the office proposing an action under this plan will initiate environmental review.

C. Identify and Prioritize Projects

Life-Cycle-Cost effective ECOs, BMPs, and sustainable options will be reviewed and ranked for implementation based on their Savings to Investment Ratio (SIR), their Internal Rate of Return (IRR), and their impact on TVA's mission. The projects will be prioritized for implementation based on best return on investment and necessity to support TVA's mission and responsibility to its customers.

D. Funding Strategy

All ECOs, BMPs, and sustainable options analyzed shall be evaluated using the guideline of NIST Handbook 135, Life-Cycle-Costing Manual for the Federal Energy Management Program. Those cost-effective ECOs, BMPs and sustainable options having a 10-year or less payback and a savings to investment ration greater than one will be budgeted for and implemented prior to FY 2005. For ECOs on TVA buildings not covered under EPCA 92, but considered under Green Lights, cost effectiveness shall be based on a 20-percent return on the investment at the time of the upgrade.

The following funding options will be considered when implementing ECOs, BMPs, and sustainable options:

1. Direct funding from TVA operating capital,
2. Utility sponsored demand side management programs,
3. Energy Savings Performance Contracts and Shared Savings Agreements,
4. Federal Energy Efficiency Fund.

III. Major Plan Components (continued)

E. Other Activities

TVA will consider implementation of all cost-effective operation and maintenance energy management projects in its day-to-day energy management activities. Water flow restriction devices and other activities which would conserve and preserve our water resources will be considered for implementation. TVA will demonstrate and implement energy efficient electrical equipment in its internal operations where appropriate and will promote their use to its customers. TVA will implement an energy awareness campaign to obtain employee assistance in reducing energy use. TVA will also continue its sustainable design efforts through the direction of the Sustainable Design program.

IV. Tracking and Reporting

A. Implementation Procedures

If an ECO has a less than 5-year payback and meets TVA's IRR, as defined by TVA's CFO, this ECO will be considered for implementation during the next budget cycle. Water conservation objectives and sustainable options will be considered for implementation when, after life-cycle-cost analysis, their payback is less than ten years.

B. Progress Toward Meeting Objectives

All TVA organizations which have responsibility for energy and water consumption in buildings or operations will report this usage to the IEMP.

1. Quarterly Reporting

- a) On a quarterly basis, unless otherwise specified, organizations which have identified or implemented ECOs, BMPs, and/or sustainable options will report this information to the IEMP.

2. Annual Reporting

- a) On an annual basis, all organizations which have responsibilities over energy and/or water use in operations or buildings will describe energy management or conservation programs, projects, or operations performed during that fiscal year and those projects, programs, and operations planned for the next fiscal year. The date for submission for this information will be no later than 15 calendar days before the end of the fiscal year.

3. Other Reporting

- a) Individual organizations may implement reporting requirements within their organizations in order to monitor usage in an effort to enhance performance.

- b) Organizations may receive copies of the reports sent to DOE upon request. All other reports generated to assist TVA in its effort to be a leader in energy management and conservation will be available upon request.

IV. Tracking and Reporting (continued)

C. General

All TVA employees and organizations are encouraged to reduce energy and water waste. New and innovative ideas and techniques for the reduction of energy and water waste and better energy management should be communicated to the IEMP so the information can be shared throughout TVA. In selection of equipment, electrical alternatives shall be chosen whenever cost-effective and whenever possible. TVA buildings will be used to demonstrate the application of innovative energy and water efficient technologies.

V. Special Problems

Organizations having special problems meeting The Plan should submit a description of those problems to the IEMP for review. Any problems needing DOE attention will be communicated annually in TVA's annual report to DOE.

VI. Additional Provisions

A. TVA FLEET EFFICIENCY STRATEGY (Preliminary)

1. Background:

This strategy defines TVA's commitment to vehicle fleet and transportation efficiencies as described in Executive Order 13149. The strategy is an internal part of the decision making process for fleet purchases and operations for TVA.

2. Goals:

- a) Comply with Executive Order 13149 by decreasing the internal consumption of petroleum for vehicle fleets by 20 percent by FY 2005 compared to FY 1999.
- b) Improve the consumption rate of light duty vehicles 1 mile per gallon by FY 2002 compared to FY 1999.
- c) Improve the consumption rate of light duty vehicles 3 mile per gallon by FY 2005 compared to FY 1999.
- d) Increase the use of alternative fueled vehicles and/or hybrids in the TVA fleet.

3. Description (TVA plans to achieve the above goals through the implementation of the below activities):

- a) General Travel - review alternative options to reduce travel such as:
- b) Teleconferencing;
- c) Evaluating and reducing work requirements which involve or processes which drive regular travel; and
- d) Increasing vehicle capacity and ride-share between organizations.
- e) Vehicle Types - review alternative options which will increase miles per gallon (MPG) and consider replacement of:

- f) Low MPG vehicles with high MPG. For example, replacing a four wheel drive with a sedan can reduce fuel consumption of a given application by as much as 50 percent; and

A. TVA FLEET EFFICIENCY STRATEGY (Preliminary) (continued)

- g) Current petroleum use vehicles with Alternative Fuel Vehicles (AFV). An increased use of hybrid electric vehicles which can achieve greater than 40 MPG is a viable option.

4. Responsibilities:

Administration: Program administrator and owner of the fleet efficiency strategy; goal setting, etc. Transportation Services will coordinate the implementation of the strategy in TVA through the Agency Energy Management Committee. Committee members representing this program include Fleet Management, William Lehman and Heavy Equipment, David Gordon:

- a) LeAnne Stribley is the designated Senior Energy Official and Executive Vice President of Administration.
- b) Terrell Burkhart is the Senior Energy Manager and Vice President of Facilities Management in the Administration organization.
- c) Stephen L. Brothers is the manager for the TVA Internal Energy Management Program (IEMP) located within Facilities Management and chairperson for the Agency Energy Management Committee.