Tennessee Valley Authority
Annual Report on Energy Management
FY 2007

(Including Department of Energy
Reporting Guidance and Outline)

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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 13423.

A. Energy Management Infrastructure

1. **Senior Agency Official:** Identify the agency's Senior Official designated to the E.O. 13423 Steering Committee and describe the official's role and responsibilities, particularly as they pertain to energy and water management.

   John E. Long, Jr. is the designated Senior Energy Official and Executive Vice President of Administrative Services.

   Stephen L. Brothers is the designated Chief Energy Manager and manages the TVA Internal Energy Management Program (IEMP) under Administrative Services.

   David R. Zimmerman is the manager of Sustainable Design under Administrative Services.

2. **Agency Energy Team:** Identify the members of the team and describe the team's responsibilities and interactions with cross-functional teams designated to expedite the implementation of E.O. 13423.

   TVA formed the Agency Energy Management Committee (AEMC) to facilitate compliance with applicable 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;**
   - **Tina I Broyles, Power Systems Operations;**
   - **David R. Chamberlain, Customer Resources;**
   - **Sherri R. Collins, Office of General Counsel;**
   - **Annemarie C. Smith, Government Relations;**
   - **Jonnie A. Cox, Facilities Management Projects;**
   - **Joe H. Dempsey, Central Support and Repair Heavy Equipment Division;**
   - **David R. Dinse, Research and Technology Applications;**
   - **Judy G. Driggans, Financial Services;**
   - **Bryan H. Jones, Information Services;**
   - **Janet H. Keith, Transportation;**
   - **Steven S. Long, Fossil;**
   - **Justin C. Maierhofer, Government Relations;**
   - **Gary W. Mauldin, River Operations;**
   - **William R. McNabb, Facilities Management O&M;**
   - **Daniel R. McNeely, Power Systems Operations;**
   - **L. Jim Miller, River Operations;**
   - **Aaron B. Nix, Facilities Management Environmental;**

- **Rocky L. Roberts, Demand Side Management Program;**
- **David D. Smith, Facilities Management;**
- **Hugh E. Standridge, Environmental Stewardship and Policy;**
- **Stacey R. Stewart, Financial Services;**
- **Lanny S. Thornsberry, Nuclear;**
- **Bruce E. Vincent, Transportation;**
- **Bryan Wells, Power Systems Operations; and**
- **David R. Zimmerman, Sustainable Design.**

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 (E.O.) 13423.

   TVA utilizes "Winning Performance" as a 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, sustainable and related environmental projects. One of the major "Winning Performance" goals is the reduction in cost per square foot for building operation. Meeting this goal includes reductions in energy use. TVA also has in place policies and procedures which provide an avenue for employees to be recognized for their outstanding efforts.

2. **Performance Evaluations:** Describe agency efforts to include successful implementation of provisions of Executive Order 13423 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 E.O. 13423, their job descriptions contain reflective line items and their performance is evaluated in terms of the level to which they accomplish such goals.

3. **Training and Education: 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 Data Report and Energy Scorecard. Expenditures on training will also be reported on the Data Report). Describe agency outreach programs that include education, training, and promotion of ENERGY STAR® and other energy efficient and low standby power products for Federal purchase card users.**

   Multiple methods of training are used to accomplish the objectives of the IEMP. The TVA Intranet and employee awareness programs are used as tools to educate employees on how they impact energy efficiency and use, both at work and at home. Employees are shown their impact on facility energy use through a facility performance poster campaign. Posters showing monthly energy use and energy saving tips are placed in the lobbies of major energy-using facilities. Energy efficiency and information updates on current federal requirements and regulations are provided to employees, managers, and TVA customers upon request. Energy management and associated environmental training is provided to managers and employees as needed. TVA also educates staff on energy and environmental related topics through the TVA Training and Development Organization.

4. **Highlight Facility: Highlight exemplary new or existing facilities that the agency has designated in FY 2007 (i.e., discuss the facility design, the improvements made in energy or water efficiency, the use of renewable energy, etc.).**

The COC, completed in 1986, encloses approximately 1.2 million square feet of floor area, and is made up of five interconnected buildings (Signal Place, Lookout Place, Blue Ridge, Missionary Ridge, and Monteagle Place). 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 combinations 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 continues to investigate energy efficiency measures and have implemented measures which include:

- **Better placement of task lights resulting in reduction of numbers used;**
- **Demonstration of digital lighting controls which can be operated from the users PCs;**
- **Orienting offices to better utilize daylighting over mechanical lighting;**
- **Use of more efficient T5 lighting in place of existing T8 and T12;**
- **Use of more efficient flat panel displays in place of conventional cathode ray tube displays;**
- **Testing of innovative lighting and control systems; and**
- **Use of occupancy sensors in individual office spaces.**

ENERGY MANAGEMENT AND ASSOCIATED ENVIRONMENTAL EFFORTS

The COC's low energy consumption rate supports the reduction of CO_2 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 footcandles of ambient lighting supplemented with daylighting and task lighting;**
- **Renewable energy attributes such as daylighting; and**
- **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, chillers etc.) was upgraded to energy efficient models as failures occurred;**
- **Variable Frequency Drives (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; and**
- **Building entry air locks with automated doors 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 ninety percent since 1995. The COC is the largest single contributor to this effort.

Affirmative Procurement:
TVA reduces environmental impacts at the COC and other facilities through affirmative procurement of materials with recycled content. TVA's Affirmative Procurement Plan has been upgraded to the Green Procurement Plan which will include EPAct05 and other federal requirements. In FY07, TVA spent $4.82 million on commercial sanitary tissue products, non-paper office products, construction products (concrete), landscaping products, park and recreation products, transportation products (traffic barricades), vehicular products (re-refined oil), and miscellaneous products (signage) and spent $56.65 million on other recycled materials, meeting guidelines established under the Resource Conservation and Recovery Act (RCRA). This is a decrease of sixteen percent from last year.

Waste Minimization and Recycling Programs:
TVA is a Federal Charter Partner in the EPA "WasteWise Program." 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."

During FY 2007, TVA generated 21,626 tons of solid waste which includes power plants, projects, public recreation areas and corporate facilities such as the COC. 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 from the COC. In addition to the typical office waste recycling, TVA continues its efforts in recycling fluorescent light tubes, oil, scrap metals, building materials, wood waste, and ballasts. TVA also utilizes a redeployment program which collects and redeploys used equipment and materials. During FY 2007, TVA deployed 9,125 tons of material and equipment through scrap contracts, auctions and sales, and donations.

Sustainable carpet is used throughout the COC. This carpet contains and uses high performance backing made from one hundred 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.

5. **Other Energy and Related Environmental Initiatives: Highlight new or existing energy and related environmental initiatives that the agency has accomplished in FY 2007. Provide a brief description of these initiatives.**

INDUSTRIAL INITIATIVES

TVA provides end use technical assistance to its direct-served and distributor-served industrial customers. TVA works with these clients to help them identify and solve problems related to their use of energy in areas such as: manufacturing processes, environmental issues and plant operations. The targeted segments, such as the automotive, machinery, forest products and food processing industries, as well as local water and wastewater treatment systems, are selected because of the large presence of such industries in the TVA service area, their high energy usage, or the availability of solutions for their existing problems. The TVA industrial marketing managers rely primarily on in-house expertise, but sometimes bring in consultants to assist these industrial clients.

The following is an example of TVA energy assistance to industrial customers:

TVA representatives developed and co-chaired an in-house energy conservation team to identify and implement energy cost savings opportunities at the GM Spring Hill automobile assembly plant. The team achieved savings in excess of $1 million in FY 2007 and over $11.3 million since the beginning of the initiative eight years ago. This includes electricity savings of over 17 million kWh and demand reduction of 2.3 MW in FY 2007.

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 306 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

TVA and its 158 public power distributors have a long history of residential energy-efficiency programs for the Valley. These programs are currently marketed under the brand name *energy right*®.

Participation in the various initiatives under the *energy right*® Program includes over 150 distributors. These initiatives are described below:

New Homes Plan promotes all-electric, energy-efficient new homes. All homes built *energy right*® must meet a minimum rating in overall energy efficiency. Homes built at least 15 percent better than the minimum rating qualify as *energy right*® while those built 30 percent better qualify as *energy right*® Platinum or *energy right*® Platinum Certified. Since the summer of 2005, when TVA began an Energy Star® certification promotion (which equates to *energy right* Platinum Certified), over 1,800 homes have been certified to date through 9 participating power distributors. (FY 2007 installations: *energy right*® – 5,211 units; *energy right*® Platinum – 950 units; *energy right*® Platinum Certified – 986 units)

Heat Pump Plan promotes the installation of high efficiency heat pumps in homes and small businesses. Installation, performance, and weatherization standards have been established to ensure the comfort of the customer and the proper operation of the system. A Quality Contractor Network has been established for maintaining high installation standards. Through a third-party lender, TVA provides ten-year financing for residential heat pumps with repayment through the consumer's electric bill. (FY 2007 installations: 8,261.)

Water Heater Plan promotes the installation of energy-efficient electric water heaters in homes and small businesses. (FY 2007 installations: 15,150.)

New Manufactured Homes Plan promotes the installation of high efficiency 13 SEER heat pumps in new manufactured homes and currently has over 40 percent of the market share in the Valley. TVA is also piloting an Energy Star® Manufactured Homes pilot with MHRA (Manufactured Housing Research Alliance) to promote Energy Star® homes in the Valley. (FY 2007 installations: 2,110.)

In Concert With The Environment (in partnership with Nexus Energy Software) is a comprehensive environmental and energy education program directed to middle school and junior high school students. Student participants receive an energy survey to complete for their households. Results from the survey indicate the home's estimated annual and monthly energy usage by appliance and give a number of energy, environmental and water recommendations for the student and their family to implement. (FY 2007 audits: 630.)

***energy right* Home *e*-valuation® (in partnership with Nexus Energy Software) allows residential customers to play an active role in saving energy in their homes. After completing an energy survey, customers receive a personalized report that breaks down the home's annual and monthly energy usage by appliance, and gives a number of energy recommendations as well as information about distributor products and services. (FY 2007 audits: 3,857.)**

Energy Depot for Homes (in partnership with Enercom) is a web-based home energy audit for residential customers to complete interactively. Customers complete the survey and receive a detailed analysis of their energy use based on their answers and local electric and average gas rates. The analysis report also gives a number of energy recommendations. (FY 2007 audits: 13,443.)

Energy Depot for Business (in partnership with Enercom) is a web-based home energy audit for small business customers to complete interactively via the Web. Customers complete the survey and receive a detailed analysis of their energy use based on their answers and local electric and average gas rates. The analysis report also gives a number of energy recommendations. (FY 2007 audits: 4,582.)

Energy Depot for Homes Comparison Tool (in partnership with Enercom) provides residential customers with a way to compare energy use, costs, potential savings and paybacks for replacing existing heating and air conditioning systems, water heating and lighting.

More information is available at the *energy right* website (www.energyright.com).

ENERGY SERVICES COMPANY (ESCO)

Since 1997, TVA's Energy Services Company has worked with customers to achieve 43,122,000 kWh of energy efficiency savings and 14 MW of cumulative peak demand reduction through performance contracting projects. More than $50 million in improvements have been made at military installations, state-owned buildings, and school systems in the Valley; at one base the energy savings now exceed $1 million per year. Under these performance contracts, the equipment cost is funded through the resulting savings on the energy bills.

These industrial, commercial, ESCO, and residential programs accounted for an estimated 36.7 MW of demand reduction in FY 2007.

REGIONAL ACCOUNTS

National accounts that are served regionally by distributors of TVA power have requested the ability to view and pay bills electronically. Example: Kroger's has 140 locations in 51 distributor service areas and energy payments to our distributors are made from the corporate office. The ability to view and pay these bills electronically would reduce their administrative burden, reduce late fees, and allow them to easily compare energy usages between facilities. TVA has developed a pilot of a prototype electronic bill presentment and payment system in response to the needs of these customers. This project is an effort by TVA to develop and make available such a program that crosses distribution boundaries for this customer class.

DIRECT LOAD CONTROL (DLC)

TVA and 12 power distributors currently participate in a Direct Load Control program. This program involves power distributors installing radio controlled or power line carrier switches on their customers' air-conditioners and water heaters. During peak demand periods, TVA is allowed to curtail the power to this equipment. The power distributors receive a monthly bill credit from TVA for each operable switch. Participating power distributors are allowed to determine the type of incentive given to their customers. TVA can curtail up to 30 MW of load upon demand with DLC. The future of DLC is being evaluated by TVA in relation to a larger, more modern, and more effective Demand Side Management initiative.

GREEN POWER SWITCH® (GPS)

See II. (Energy Efficiency Performance), section B. (Renewable Energy).

GENERATION PARTNERS

TVA launched the GPS Generation Partners® Program in support of Green Power Switch®. The Generation Partners® program pays participants for 100 percent of their green power output at a rate of 15 cents per kilowatt-hour for the generation produced from solar and wind installations on participants' home or small businesses. The energy from Generation Partners® contributes to TVA's supply of renewable energy for Green Power Switch®. In FY 2004, GPS Generation Partners® was expanded to allow larger, demand-metered customers to participate with solar generation only.

TVA's GPS and Generation Partners® programs were awarded the State of Tennessee Energy Leadership Award in 2005. As of September 30, 2007, there were 34 consumer-owned installations and 43 participating power distributors in the Generation Partners® program.

RESEARCH AND TECHNOLOGY APPLICATIONS

In support of TVA's efforts to continually improve its operations, Research and Technology Applications (R&TA) provides scientific and technological solutions to problems in the areas of generation, transmission and environmental compliance and evaluates emerging technologies that could benefit TVA and its customers in the future. TVA also works with partners in industry and academia to help bring technologies to the marketplace for the benefit of TVA's operations and its customers. Efforts in these areas are included in this report.

R&TA promotes sustainability by partnering with TVA Facilities Management to test and showcase sustainable technologies.

R&TA helps TVA fulfill its commitment to provide competitively-priced and reliable power while promoting environmental stewardship and economic development. R&TA works to help develop, demonstrate, and deploy new energy-related technologies for a better tomorrow.

R&TA RECENT HIGHLIGHTS/ACCOMPLISHMENTS

New Technologies Demonstrated and Implemented – R&TA's Technologies Demonstrated and Implemented Indicators are a measure of the number of research and development technologies which are demonstrated and implemented for the first time at TVA facilities, at customer sites (distributor, directly served, and consumer), and through partnerships and collaborations.

1. **Chattanooga Office Complex (COC) Lighting Demonstration:**
   A lighting demonstration project in the COC building was completed and monitored. The new lighting used high efficiency T-5 light fixtures that attached directly to the existing cubicle furniture. The lighting provided both up and down lighting and incorporated occupancy sensors, daylight harvesting sensors, custom programming of individual light fixtures and local real time control of the lighting by the occupants via computer interface. The monitoring data indicated that the new system achieved a savings of approximately 75 percent compared to the old system, with a similar demand savings. Occupants generally liked the new lighting better than the old system.

2. **Breakaway Link:**

   A prototype of the electro-mechanical fuse (Breakaway Link) was designed, manufactured and tested/demonstrated by EPRI, TVA and the Tullahoma Board of Public Utilities and Cookeville Electric Department served by TVA. The device limits storm damage to structures and service equipment by acting as a mechanical fuse that allows the connection to be severed both mechanically and electrically before the tension increases enough to damage the structure. It also assures that the service is electrically interrupted prior to complete separation. An exclusive worldwide license was granted to Homac Mfg. of Ormond Beach, FL. Homac is presently marketing the commercial product as a service entrance disconnect system called Storm Safe.

3. **Smart Thermostat Load Management Demonstration:**

   This project was a demonstration of new "smart" programmable electronic thermostats that can be controlled by either the customer or the utility with the use of a radio, telephony, or broadband signal. This project tested the ability to communicate with the thermostat with the existing radio hardware. The communications were successful, however there were some significant maintenance issues identified with continued use of the older radio technology. There was also the issue of the need for two-way communications to verify demand reduction. Two-way communication was not part of the old radio dispatched direct load control system.

4. **Other Current Activities:**
   - **Completing a performance evaluation and a survey of 20 passive acid drainage treatment systems built from 1985-1998;**
   - **Working with McMinnville Electric System, TVA measured NOx emissions from a diesel-generator set fueled by biodiesel. The project includes testing a new NOx removal system. The system shows promise; it has reduced NOx by more than 90 percent. A final report of this work has been prepared by McMinnville Electric System and includes TVA's final report as one chapter;**
   - **TVA was awarded a patent (patent number 6,751,959 B1) for the Advanced Low Temperature Power Cycle technology (ALTPC). ALTPC is a highly efficient advanced technology that converts industrial waste heat to power in a cost effective manner. In 2007, TVA and Facilities Management Company, Inc. (FMC) of Boston, MA, executed a license agreement that gives FMC the exclusive license in the United States to build, own, operate, and market TVA's patented Advanced Low Temperature Power Cycle (ALTPC) technology. FMC is forming a startup company based on TVA's ALTPC technology. The royalty to TVA from this license agreement is based on installed generation. TVA will continue to have access to ALTPC technology;**
   - **Continued a joint EPRI, and TVA project, the Carbon Capture and Water Emissions Treatment System (CCWESTRS), which will demonstrate integration of fossil power plant operations with terrestrial carbon sequestration technologies;**
   - **Completed installation and initiated operation of a joint TVA, EPRI, AEP, and Duke Energy project, Aquatic Toxicity Improvement and Control, which will demonstrate the use of passive treatment of high-volume power plant process water for heavy metals and nutrients;**
   - **Evaluating and demonstrating Demand Side Management (DSM) initiatives to prepare for future changes in the energy market place. Demonstrations underway include:**
     - **Net-Zero Energy House Community - TVA is continuing to work with Oak Ridge National Lab (ORNL) and is having discussions with developers that are interested in building very high efficiency "green" developments;**

- **Advanced Metering Infrastructure with DSM - a pilot project was begun with the Chattanooga Electric Power Board (CEPB). CEPB began recruiting residential customers. The pilot will implement a time-of-use rate structure with three levels, off-peak, peak, and critical peak;**
- **A GridPoint Energy Storage System was installed in one of the TVA /ORNL/ Habitat Zero Energy Houses, to demonstrate Peak Load Reduction. It was successful in reducing the local peak loads during the system-wide peak load events of August 2007;**
- **The Hybrid Solar Light (HSL) demonstration addressed key scientific hurdles associated with adaptive, full-spectrum solar energy systems and their associated applications in commercial buildings. The project goal was to validate the hypothesis that full-spectrum solar energy systems can improve by several-fold the nonrenewable energy displacement efficiency and affordability of solar energy in buildings. The demonstration culminated with the installation of an operational system at the American Museum of Science & Energy in Oak Ridge, Tennessee and three other installations in Knoxville and Chattanooga. The systems are presently being monitored and evaluated to determine the performance and savings; and**
- **TVA and ORNL continue the performance and durability testing of an affordable, energy efficient electric heat pump water heater (hew). Tests have confirmed that it possesses twice the energy factor of a conventional electric water heater and a market price of $600 or less is attainable. Discussions between ORNL and interested water heater tank manufacturers about licensing this HPWH design are ongoing.**

II. Energy Efficiency Performance: This section will highlight data calculated for reporting on the Data Report and the Energy Scorecard. The purpose of the section is to provide narrative information in support of these data as well as showcase particular agency initiatives and projects contributing to the goals of EPACT '05 and E.O. 13423.

A. Energy Intensity Reduction Performance

TVA's facility inventory and the type of activities for which these facilities are used continue to evolve as the agency faces new challenges. 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 Long Term Planning Strategy (see Attachment 2). To benchmark success, the AEMC utilizes many tools including the OMB Energy Scorecard. The AEMC allows representatives to voice problems in meeting regulations and goals and share success stories which can then be applied throughout TVA. To benchmark success, the AEMC uses many tools including:

TVA NEW BUILDING DESIGN

When designing new buildings, TVA incorporates sustainable practices and energy efficiency standards. New building designs consider the incorporation of technologies such as daylighting, passive solar heating, geothermal heat pumps, advanced controls and non-toxic, recycle-content building materials.

TVA FACILITY IMPROVEMENTS

TVA implements various energy efficiency improvements in its facilities. Some examples of typical energy reduction improvements are as follows:

- **New lighting systems using T-8 lamps, electronic ballasts and motion sensors have been installed in many existing buildings;**
- **New lighting systems using T-5 lamps, electronic ballasts, and various types of control systems have been installed in existing buildings;**
- **Incandescent lights have been replaced with compact fluorescents in many facilities;**
- **Occupancy sensors are being installed to control lighting and equipment in individual spaces, open offices and personal work stations;**
- **Old mercury vapor lighting and incandescent lighting was upgraded to metal halide and high pressure sodium lighting at various fossil sites and switch yards;**
- **Energy Management Control Systems have been added to control heating and cooling systems, lighting systems, motors, exhaust fans, pumps and other energy using equipment;**
- **Variable Frequency Drives have been added to building heating, ventilating, and air conditioning units;**
- **New high efficiency heat pump systems have been installed in many buildings to replace old window units and out of date package units;**
- **Existing air handlers have been rebuilt to improve efficiency;**
- **Existing chillers have been replaced and/or rebuilt to improve efficiency;**
- **Old, inefficient cooling towers were updated to a high efficiency system on one facility with a reduction in energy use of 33 percent;**
- **Old inefficient single glazed windows were replaced with double glazed windows;**
- **Motorized shades were installed to reduce solar heat gain and cooling loads;**
- **Renovated buildings had insulation installed in the ceiling and walls where applicable; and**
- **Older emergency generators were replaced with smaller ones which reduces fuel use and cost.**

OPERATION AND MAINTENANCE ACTIVITIES FOR BUILDINGS

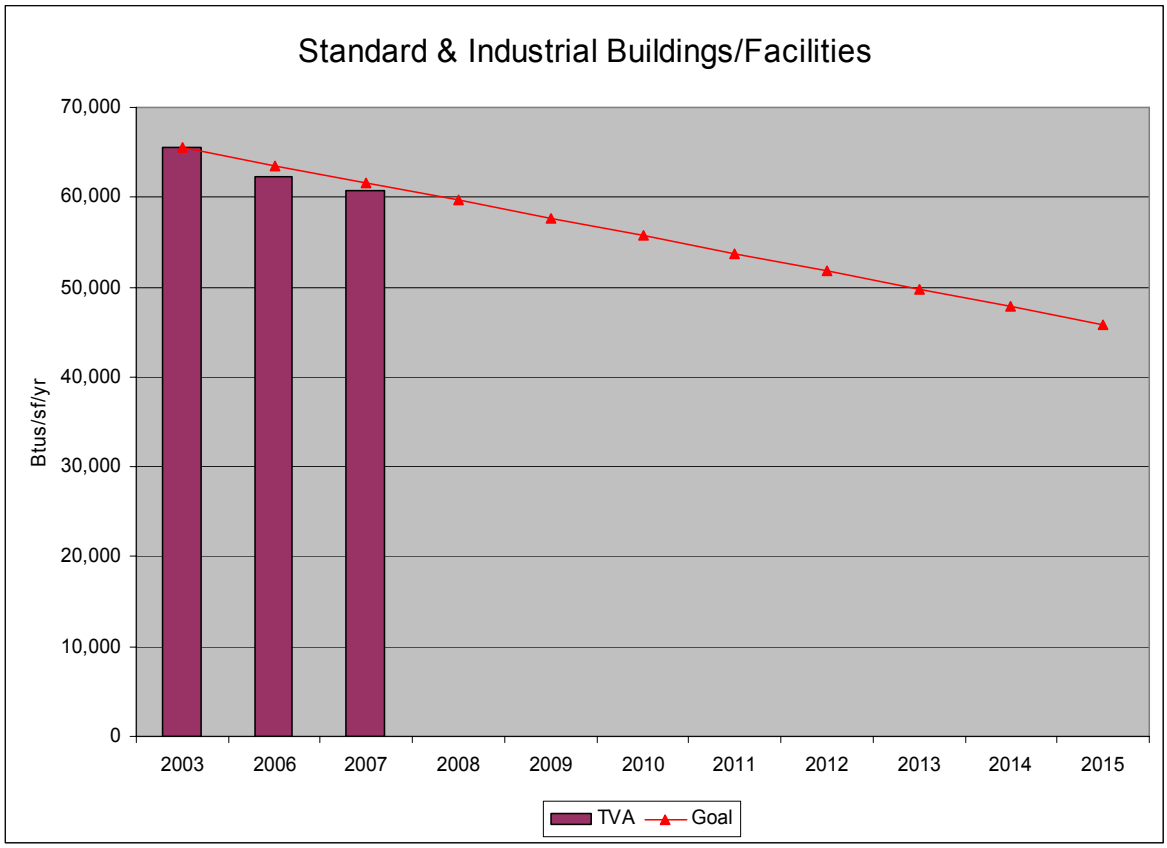
TVA continues to improve its energy efficiency and environmental stewardship through operation and maintenance activities. The following is a list of operation and maintenance practices and activities for FY 2007:

- **Recycle scrap metals, used oil, substation and communication station service batteries, and storm damaged or deteriorating steel structures;**
- **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 (recommissioning);**
- **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 summer;**
- **When replacing motors, use properly sized energy efficient motors;**
- **Balance three-phase loads;**
- **Use cog-type belts for higher efficiency;**
- **Eliminate steam trap leaks;**
- **Repair water leaks;**
- **Install low-flow faucets and shower heads;**
- **Install automatic flush valves; and**
- **Properly insulate hot water and steam lines to reduce energy loss.**

1. **Goal Subject Buildings: Report energy use for buildings in units of Btu-per-gross-square-foot (Btu/GSF) for FY 2003 (the base year) and FY 2007. Report the percent change from FY 2003 and from FY 2007. (Note: This information will be reported on the performance summary spreadsheet incorporated into the Annual Energy Management Data Report). 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 and implementation of energy efficiency improvements. TVA has ended FY 2007 with a Btu/GSF/Yr of 60,703 (including the renewable energy credit); this is a 7.4 percent reduction from the FY 2003 base.



2. **Excluded Facilities: Refer to Section IV (B) of this guidance—a list of excluded facilities and an explanation of why they were excluded. (Refer to DOE's *Criteria Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirement,* See: http://www.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf.) These guidelines fulfill the requirement under Section 543(c)(3) of NECPA as amended by EPACT '05. Section 543(c)(3) states that the Secretary of Energy shall issue guidelines that establish criteria for exclusions from the energy performance requirement for a fiscal year, any Federal building or collection of Federal buildings, within the statutory framework provided by the law. These guidelines were developed through an interagency working group process under the auspices of the Federal Interagency Energy Management Task Force which subsequently concurred with the final product.**

   TVA has a long history of demonstrating stewardship toward energy reduction and will continue to work toward reducing energy use in its generation, transmission and related energy intensive buildings. Energy reduction in these buildings has become increasingly more difficult given the majority of the energy consumption in these buildings is largely attributed to process energy (generation and transmission of electricity). In recognition of the above and the fact that only so much can be done to make these buildings more efficient in a cost effective manner, TVA, in discussion with DOE, has decided to exclude these buildings. Attachment 4 contains a list of TVA's excluded facilities for FY 2007.

   The following is a list of projects implemented in FY 2007 or planned for future implementation related to energy/water efficiency and sustainability in these exempt facilities.

POWER SYSTEM OPERATIONS EFFICIENCY

TVA's Power Systems Operations' staff considers energy efficiency and environmental impacts for each project and activity. The following activities have been completed in FY 2007 or planned for FY 2008.

- **The Power System Optimization and New State Estimator Projects continue to improve TVA's ability to operate the power system confidently with decreased margin as a result of increased wide-area awareness of current state and contingency options.**
- **Smaller modular switchhouses which are more energy efficient are being installed for new transmission facilities instead of the old block switchhouses of the past. In FY 2008, retirement of old switchhouses will occur at designated existing substations.**
- **Reactive Power: The PSO Optimal Power Flow Initiative gives promise for future minimization of losses using an optimized voltage schedule and minimizing new construction of reactive devices through optimal placement. The Northeast section was the first area completed on the TVA system; with other areas to begin implementation soon. Projects include the addition of 161kV capacitor banks at Jonesborough switching station, Manchester 161kV substation, and Franklin 500kV substation.**
- **Construction of New Lines: New lines help to ensure that electricity can be delivered reliably for the minimum transmission loss. The environmental impact of new lines is minimized through careful design and route selection, study of all possible alternatives including new technologies, and realizing the best performance from existing resources, as well as a detailed process for public involvement. A new 161kV line was constructed from Montgomery to Oakwood. Also new transmission lines were constructed from West Point to serve the new Severcorr steel mill. Planned projects include the Cumberland-Montgomery 500kV transmission line and the Kingston-ORNL 161kV transmission line.**
- **Construction of new TVA interconnections: New interconnections typically allow two area systems to become stronger for minimal capital improvements. The Five Points-Homewood 161kV interconnection with SMEPA was completed in FY 2007.**
- **New TVA Subs/breaker installations: New substations/switching stations increase the reliability of the power system by reducing interruptions to area loads. New breaker installations placed in service during FY 2007 or planned for FY 2008 include replacement of overstressed breakers at Allen Fossil Plant and new breakers at McGregors Chapel, Hickory Valley, Albertville, and Elizabethton 161-kV substations. New TVA substations placed in service during FY 2007 or planned for FY 2008 include the ORNL and Coosa River 161-kV substations, and the Bradley 500-kV substation. Also replaced the transformers at Albertville and Burnsville with more efficient transformers. A second 500-161-kV bank has been added at the Madison Substation. Also, the 500-161-kV single-phase and the Lafayette three-phase transformers that had previously failed were replaced in FY 2007. The Bradley 500-kV Substation will be completed in FY 2008. A new spare 500-161-kV transformer will be installed at the Roane Substation in FY 2008. Also, the failed 500-161-kV single-phase transformer at Shelby Substation will be replaced in FY 2008.**
- **Transmission Line Upgrades**
  - **FY 2007 Line upgrades were completed for Alcoa Switching Station - Alcoa #2,3,4 161-kV TLs, Ardmore-Fayetteville 161-kV TL, Madison-Big Cove 161-kV TL, Rockwood-Peavine 161-kV TL, Sequoyah-GA State Line 500-kV TL, Browns Ferry-Maury 500-kV TL, Browns Ferry-Madison 500-kV TL, and Maury-Franklin 500-kV TL. This allowed for additional transmission capacity in these areas without requiring acquisition of new right-of-ways.**
  - **In FY 2008, line upgrades are to be completed for Ocoee #2 - Ocoee #3 69-kV transformer line rebuild along with upgrades for the following transformer lines (TLs): Kingston-Oak Ridge 161-kV TL, Wheeler-Nance-Trinity 161-kV TL, Great Falls-Center Hill 161-kV TL, Kentucky-Calvert #1,2 161-kV TLs, Gallatin-North Nashville 161-kV TL,**

- **Delivery points: Like new lines, designing a system with sufficient connections to the transmission system enables supply to consumers to be achieved most directly while enhancing reliability and minimizing losses. New construction placed in service during FY 2007 or planned for FY 2008 include delivery points at North Sweetwater, Buffalo Road, Mt. Hope, Pelham, Hardin, Cedar Grove, Rosemark, Mitchellville, West Somerville, Fairfield Glade, Old Smyrna Rd, Gist Creek, New St. Bethlehem, Pioneer, Bonwood, Gregory's Mill, Estill Springs, North Columbia, Big Cove, Wartrace, Memphis Junction, West Ooltewah, Algood, Catalpa Creek, Weir, East Sumner, CCJIP, West Pleasant Hill, Severcorr, Hayesville, Station Camp, North Mill, Thornton, Volunteer, Golden Triangle, Payne Lane, Boynton Valley, Coldwater, Wellspring, Goose Creek, Belden**
- **Replacement project for obsolete relays continued in FY 2007 with more efficient solid-state relays and will continue into FY 2008. Locations included Cordova, West Point, Bull Run, and Brown Ferry 500-kV substations. Other locations included Wheeler HP-Maury and Allen FP-Hornlake 161-kV transmission lines.**

HYDRO EFFICIENCY

The table below accounts for both completed and on-going projects at TVA hydro plants in FY 2007. These projects are aimed at increasing overall hydro efficiency by reducing energy consumption, maintaining plant availability, lowering maintenance costs, and increasing megawatt capacity. They also support environmental stewardship in that environmental impacts are included as part of the project development process. In addition, by maximizing hydro efficiency, TVA is able to burn less fossil fuel, reducing the amount of carbon released into the atmosphere.

TVA's hydro modernization is of particular importance in terms of energy management. This initiative, designed to ensure the availability of reliable hydroelectric generation in the future, has improved the facilities' efficiency by an average of approximately five percent since its inception in 1992. When completed around 2018, TVA's modernization program will have increased the hydro system's power output by more than 700 MW's. TVA's automation program, another key energy management initiative, also is reducing operating costs and increasing hydro efficiency.

Plant Name	Project Name	Cost ($000's)
Hydro System	Modernization program	19,536
Hydro System	Asset preservation/recovery projects	26,859
Hydro System	Remoting and automation	1,127
Hydro System	Safety/fire protection/regulatory projects	11,099
Hydro System	Miscellaneous small capital projects	10,408
Hydro System	Total All Projects	69,029

NUCLEAR EFFICIENCY

TVA Nuclear considers energy efficiency and environmental impacts for each project and activity. One major project was completed in FY 2007 to increase our generating capability. The following is a list of energy management and sustainability projects completed in FY 2007 and a list of energy management and sustainability projects in progress, or planned for future implementation at TVA Nuclear plants.

NUCLEAR ENERGY PROJECTS COMPLETED IN FY 2007

Plant Name	Project Name	Cost (000's)
Browns Ferry	Restart the Unit 1 reactor (1130Mwe)	1,800,000
Watts Bar	Improve Unit 1 heat rate by replacing the steam generators	221,361
Browns Ferry Sequoyah Watts Bar	Install oil containment and other oil spill prevention measures required by the recent change to 40CFR112.	3,753
	Total All Projects	2,025,384

NUCLEAR ENERGY PROJECTS IN PROGRESS IN FY 2007 OR PLANNED FOR FUTURE IMPLEMENTATION

Plant Name	Project Name	Cost (000's)
Browns Ferry	Replace all PCB containing electrical devices	3,380
Browns Ferry	Increase Unit 2 and 3 electrical output by 110 MWe per Unit.	272,046
Browns Ferry	Increase Unit 1 electrical output by 110 MWe	7,555
Brown Ferry	Replace portions of the U2 condenser tube cleaning system. Improves steam cycle efficiency (heat rate).	3,292
Brown Ferry	Replace portions of the U3 condenser tube cleaning system. Improves steam cycle efficiency (heat rate).	4,858
Browns Ferry	Replace Unit 3 control bay chillers. Removes ozone depleting refrigerant.	7,488
Browns Ferry	Off-Gas Chiller Replacement. Removes ozone depleting refrigerant.	5,525
Sequoyah	Improve Unit 2 heat rate by replacing the steam generators	296,432
Sequoyah	Rebuild 6 essential raw cooling water pumps. Improves pump efficiency.	5,040
Sequoyah	Replace 480V Board Room Chiller	1,714
Watts Bar	Rebuild 4 essential raw cooling water pumps. Improves pump efficiency.	5,323

Watts Bar	**Replace safety related chillers. Removes ozone depleting refrigerant.**	**27,980**
Watts Bar	**Convert non-safety related Aux Bldg. General Vent Chillers to non-ozone depleting refrigerants.**	**983**
Watts Bar	**Complete and startup Watts Bar Unit 2 (1200 MWe)**	**2,490,000**
	Total All Projects	**3,131,616**

FOSSIL EFFICIENCY

Fossil Power Group (FPG) considers energy efficiency and environmental impact in the evaluation of each project. FPG continues to focus on reducing the number of forced outages and load reductions at its fossil power plants. Improving system-wide performance means fewer generating unit startups which improves unit operational efficiency and helps reduce the overall delivered cost of power.

The industry utility magazine *Electric Light & Power* annually ranks the top 20 generating units by various criteria. In the November/December 2006 edition covering performance for calendar year 2005, Bull Run fossil plant earned top honors as the most efficient coal-fired power plant for the second consecutive year. Bull Run has ranked among the nation's top 10 most efficient plants every year since 1996 and the plant has topped the list four out of the past five years. In addition, Paradise fossil plant was ranked 18th in the same category. The rankings are based on heat rate - a measure of the efficiency with which a plant turns fuel energy into electric energy.

Three fossil plants had Equivalent Forced Outage Rates (EFOR) levels of less than 2 percent in FY 2007 - Allen, John Sevier and Kingston. During FY 2007, 11 fossil units established continuous run records. Shawnee Unit 6 established a national record for continuous operation for a steam generating unit after completing 1,093 days of nonstop operation. In FY 2007, the fossil coal system set an all time net generation record of 100.19 million megawatt-hours, surpassing the previous mark set in FY 2001.

During FY 2007, Selective Non-Catalytic Reduction (SNCR) systems were brought online at John Sevier Unit 1 and Johnsonville Unit 4 to remove nitrogen oxide (NOx). As a result of this technology and other removal equipment, ozone season NOx emissions for FY 2007 was 41,622 tons. This is the lowest level for ozone season emissions since all 59 fossil units have been in service and is 81.1 percent less than the level in 1995. In addition, the scrubber was placed in service at Paradise Unit 3 to reduce SO2 emissions. TVA's environmental efforts are continuing via ongoing and future projects and include the addition of technologies to achieve further reductions in nitrogen oxide emissions; fuel switch changes and the addition of scrubbers to achieve further reductions in SO2 emissions; and the addition of equipment to mitigate SO3 and improve opacity.

Many energy management and related environmental projects were completed at TVA Fossil plants during FY 2007. These projects included heat rate improvements, maintaining plant availability, reducing energy consumption, lowering maintenance costs, environmental stewardship, and increasing overall efficiency.

The following is a representative list of projects completed in FY 2007:

Plant	Project Name	Cost (000's)
Allen	ALF--U3 Combustion Optimization	489
Cumberland	CUF--U1 Replace LP Turbine Blades Rows L-0 & L-1	7,671
John Sevier	JSF--U1 Replace #5 LP Feedwater Heater	381
Paradise	PAF--U3 Replace 3A & 3B HP Heaters	4,045
Paradise	PAF--Cooling Tower #1 Upgrade	6,353
Paradise	PAF--Cooling Tower #3 Upgrade	5,462
Widows Creek	WCF--U6 Replace Main Condenser Tubes	883
	Total All Projects	25,284

The following is a representative list of ongoing and/or future projects:

Plant	Project Name	Budget (000's)
Allen	ALF--U2 Retube #8 Feedwater Heater	1,448
Colbert	COF--U5 Combustion Improvement	14,628
Colbert	COF--U5 Replace Air Preheaters	7,263
Colbert	COF--U5 Upgrade Precipitator	41,648
Colbert	COF--U5 Low NOx Burners	1,890
Cumberland	CUF--U2 Replace LP Turbine Blades L-0 & Rows 1-2	8,867
Cumberland	CUF--U2 Replace Row 11 Blades on BFPT 2A	466
Cumberland	CUF--Replace Sootblowing Air Compressors	2,147
Cumberland	CUF--Replace Air Preheater Cold End Baskets	6,544
Gallatin	GAF--U1-4 NOx Reduction Project	1,964
John Sevier	JSF--U2 Retube #6 LP Feedwater Heater	302
Johnsonville	JOF--U8 Combustion Controls	2,474
Johnsonville	JOF--U10 Combustion Controls	2,100
Paradise	PAF--U3 Replace 1A & 1B HP Heaters	5,883
Widows Creek	WCF--U5 Replace Main Condenser Tubes	1,070
Widows Creek	WCF--U8 Replace 6A & 6B Feedwater Heaters	1,093
Widows Creek	WCF--U7 Replace LP Turbine	26,772
	Total All Projects	126,559

3. **Non-Fleet Vehicle and Equipment Fuel Use: Refer to the Data Report to identify the fuel use for non-fleet vehicles and other equipment not captured by the Federal Automotive Statistical Tool (FAST) reporting system. Discuss trends in the use of this category of fuel use and methods employed to reduce fuel use.**

Vehicle Fleet Consumption—In the past, GSA's Agency Report of Motor Vehicle Data (Form SF-82) collected acquisition, fuel consumption, and fuel cost data for motor vehicles directly from vehicle fleet managers. The SF-82 was replaced by the Federal Automotive Statistical Tool (FAST), an internet-based reporting platform. FAST eliminates the need to report fuel consumption data for fleet motor vehicles to FEMP on the Data Report. FAST now collects this data, including alternative fuel consumption data reported under Sections 303 and 308 of EPACT, and this information is forwarded to FEMP for inclusion in the Annual Report to Congress. For more information on FAST, please contact Brad Gustafson of DOE's Federal Energy Management Program at (202) 586-5865.

FLEET FUEL EFFICIENCY

TVA's fleet strategy is to examine current vehicle use and replacement and where feasible, choose replacement vehicles that are most efficient. TVA, as a major provider of electricity, will continue to make use of alternative fueled vehicles (AFVs), including those that use electric power, and acquire additional vehicles to meet requirements under EPAct05. TVA has recognized the value of hybrid electric vehicle technology in reducing fuel consumption, increasing versatility, and promoting electric propulsion and has included these vehicles in its fleet. TVA created a hybrid-fleet program in FY 2002 which is a partnership effort between TVA's Energy Management and Fleet Management organizations. In FY 2007, TVA added seven hybrid gas/electric vehicles and 61 AFV's to its fleet bringing the total number of hybrid vehicles to 37 and AFV's to 132.

During FY 2007, TVA gasoline fuel usage under FAST (Federal Automotive Statistical Tool) reporting decreased by 2.5 percent compared to FY 2006 while diesel fuel use under FAST reporting decreased by 4.3 percent compared to FY 2006.

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 is utilized throughout TVA. This coordinated effort reduces deadheading and avoids double handling and, multiple trips to the same sites.

TVA continued to implement information technologies in FY 2007 that enabled employees to perform their jobs more efficiently while also saving energy. Since the TVA service area covers all of Tennessee and portions of six other states, employees are widely dispersed and often need to meet with others in different work locations. In recent years technologies have been implemented which enable employees to travel less and conduct more meetings from their remote work sites, therefore saving fuel and related travel expenses. The implementation and use of such technologies increased in FY 2007. Additionally, TVA replaced older computers and monitors with more energy efficient models that use less energy.

- **Video Conference Rooms - TVA has 58 video conference rooms throughout the Tennessee Valley service area. Approximately 1,473 video conferences were held in FY 2007, an increase of nine percent from FY 2006, eliminating the need for travel to these meetings.**

- **Meeting Place - This technology offers up to 96 origins of audio conferencing without operator assistance, enabling employees across the service area to conduct business without travel. On average, over 2,468 such meetings were held monthly using this system, an increase of three percent from FY 2006.**

- **PC Efficiency - TVA replaced approximately 3,000 computers in FY 2007 with units having both Energy Star® and Electronic Product Environmental Assessment Tool (EPEAT) Silver certifications. Beginning in July FY 2007, TVA standard desktop systems met the new Energy Star® version 4.0 standards. TVA pursues additional energy efficiency by aggressively implementing 80 Plus power supplies and the most efficient chip technologies.**

- **Monitor Efficiency - TVA maintains standardized monitor management processes that automatically suspend inactive displays. Monitors purchased in FY 2007 were Energy Star®, Tier 2 registered LCD displays with EPEAT Silver certifications.**

HEAVY EQUIPMENT

TVA continued using Fuel Mag with small compressors to kill bacteria and spores that grow in fuel that is stored for long periods of time. Its use should decrease the amount of contaminated fuel that has to be disposed. These units can also eliminate down time due to filter and fuel injector plugging.

TVA's maintenance shops use filter crushers to get all possible oil out of filters before disposal. Our maintenance facilities are using oil burners to heat their facilities using TVA's generated used oil. Also, the used oil generated by our field mechanics is being recycled by the Holston Company.

TVA has begun to use super high efficiency air filters on Caterpillar equipment as available. The cost is about 15-20 percent higher but the efficient life is about 300 percent longer.

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.

TVA incorporates EPA emission standards in specifications for both on-road and off-road trucks. TVA also is in constant communication with equipment providers on their emission standards and latest engine components to insure the best and most economical equipment is used.

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 2007.

ANNUAL MILEAGE

FY	Miles Driven		Percent Increase/(Decrease)	
	Sedans	Trucks*	Sedans Base Yr. 75	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)
02	10,793,620	23,520,150	(12)	(9)
03	11,788,288	26,175,474	(4)	1
04	10,689,531	29,911,323	(13)	15
05	9,215,499	29,575,499	(25)	14
06	10,929,610	34,110,244	(11)	32
07	10,747,173	33,997,319	(12)	31

*Figures for Trucks include both light duty (<8500 lbs GVWR) & medium duty (8501 – 16000 lbs GVWR).

MPG PERFORMANCE

FY	Annual MPG			Percent Increase/(Decrease)		
	Sedans Base Yr. 75	Trucks* Base Yr. 79		Sedans Base Yr. 75	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
02	26.0	14.1	12.9	72	22	57
03	27.4	14.0	12.7	81	21	55
04	28.2	15.2	13.4	87	31	63
05	27.3	14.8	13.4	81	28	63
06	28.0	15.3	13.7	85	32	67
07	27.1	16.3	14.0	79	41	71

*****Figures for Trucks include both light duty (<8500 lbs gross vehicular weight rating (GVWR)) & medium duty (8501 - 16000 lbs GVWR).

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 is also utilizing electric vehicles at its plant sites to reduce fuel consumption and emissions.

TVA currently has the following EVs:

- **7 GEM electric cars; and**
- **78 EZGOs electric vehicles.**

B. Renewable Energy: Discuss agency's policy and efforts to encourage purchase and generation of electricity and thermal energy from renewable energy sources. The quantitative information related to this section will be reported on the agency's Data Report which incorporates the new counting methodology for renewable energy (electricity only, old vs. new). More details on the changes to renewable energy reporting are contained in the *FEMP Renewable Energy Requirement Guidance for EPACT 2005 and Executive Order 13423*, available on FEMP's website: http://www.eere.energy.gov/femp/--link TBD.

GREEN POWER SWITCH® (GPS)

TVA and 12 public power companies launched GPS on Earth Day, April 22, 2000. GPS was the first program of its kind offered in the Southeast and provided consumers with an economical opportunity to participate in TVA's development of renewable energy resources. The program originally included supply from wind and solar energy sources. The program was expanded in FY 2001 to include electricity generated from methane gas.

Sixteen TVA-owned solar generating facilities are presently operating in Tennessee, Kentucky, Alabama, Virginia and Mississippi. One commercial scale wind power generation site has been operational since November 2000. TVA will also purchase up to 27 megawatts of wind energy from Invenergy through the end of CY 2024. Invenergy operates the fifteen 1.8 megawatt wind turbines that were added to the existing three wind turbines located on Buffalo Mountain in Anderson County, Tennessee. These Invenergy units became operational in December 2004. GPS also benefits from generation produced from an eight megawatt waste water treatment methane gas project located at TVA's Allen Fossil plant near Memphis, Tennessee.

Under the GPS program, residential customers can purchase green power in blocks of 150 kilowatt hours each, at a cost of $4.00 per block. These blocks represent approximately 12 percent of a typical home's monthly energy use. Commercial and industrial customers can sign up for the 150 kilowatt-hour blocks based on the amount of energy they use each month. When two blocks of GPS are purchased each month for one year, the associated reduction of atmospheric carbon dioxide is equivalent to planting an acre of trees in the Tennessee Valley. As of September 30, 2007, residential customers were purchasing 24,061 blocks and business customers were purchasing 13,087 blocks for a total of 37,149 purchased blocks of green power. This total includes TVA's purchase of 1,170 MWh for use in its Knoxville Office Complex, Chattanooga Office Complex, and Huntsville office.

As of September 30, 2007, there were 104 TVA power distributors participating in the GPS program throughout the Tennessee Valley. TVA plans to continue expanding the GPS program by offering it to additional power distributors.

RENEWABLE ENERGY TECHNOLOGY MONITORING

TVA identifies and evaluates emerging renewable energy technologies in support of its strategic needs. The renewable energy program provides data to support debate on renewable energy policy; monitors advancements in renewables to keep TVA organizations and customers informed on technology issues; and demonstrates and develops the most viable technologies in the areas of bio-energy, wind, solar, and other renewable resources.

TVA's Green Power Switch program is one of the primary drivers for renewable energy technologies at TVA. However, TVA's 2007 Strategic Plan states that TVA will evaluate the feasibility of increasing renewable generation. The new Renewable Energy Strategy, which is in the development phase, contains items such as renewable technology selection, identification of generation and portfolio goals. The Energy Policy Act of 2005 and the President's Advanced Energy Initiative supports the development of renewable energy resources through research and development funding and financial incentives. Furthermore, Executive Order 13423, mandates that at least half of the required renewable energy consumed by a federal agency must come from new renewable sources (in service after January 1, 1999). TVA continues to assess and evaluate new and advanced renewable technologies. Project plans include working with EPRI, national laboratories, and other utilities to evaluate large scale biomass gasification for production of electricity and value-added products from regional biomass, and evaluating other advanced renewable energy supply options in wind and solar.

1. **Self-generated renewable energy: Identify/estimate energy use from electricity self-generated from renewable sources (photovoltaics, wind turbines) and renewable energy thermal projects (solar thermal, biomass, geothermal). Also report energy generated on Federal lands or by projects facilitated by your agency, but which may be sold to other parties. Agencies should report the annual energy generated from all renewable energy systems installed after 1990 and in place during FY 2006.**

   Through TVA's GPS program, TVA utilizes photovoltaics, wind, and methane as part of its mix to provide renewable energy to its customers (for more information see Section II. B. Renewable Energy, Green Power Switch).

2. **Purchased renewable energy: Summarize agency purchases of renewable energy in the form of Renewable Energy Certificates RECs or as part of competitive power purchases. Discuss highlights of major purchases and approaches taken to obtain renewable energy through purchases.**

   The renewable energy purchased for the Knoxville Office Complex, Chattanooga Office Complex and Huntsville office building was 1,170 MWh.

C. **Water Conservation. Identify/estimate water consumption and cost by the agency in FY 2007 and outline any agency-specific issues related to collection of water consumption data. (Note: This information will be reported on the Data Report.) Also in this section, highlight activities undertaken to improve water efficiency. For more information, refer to DOE's supplemental guidance document, *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423* on the FEMP website: http://www.eere.energy.gov/femp/ -- link TBD.**

During FY 2007, energy surveys including water were conducted at multiple TVA sites.

TVA consumed 733 million gallons of potable water in FY 2007 with an estimated cost of $2.2 million. These numbers include water consumption from excluded buildings (see Attachment 4).

TVA considers water management plans as part of its operation and maintenance activities. As part of these activities, more than 271 facilities have been covered, representing over 4.3 million GSF.

To date, TVA has implemented the Best Management Practices (BMPs) in more than 11 percent of its gross square footage.

D. Metering of Electricity Use: EPACT '05, Section 103, requires all Federal agencies to install metering and advanced metering where found to be cost-effective, according to guidelines developed by DOE (refer to: http://www1.eere.energy.gov/femp/pdfs/adv_metering.pdf). Agencies are required to install standard or advanced meters at all Federal buildings to the maximum extent practicable, by October 1, 2012, and were to submit implementation plans to accomplish this in August 2006. Agencies are required to report on their progress as part of their annual input to the DOE Report to Congress beginning with FY 2007. Progress will be measured based on the number of buildings metered and the percent of agency electricity consumption represented by those buildings. The quantitative information related to this section will be reported on the agency's Data Report in Table 2-4. Starting with FY 2008, agencies will be required to report progress on both buildings with standard meters and buildings with advanced meters. Agencies should describe progress made in FY 2007 in meeting the milestones of their metering implementation plans.

Under TVA's Metering Plan, funding for metering projects, including advanced meter installation, was established starting in FY 2008.

E. Federal Building Energy Efficiency Standards: EPACT '05, Section 109, requires that new Federal buildings be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the ASHRAE Standard or the International Energy Conservation Code, as appropriate, if life-cycle cost-effective. DOE published the Interim Final Rule for new Federal building energy efficiency standards in the Federal Register, Vol 71, No. 232, December 4, 2006, 70275 (see http://www1.eere.energy.gov/femp/pdfs/fr_notice_cfr433_434_435.pdf. The prevailing private sector standards referenced are ANSI/ASHRAE/IESNA Standard 90.1-2004 for commercial and high-rise multi-family residential buildings and the 2004 Supplement to the IECC for low-rise residential buildings. Both Standard 90.1-2004 and the 2004 IECC are incorporated by reference into the new Federal standards. The new standards may be found in 10 Code of Federal Regulations (CFR) Part 433 for commercial and high-rise multi-family residential buildings and in 10 CFR Part 435 Subpart A for low-rise residential buildings.

The quantitative information related to this section will be reported on the agency's Data Report in Table 2-5. In addition, the statute requires that agencies provide the following in their annual reports:

1. **a list of all new Federal buildings owned, operated, or controlled by the Federal agency, and**
2. **a statement specifying whether the Federal buildings meet or exceed the Federal building efficiency standards.**

During FY 2007 TVA designed and built the 2,400 sf Johnsonville Fossil Plant Maintenance Building which complied with the Federal building efficiency standard. A warehouse was also designed but did not have to meet the Federal building efficiency standard since it did not meet the minimum energy use threshold requirement.

III. IMPLEMENTATION HIGHLIGHTS OF FY 2007: The purpose of this section is to identify and describe results and accomplishments to reduce energy consumption and improve energy efficiency. It is not expected that each agency will have employed every strategy; rather, the strategies identified below are intended to remind agency officials of the existence of these strategies and to encourage their use where practical and life-cycle cost effective. Agencies should provide highlights of the following strategies their energy management programs employed during FY 2007:

A. Life-Cycle Cost Analysis
B. Retrofits and Capital Improvement Projects
C. Use of Performance Contracts
- **Energy-Savings Performance Contracts (ESPCs)**
- **Utility Energy Services Contracts (UESCs).**

D. Use of ENERGY STAR® and Other Energy-Efficient Products
E. Sustainable Building Design and High-Performance Buildings
F. Energy Efficiency/Sustainable Design in Lease Provisions
G. Distributed Generation, including cooling, heating, and power systems
H. **Electrical Load Reduction Measures**

TVA implements many energy management measures through a number of strategies which include the following:

AGENCY ENERGY MANAGEMENT COMMITTEE

TVA Agency Energy Management Committee is a forum for sharing of information and success stories on energy efficiency efforts for application across the agency.

NEW CONSTRUCTION

TVA combines teams of designers to incorporate energy efficiency and sustainability at the start of new building designs. The Resource Efficient Building Design Process developed during FY 2006 and implemented in FY 2007 should ensure energy and sustainable requirements are considered.

RENOVATION

TVA takes advantage of renovation activities by incorporating energy efficiency and sustainability into its spaces that are being reconfigured for change.

OPERATIONS & MAINTENANCE

Operation and maintenance (O&M) personnel are the front line, used to identify potential energy and sustainable problems and opportunities on a daily basis. O&M staff take corrective action where needed and seek help from engineering, energy and sustainable staff to resolve technical issues when necessary.

Examples of O&M activities are the efficient operation of building EMCS systems, the placement of controls on lighting and other energy consuming equipment, addition of insulation in buildings, replacement of old glazing with newer high efficiency glazing, and replacement of inefficient lighting when actions are determined to be life-cycle cost effective. In addition TVA considers efficiency improvements in its industrial, power plant and transmission operations when 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.

VEHICLE FUEL

TVA looks at its overall fleet and business needs on a continuous basis to match the work needs of each individual to the most efficient vehicle. TVA investigates efficient vehicles such as hybrid cars and adds these vehicles to its fleet to meet business needs. TVA also investigates ways to extend the life cycle of vehicles, especially special purpose vehicles. TVA's detailed Fleet Strategy is provided as Attachment 5.

A. Life-Cycle Cost Analysis:
TVA's Energy Plan provides that life-cycle analysis will be used in making investment decisions regarding energy/water efficiency and sustainable practices.

B. Retrofits and Capital Improvement Projects:
TVA has evaluated building inventory for potential energy conservation measures. These facilities are being re-evaluated in accordance with EPAct05, E.O. 13423 and TVA's Memorandum of Understanding with the EPA. During FY 2007, TVA surveyed 293 facilities located across the valley.

C. Use of Performance Contracts:
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. TVA considers the use of ESPCs and UESCs where cost effective and in the best interest of the agency and its customers. During FY 2007, TVA did not utilize these financing mechanisms.

D. Use of Energy Star® and Other Energy-Efficient Products:
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. This includes purchasing Energy Star® and other energy efficient products, when feasible.

E. Sustainable Building Design and High Performance Buildings:
During FY 2007 TVA designed and built the 2,400 sf Johnsonville Fossil Plant Maintenance Building Addition which incorporated passive solar heating, daylighting, recycled content materials, and energy efficient lighting with photo sensor and occupancy sensor controls. This building is estimated to use 30 percent+ less energy than the ASHRAE 90.1 energy code.

During FY 2007 TVA started design on the following buildings with the goal of meeting EPAct05 and applicable requirements under EO 13423:

- **31,100 sf Watts Bar Material Handling Warehouse - incorporated super insulation, passive solar heating, daylighting, recycled content materials, and energy efficient lighting. Project is currently on hold.**
- **8,700 sf Allen Fossil Plan Coal Yard Utility Building - incorporated passive solar heating, daylighting, recycled content materials, and energy efficient lighting. Still in design.**
- **15,300 sf Watts Bar Inprocessing Facility - incorporated passive solar heating, daylighting, recycled content materials, and energy efficient lighting. Project was canceled.**
- **3,000 sf Marshall County Combustion Turbine Warehouse - incorporated passive solar heating, daylighting, recycled content materials, and energy efficient lighting. Design complete.**
- **36,000 sf Watts Bar Multipurpose Building - incorporated passive solar heating, daylighting, recycled content materials, and energy efficient lighting. Project was canceled.**

- **100,000 sf Watts Bar Administration Building - incorporated daylighting, recycled content materials, and energy efficient lighting. Project was canceled.**

TVA is incorporating sustainable design criteria into major renovation and new construction efforts. TVA has been reviewing its building inventory in an effort to reduce inefficient, high cost, underutilized space. This consolidation effort provides an opportunity to further practice sustainable efforts such as:

- **Renovate space using removable, reusable wall systems;**
- **Recycle and recondition office furniture and panel systems;**
- **Install recyclable carpet tiles and low VOC finishes; and**
- **Upgrade lighting systems using T-5 and T-8 lamps, room and personal work station occupancy sensors, and internet based digital lighting control systems.**

All of these efforts are being done as part of an agency sustainable program under TVA's IEMP.

TVA continues to buy materials that have positive environmental qualities and include those that meet RCRA, EPAct05 and EO 13423 requirements and other recycled content materials. Examples of environmental products purchased include soy ink, rechargeable batteries, low mercury lamps, and non-toxic supplies, energy efficient motors, low standby power using appliances, Energy Star® certified and EPEAT certified electronics and movable/reusable wall systems in place of drywall. TVA also purchases materials that meet sustainable architecture criteria. These non-toxic building materials have recycled content, and their creation, use, and disposal minimize environmental impacts.

F. Energy Efficiency/Sustainable Design in Lease Provisions:
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, sustainability and water efficiency.

G. Distributed Generation including combined cooling, heating, and power systems:
TVA is a utility; however, the use of distributed generation, where applicable, is used or considered for use.

H. 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.

IV. Data Tables and Inventories. Include the items listed below:

A. FY 2007 Annual Energy Management Data Report: A blank Data Report form and instructions for completing the form are included as Attachment 1 of this Guidance. Also include Data Reports for revisions to past years' energy data along with an explanation.

B. Excluded Facilities Inventory. This should include the following information: building name, building location (city and state), and justification for excluded status under the criteria developed for EPACT '05: http://www.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf.

V. Attachments

1) **Attachment 1 - FY 2007 Annual Energy Management Data Report (electronic file "Attachment 1_DataReport_12-07.xls")**
2) **Attachment 2 -Long Term Planning and Strategy (electronic file "Attachment 2_Long-Term Planning and Strategy_12-07.doc")**
3) **Attachment 3- Reporting Units and Conversion Factors for Federal Energy Management Reporting (electronic file "Attachment 3_Conversion_Factors_12-07.doc")**
4) **Attachment 4 - Excluded Facility Inventory FY 2007 (electronic file "Attachment 4_Excluded Facility Inventory FY 2007_12-07.xls")**
5) **Attachment 5 - TVA Fleet Strategy FY 2007 (electronic file "Attachment 5_Fleet Strategy_12-07.doc")**

Attachment 1 - FY 2007 ENERGY MANAGEMENT DATA REPORT

Agency: **Tennessee Valley Authority** Prepared by: **Stephen L. Brothers Jr.**

Date: **12/21/2007** Phone: **423-751-7369**

PART 1: ENERGY/WATER CONSUMPTION AND COST DATA

1-1. EPACT/E.O. 13423 Goal Subject Buildings

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. $)	Unit Cost ($)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions ($MTCO_2e$)
Electricity	MWH	157,504.2	$7,903.0	$0.05 /kWh	537.4	1,866.4	104,208
Fuel Oil	Thou. Gal.	5.4	$14.0	$2.61 /gallon	0.7	0.7	54
Natural Gas	Thou. Cubic Ft.	2,652.8	$38.0	$14.32 /Thou Cu Ft	2.7	2.7	145
LPG/Propane	Thou. Gal.	16.4	$13.9	$0.85 /gallon	1.6	1.6	97
Coal	S. Ton	0.0	$0.0	#DIV/0! /S. Ton	0.0	0.0	0
Purch. Steam	BBtu	0.0	$0.0	#DIV/0! /MMBtu	0.0	0.0	0
Other	BBtu	0.0	$0.0	#DIV/0! /MMBtu	0.0	0.0	
		Total Costs:	$7,968.9	Total:	542.4	1,871.5	104,505
Goal Subject Buildings (Thou. Gross Square Feet)		8,870.4		Btu/GSF:	61,153	210,980	
				Btu/GSF w/ RE Purchase Credit:	60,703	209,417	
				Btu/GSF w/ RE & Source Btu Credit:	60,703	209,417	

1-2. EPACT/E.O. 13423 Goal Excluded Facilities (1)

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. $)	Unit Cost ($)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions ($MTCO_2e$)
Electricity	MWH	374,613.0	$17,022.4	$0.05 /kWh	1,278.2	4,439.2	247,852
Fuel Oil	Thou. Gal.	0.0	$0.0	#DIV/0! /gallon	0.0	0.0	0
Natural Gas	Thou. Cubic Ft.	0.0	$0.0	#DIV/0! /Thou Cu Ft	0.0	0.0	0
LPG/Propane	Thou. Gal.	0.0	$0.0	#DIV/0! /gallon	0.0	0.0	0
Coal	S. Ton	0.0	$0.0	#DIV/0! /S. Ton	0.0	0.0	0
Purch. Steam	BBtu	0.0	$0.0	#DIV/0! /MMBtu	0.0	0.0	0
Other	BBtu	0.0	$0.0	#DIV/0! /MMBtu	0.0	0.0	
		Total Costs:	$17,022.4	Total:	1,278.2	4,439.2	247,852
Goal Excluded Facilities (Thou. Gross Square Feet)		19,099.5		Btu/GSF:	66,922	232,423	
				Btu/GSF w/ RE Purchase Credit:	66,922	232,423	
				Btu/GSF w/ RE & Source Btu Credit:	66,922	232,423	

1-3. Non-Fleet Vehicles and Other Equipment (Does not include Fleet Vehicle Data Captured by FAST System)

	Consumption Units	Annual Consumption	Annual Cost (Thou. $)	Unit Cost ($)	Btu (Billion)	Est. GHG Emissions ($MTCO_2$)
Auto Gasoline	Thou. Gal.	0.5	$1.2	$2.40 /gallon	0.1	4
Diesel-Distillate	Thou. Gal.	1,357.0	$3,501.2	$2.58 /gallon	188.2	13,768
LPG/Propane	Thou. Gal.	0.0	$0.0	#DIV/0! /gallon	0.0	0
Aviation Gasoline	Thou. Gal.	72.3	$205.0	$2.84 /gallon	9.0	625
Jet Fuel	Thou. Gal.	39.7	$107.1	$2.70 /gallon	5.2	366
Navy Special	Thou. Gal.	0.0	$0.0	#DIV/0! /gallon	0.0	0
Other	BBtu	0.0	$0.0	#DIV/0! /MMBtu	0.0	
		Total Costs:	$3,814.5		202.5	14,764

Optional 1-3a. Fleet Vehicle Consumption and Costs Captured by the FAST System

(Input reflects format of Section IV, Part C, Annual Fuel Consumption Report, by Fuel Type of FAST SF 82 - Aggregate Combined Report)

Description	Consumption Units	Annual Consumption	Annual Cost (Actual $)	Btu (Billion)
Biodiesel	GEG	0.0	$0.0	0.0
Diesel	GEG	587,000.0	$1,514,460.0	73.4
Electric	GEG	0.0	$0.0	0.0
E-85	GEG	0.0	$0.0	0.0
Gasoline	GEG	2,621,336.0	$6,218,100.0	327.7
Hydrogen	GEG	0.0	$0.0	0.0
M-85	GEG	0.0	$0.0	0.0
LPG	GEG	0.0	$0.0	0.0
NG	GEG	0.0	$0.0	0.0
Other	GEG	0.0	$0.0	0.0
TOTAL	GEG	3,208,336.0	$7,732,560.0	401.0

1-4. RENEWABLE ENERGY GENERATED ON FEDERAL OR INDIAN LAND WHERE RECS ARE RETAINED BY THE GOVERNMENT
(New renewable energy is from projects placed in service after January 1, 1999)

Renewable energy project types in service during FY 2007, by age and source	Number of Projects	Annual Energy Produced	Energy Produced on Federal or Indian Land and Used at a Federal Facility
Electricity from *New* Solar projects (MWH)	0	30.0	0.0
Electricity from *New* Wind projects (MWH)	0	0.0	0.0
Electricity from *New* Biomass projects (MWH)	0	0.0	0.0
Electricity from *New* Landfill Gas projects (MWH)	0	0.0	0.0
Electricity from *New* Geothermal projects (MWH)	0	0.0	0.0
Electricity from *New* Hydro/Ocean projects (MWH)	0	7,542.0	7,542.0
Electricity from *Old* Solar projects (MWH)	0	0.0	0.0
Electricity from *Old* Wind projects (MWH)	0	0.0	0.0
Electricity from *Old* Biomass projects (MWH)	0	0.0	0.0
Electricity from *Old* Landfill Gas projects (MWH)	0	0.0	0.0
Electricity from *Old* Geothermal projects (MWH)	0	0.0	0.0
Electricity from *Old* Hydro/Ocean projects (MWH)	0	4,200.0	4,200.0
Natural Gas from Landfill/Biomass (Million Btu)	0	0.0	0.0
Renewable Thermal Energy (Million Btu)	0	0.0	0.0
Other Renewable Energy (Specify Type) (Million Btu)	0	0.0	0.0
Total New Renewable Electricity (MWH)	0	7,572.0	7,542.0
Total Old Renewable Electricity (MWH)	0	4,200.0	
Non-Electric Renewable Energy (Million Btu)	0	0.0	
Total Renewable Energy Generation (Million Btu)	0	40,166.1	

1-5. ON-SITE RENEWABLE ENERGY GENERATION WHERE RECS ARE NOT RETAINED BY THE GOVERNMENT
(This energy is only counted toward the renewable energy goal if the agency has enough new RECs to qualify for the on-site bonus.)

	Amount Produced or Used	Amount Qualified for Goal
Renewable energy reported here comes from projects: 1) placed in service **after 1/1/1999 (New)**; 2) where RECs have not been retained by the government; 3) where the amount has not been reported elsewhere on this data report; and 4) where the energy or RECs have not been sold to another agency that is counting it toward their renewable energy goal. (MWH)	0.0	0.0
Renewable energy reported here must come from projects: 1) placed in service **before 1/1/1999 (Old)**; 2) where RECs have not been retained by the government; 3) where the amount has not been reported elsewhere on this data report; and 4) where the energy or RECs have not been sold to another agency that is counting it toward their renewable energy goal. (MWH)	0.0	0.0

1-6. RENEWABLE ENERGY/RENEWABLE ENERGY CERTIFICATE PURCHASES IN FY 2007

(New renewable energy is from resources developed after January 1, 1999)

Description of *Each* Renewable Energy Purchase (examples below, insert additional rows as necessary for each separate purchase. Insert rows after the first row of each color-coded category.)	Total Amount Purchased (MWH)	Total Amount Purchased (Million Btu)	Portion of Total Purchased from Projects on Federal or Indian Lands	FY 2007 Goal Application Renewable Energy Goal (RE) Energy Efficiency Goal (EE) Credit	End Use Category (Goal or Excluded)	State or Region of Generation or Source
Electricity from *New* Renewable Source	1,170.0		0.0	RE: 100% EE-Credit: 100%	Goal	TN Valley
RECs from *New* Renewable Source	0.0		0.0	RE: 100% EE-Credit: 100%	Goal	
Electricity from *Old* Renewable Source	0.0		0.0	RE: Up to 1.5% of total electricty use EE-Credit: 100%	Goal	
RECs from *Old* Renewable Source	0.0		0.0	RE: Up to 1.5% of total electricty use EE-Credit: 100%	Goal	
Gas from Renewable Source		0.0	0.0	RE: no contribution to goal EE-Credit: 100%	Goal	
Thermal Energy from Renewable Source		0.0	0.0	RE: no contribution to goal EE-Credit: 100%	Goal	
Total Purchases of *New* Renewable Electricity or RECs	1,170.0					
Bonus for Purchases from New Projects on Federal or Indian Land	0.0					
Total Purchases of *Old* Renewable Electricity or RECs	0.0					
Purchases of Non-Electric Renewable Energy		0.0				
Total Purchases for Goal Buildings	1,170.0	0.0				
Total Purchases for Excluded Facilities	0.0	0.0				
Total All Purchases	1,170.0	0.0				

1-7. GOAL-ELIGIBLE RENEWABLE ENERGY USE AS A PERCENTAGE OF FACILITY ELECTRICITY USE

(Calculated from input above per FEMP Renewable Energy Guidance)

Components of Eligible RE Use	Renewable Electricity Use (MWH)	Total Facility Electricity Use (MWH)	RE as a Percentage of Electricity Use
Eligible RE Total	20,484.0	532,117.1	3.8%
New RE (without Bonus)	8,742.0		
Bonus, Federal or Indian Land	7,542.0		
Eligible Old RE	4,200.0		

1-8. ALL RENEWABLE ENERGY USE (INCLUDING NON-ELECTRIC) AS A PERCENTAGE OF FACILITY ELECTRICITY USE

(Calculated from input above for information only)

All Renewable Energy Use (Billion Btu)	Total Facility Electricity Use (Billion Btu)	RE as a Percentage of Energy Use
69.9	1,815.6	3.8%

1-9. WATER USE INTENSITY AND COST

Potable Water	Annual Consumption (Million Gallons)	Annual Cost (Thou. $)	Facility Gross Square Feet (Thou.)	Gallons per Gross Square Foot
Buildings & Facilities Subject to Water Goal	733.0	$2,248.2	27,969.8	26.2
				Percent
Approx. percentage of reported water consumption that is estimated:				5%
Is the FY 2007 agency water intensity baseline preliminary or final?				final

A large portion of buildings are master metered

PART 2: ENERGY EFFICIENCY IMPROVEMENTS

2-1. DIRECT AGENCY OBLIGATIONS

	FY 2007		Projected FY 2008	
	(Million Btu)	(Thou. $)	(Million Btu)	(Thou. $)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		$325.0		$450.0
Estimated annual savings anticipated from obligations	2,117.0	$44.0	3,780.0	$65.0

2-2. ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC) (2)

	Annual savings (Million Btu)	(number/Thou. $)
Number of ESPC Task/Delivery Orders awarded in fiscal year & annual energy (MMBTU) savings.	0.0	0
Investment value of ESPC Task/Delivery Orders awarded in fiscal year.		$0.0
Amount privately financed under ESPC Task/Delivery Orders awarded in fiscal year.		$0.0
Cumulative guaranteed cost savings of ESPCs awarded in fiscal year relative to the baseline spending.		$0.0
Total contract award value of ESPCs awarded in fiscal year (sum of contractor payments for debt repayment, M&V, and other negotiated performance period services).		$0.0
Total payments made to all ESPC contractors in fiscal year.		$0.0

2-3. UTILITY ENERGY SERVICES CONTRACTS (UESC) (3)

	Annual savings (Million Btu)	(number/Thou. $)
Number of UESC Task/Delivery Orders awarded in fiscal year & annual energy (MMBTU) savings.	0.0	0
Investment value of UESC Task/Delivery Orders awarded in fiscal year.		$0.0
Amount privately financed under UESC Task/Delivery Orders awarded in fiscal year.		$0.0
Cumulative cost savings of UESCs awarded in fiscal year relative to the baseline spending.		$0.0
Total contract award value of UESCs awarded in fiscal year (sum of payments for debt repayment and other negotiated performance period services).		$0.0
Total payments made to all UESC contractors in fiscal year.		$0.0

2-4. METERING OF ELECTRICITY USE

	Standard Meters		Advanced Meters	
FY	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered
2007	108	48.6%		
2008 planned	108	48.6%	9	10.3%
				Percent
Percentage of agency metering plan milestones met in FY 2007:				100%

A large majority of buildings are master metered and don't meet the capital threshold for individual meter installation.

Cumulative % of energy metered including Advanced and Standard meters is 58.9%.

TVA met its goal to budget for and begin implementation of meters during FY 2008 on standard and industrial facilities.

2-5. FEDERAL BUILDING ENERGY EFFICIENCY STANDARDS

	Number of New Building Designs
Total new building designs started in FY 2007:	7
Total new building designs started in FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	7
	Percent
Percent of new building designs started in FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	100%

This only includes buildings which met the TVA capital investment threshold.

2-6. TRAINING

	(number)	(Thou. $)
Number of personnel	175	$26.0

ATTACHMENT 2

LONG TERM PLANNING AND STRATEGIES FOR ACHIEVING ENERGY AND WATER GOALS FY 2007

PURPOSE

This document provides guidance to agencies for developing multi-year plans and long-term strategies for achieving the energy management goals of Executive Order 13423, its associated Implementing Instructions, and the Energy Policy Act of 2005. The requirement under the previous Executive Order 13123 for submittal of an annual implementation plan is hereby superseded; instead agencies may use the general framework included in this guidance for developing a strategy and plan with a 2015 planning horizon.
(TVA's input is in 11 font, bold.)

PLANNING FRAMEWORK

1. Management, Administration, and Accountability

1.1. Establish Energy Management Infrastructure

1.1.1. Identify Senior Agency Official as required under Executive Order 13423, and identify responsibilities, and lines of authority

John E. Long, Jr. is the designated Senior Energy Official and Executive Vice President of Administrative Services.

Stephen L. Brothers is the designated Chief Energy Manager and manages the TVA Internal Energy Management Program (IEMP) under Administrative Services.

David R. Zimmerman is the manager of Sustainable Design under Administrative Services.

1.1.2. Assemble and identify a cross-functional agency energy management team consisting of personnel from:

- Facility and energy management
- Procurement
- Budget
- Legal
- Information Technology/Information Systems
- Others, as appropriate

TVA formed the Agency Energy Management Committee (AEMC) to facilitate compliance with applicable 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;**
- **Bruce E. Vincent, Transportation;**
- **David R. Zimmerman, Sustainable Design;**
- **Steven S. Long, Fossil;**
- **Aaron B. Nix, Facilities Management Environmental;**
- **William R. McNabb, Facilities Management O&M;**
- **Lanny S. Thornsberry, Nuclear;**
- **Gary W. Mauldin, River Operations;**
- **David R. Dinse, Research and Technology Applications;**
- **Bryan H. Jones, Information Services;**
- **Jonnie A. Cox, Facilities Management Projects;**
- **Joe H. Dempsey, Central Support and Repair Heavy Equipment Division;**
- **Judy G. Driggans, Chief Financial Officer representative;**
- **Tina I Broyles, Power Systems Operations;**
- **Rocky L. Roberts, Demand Side Management Program;**
- **Justin Maierhofer, Communications;**
- **David R. Chamberlain, Customer Resources;**
- **Sherri R. Collins, Office of General Counsel;**
- **Daniel R. McNeely, Power Systems Operations;**
- **Hugh E. Standridge, Environmental Stewardship and Policy**
- **Janet Keith, Transportation alternate; and**
- **David Smith, Facilities Management alternate.**

1.2. Management Tools

1.2.3. Employee Incentive Programs

TVA utilizes "Winning Performance" as a 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, sustainable and related environmental projects. One of the major "Winning Performance" goals is the reduction in cost per square foot for building operation. Meeting this goal includes reductions in energy use.

1.2.4. Incorporate energy management objectives into performance evaluations of appropriate personnel

To the extent to which employees are responsible for activities that are related to the objectives of E.O. 13423, their job descriptions contain reflective line items and their performance is evaluated in terms of the level to which they accomplish such goals.

1.2.5. Develop training plan, programs

Multiple methods of training are used to accomplish the objectives of the IEMP. The TVA Intranet and employee awareness programs are used as tools to educate employees on how they impact energy efficiency and use, both at work and at home. Employees are shown their impact on facility energy use through a facility performance poster campaign. Posters showing monthly energy use and energy saving tips are placed in the lobbies of major energy-using facilities. Energy efficiency and information updates on current federal requirements and regulations are provided to employees, managers, and TVA customers upon request. Energy management and associated environmental training is provided to managers and employees as needed. TVA also educates staff on energy and environmental related topics through the TVA Leadership Institute.

2. Assess posture of agency and major components in meeting the energy reduction goals

2.1. Determine energy reductions needed to meet 30 percent goal by 2015

2.1.1. Determine target British Thermal Unit (Btu) level to meet 30 percent reduction from 2003 baseline

In order for TVA to meet the energy reduction goals established under E.O. 13423 the BTU/GSF/YR target for FY 2015 would have to be 45,871.

2.1.2. Assess current levels of consumption (baseline)

The FY 2003 baseline or starting point for TVA is 63,564 BTU/GSF/YR based on E.O. 13423 requirements.

2.1.3. Subtract target Btu from current Btu consumption to determine required reduction

For TVA to meet the E.O. 13423 FY 2015 target would require a reduction of 17,693 BTU/GSF/YR.

3. Frame strategies for non-capital project activities and estimate savings

3.1. Operations & Maintenance

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 TVA utilizes:

- **Recycle scrap metals, used oil, substation and communication station service batteries, and storm damaged or deteriorating steel structures;**
- **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 (recommissioning);**
- **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 summer;**
- **When replacing motors, use properly sized energy efficient motors;**
- **Balance three-phase loads;**
- **Use cog-type belts for higher efficiency;**

- **Eliminate steam trap leaks;**
- **Repair water leaks;**
- **Install low-flow faucets and shower heads;**
- **Install automatic flush valves; and**
- **Properly insulate hot water and steam lines to reduce energy loss.**

3.2. Other Activities

TVA also utilizes meter data to evaluate the effectiveness of its activities, re-commissioning to ensure facility systems are operating at optimum efficiency, the enabling of ENERGY STAR functions on computers and monitors to save energy and energy awareness activities to involve TVA employees in energy management and related environmental stewardship activities.

3.3. Energy Efficient Equipment Procurement

TVA has a green procurement process which allows for strategic sourcing to consolidate large buys of energy efficient equipment, the review and revision of contracts and contract writing to include energy efficient products and services to be provided.

4. Estimate project investment needed to meet required reductions and set performance targets

Projects for facilities are primarily funded through renovation, operation, maintenance, and modernization efforts. Projects can also be ranked for economic benefit compared to other TVA projects to determine funding availability and implementation status and funded mainly through the capital budgeting process. Projects are reviewed minimally on an annual basis and more frequently as required. Investments in energy efficiency improvements are identified on building by building basis.

5. Identify key facilities as candidates for energy efficiency projects

5.1. Identify facilities at the agency and major component level that are likely to house the greatest energy savings opportunities and prioritize investments

TVA currently tracks and graphs the energy performance of TVA's major energy use buildings and displays this information in the lobbies of the corporate buildings. The focus is primarily on the top 15 buildings which account for 38% of the energy use and secondarily the focus is on the top 60 buildings which account for 69% of the total energy use. Recent improvements to the energy database now allow for the analysis of monthly energy use on all metered buildings.

5.2. Identify and group facilities of similar size and function to which a template or suite of energy efficiency opportunities might apply.

The database allows for the grouping of facilities by size, function, location, intensity and other practical information. Being able to group or sort these facilities by category expedites evaluations including energy opportunities, asset preservation activities, sustainable design opportunities and others.

6. Audit key facilities to identify energy efficiency opportunities

6.1. Perform preliminary or walk-through audits of key facilities in groups that are functionally similar http://www1.eere.energy.gov/femp/services/assessments.html

TVA surveys approximately 10% of its covered buildings during each year. Items covered during the energy survey include:

- **Overall building information**
- **Information on major energy-using systems/equipment**
- **Types of systems/equipment contained in the building (process loads)**
- **Computer network low-power settings analysis**
- **Energy billing data**
- **Operating schedule**
- **Thermostat setpoints**
- **Lighting levels**
- **Type of HVAC system**
- **Outside wall/roof exposure**
- **Energy intensity (Btu/square foot)**

6.2. If preliminary audit data indicates need for a more detailed building systems audit, retain expertise from appropriate source.

If the need for a more detailed analysis is identified, TVA utilizes its engineering staff, architectural staff and other resources as necessary.

7. List and rank energy efficiency opportunities for potential project implementation

7.1. Types of energy efficiency opportunities.

Types of energy efficiency opportunities that TVA considers include, but are not limited to, the following:

- **Building Envelope**
  - **Reduce Heat Conduction Through Ceilings and Roofs**
  - **Reduce Solar Heat Gain Through Roofs**
  - **Reduce Heat Conduction Through Walls**
  - **Reduce Heat Conduction Through Floors**
  - **Control Solar Heat Gain Through Glazing Areas**
  - **Reduce Infiltration**
- **HVAC Systems Reduce Ventilation Rates**
  - **Improve Chiller Efficiency**
  - **Improve Boiler or Furnace Efficiency**
  - **Improve AC or Heat Pump Efficiency**
  - **Reduce Energy Used for Tempering Supply Air**
  - **Use Energy-Efficient Cooling Systems**
- **HVAC Distribution Systems Reduce Distribution System Energy Losses**
  - **Reduce System Flow Rates**
  - **Reduce System Resistance**

- **Water Heating Systems**
  - **Reduce Hot Water Loads**
  - **Reduce Hot Water Heating System Losses**
  - **Use Energy-Efficient Water Heating Systems**
- **Lighting**
  - **Reduce Illumination Requirements**
  - **Install Energy-Efficient Lighting Systems**
  - **Use Day lighting**
- **Power and Load Management Systems**
  - **Reduce Power System Losses**
  - **Reduce Peak Power Demand**
  - **Install Energy-Efficient Motors**
- **Energy Management Control Systems and Metering**
- **Information Technology Systems**
  - **Energy Star compliant equipment inventory**
  - **Centralized PC power management strategy**
  - **Data center/server operations assessment**
- **Distributed Generation**
  - **On-Site Renewable Energy**
  - **Fuel Cell Installation**
  - **Cogeneration**
- **Water Conservation**
  - **Public Information and Education Programs**
  - **Distribution System Audits, Leak Detection Repair**
  - **Water Efficient Landscape**
  - **Toilets and Urinals**
  - **Faucets and Showerheads**
  - **Boiler/Steam Systems**
  - **Single-Pass Cooling Systems**
  - **Cooling Tower Systems**
  - **Miscellaneous High Water-Using Processes**
  - **Water Reuse and Recycling**

7.2. Assemble information on all potential energy efficiency projects with data enabling life-cycle cost ranking of projects according to investment required, annual energy savings, return-on-investment, internal rate of return, or other criteria for determining best funding/ financing options.

The database allows for the grouping of facilities by size, function, location, intensity and other practical information. Being able to group or sort these facilities by category expedites evaluations including energy opportunities, asset preservation activities, sustainable design opportunities, life cycle cost effectiveness and others.

8. Identify sources of investment funding to accomplish projects

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. TVA

considers the use of ESPCs and UESCs where cost effective and in the best interest of the agency and its customers.

9. Set annual targets for major agency components to implement projects

9.1. Agency sites award contracts/implement energy efficiency projects.

9.2. The agency energy management team monitors projects in the pipeline and takes corrective action if delays arise.

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 oversight, monitoring and technical support for energy related projects and activities within the Agency.

10. Monitor overall agency performance toward goals of EPACT and Executive Order 13423 annually

10.1. Collect and report information on status and progress activities semi-annually in accordance with OMB Energy Management Scorecard process

10.2. Revise plan and agency component targets to reflect progress (or lack thereof)

This is provided through the AEMC and TVA's Internal Energy Management Program.

ATTACHMENT 3

REPORTING UNITS AND CONVERSION FACTORS FOR FEDERAL ENERGY MANAGEMENT REPORTING

Standard Buildings/Facilities
Industrial, Laboratory, and Other Energy-Intensive Facilities
Exempt Facilities

Fuel Type	*Reporting Units*	*BTUs per Reporting Unit*	*Joules per Reporting Unit*	*GigaJoules (GJ) per Reporting Unit*
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

Fuel Type	*Reporting Units*	*BTUs per Reporting Unit*	*Joules per Reporting Unit*	*GigaJoules (GJ) per Reporting Unit*
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 Acre-Foot = 325,851 Gallons
1 Liter = 0.264 Gallons
1 Cubic Meter = 264 Gallons
1 ton-hour of refrigeration = 12,000 Btu

Attachment 4

TVA Excluded Facility Inventory - FY2007

Following is a list of TVA's excluded buildings which include generation, transmission and related energy intensive activities. Energy reduction in these buildings has become increasingly more difficult given that the majority of the energy consumption in these buildings is largely attributed to process energy (generation and transmission of electricity). In recognition of the above and the fact that only so much can be done to make these buildings more efficient in a cost effective manner, TVA, in discussion with DOE, has excluded these buildings.

Building Name	City	State
ALF ALLEN FOSSIL PLANT	Memphis	TN
APH APALACHIA HYDRO PLANT	Ducktown	NC
APU ROCKHOUSE, BUCKEYE, BAGWELL PUMP HOUSE	Decatur	AL
APU WHITESIDE PUMP HOUSE	Decatur	AL
BFN BROWNS FERRY NUCLEAR PLANT	Decatur	AL
BGK ADAIRVILLE 69 KV SWITCH HOUSE	Adairville	AL
BGK BOWLING GREEN MICROWAVE	Bowling Green	KY
BGK BRISTOW	Bowling Green	KY
BGK BRISTOW 161 KV SWITCH HOUSE	Bristow	AL
BGK BURKESVILLE 69 KV SWITCH HOUSE	Burkesville	AL
BGK CADIZ 161 KV SWITCH HOUSE	Cadiz	KY
BGK CANEYVILLE 69 KV SWITCH HOUSE	Caneyville	AL
BGK CASKY 161 KV SWITCH HOUSE	Hopkinsville	KY
BGK CELINA 69 KV SWITCH HOUSE	Celina	AL
BGK EAST BOWLING GREEN 161 KV SWITCH HOUSE	Bowling Green	AL
BGK ELKTON 69 KV SWITCH HOUSE	Elkton	KY
BGK FOUNTAIN RUN 69 KV SWITCH HOUSE	Fountain Run	AL
BGK FRANKLIN 161 KV SWITCH HOUSE	Franklin	KY
BGK GLASGOW 161 KV SWITCH HOUSE	Glasgow	AL
BGK HARTSVILLE NUC PLANT CONST 69 KV SWITCH H	Hartsville	AL
BGK HOLLIS CHAPEL MICROWAVE	Hollis Chapel	KY
BGK HOPKINSVILLE 161 KV SWITCH HOUSE	Hopkinsville	KY
BGK HOPSON 69 KV SWITCH HOUSE	Hopson	KY
BGK LAFAYETTE DISTRICT SWITCH HOUSES	Lafayette	AL
BGK LOGAN ALUMINUM 161 KV SWITCHOUSE	Russellville	KY
BGK MONTICELLO 69 KV SWITCH HOUSE	Monticello	AL
BGK ORLINDA 69 KV SWITCH HOUSE	Orlinda	AL
BGK PENCHEM 69 KV SWITCH HOUSE	Pencham	KY
BGK PORTLAND 161 KV SWITCH HOUSE	Portland	TN
BGK ROSINE 69 KV SWITCH HOUSE	Rosine	AL
BGK RUSSELLVILLE SWITCH HOUSES	Russellville	AL
BGK SCOTTSVILLE 161 KV SWITCH HOUSE	Scottsville	AL
BGK SOUTH BOWLING GREEN 161 KV SWITCH HOUSE	Bowling Green	AL
BGK SUMMER SHADE 161 KV SWITCH HOUSE	Summer Shade	KY
BGK TOMPKINSVILLE 69 KV SWITCH HOUSE	Tompkinsville	AL

BGK WESTMORELAND 161 KV SWITCH HOUSE	Westmoreland	AL
BLN BELLEFONT NUCLEAR PLANT	Hollywood	AL
BOH BOONE HYDRO PLANT	Spurgeon	TN
BRF BULL RUN FOSSIL PLANT	Clinton	TN
BRH BLUE RIDGE HYDRO PLANT	Blue Ridge	GA
CBT BELFAST 161 KV PUMP HOUSE	Columbia	TN
CBT BELFAST 161 KV SWITCH HOUSE	Belfast	TN
CBT CENTERVILLE SWITCH HOUSE	Centerville	TN
CBT CLIFTON CITY 69 KV SWITCH HOUSE	Clifton City	TN
CBT COLLINWOOD 69 KV SWITCH HOUSE	Collinwood	TN
CBT COLUMBIA SWITCH HOUSES & PUMP HOUSE	Columbia	TN
CBT CORNERSVILLE 46 KV SWITCH HOUSE	Cornersville	TN
CBT CULLEOKA 46 KV SWITCH HOUSE	Culleoka	TN
CBT ELKTON 46 KV SWITCH HOUSE	Elkton	TN
CBT ETHRIDGE - VHF RADIO	Ethridge	TN
CBT HOHENWALD 161 KV SWITCH HOUSE	Hohenwald	TN
CBT JINGO 161 KV SWITCH HOUSE	Jingo	TN
CBT LAWRENCEBURG SWITCH HOUSES	Lawrenceburg	TN
CBT LEWISBURG SWITCH HOUSES	Lewsburg	TN
CBT LINDEN 69 KV SWITCH HOUSE	Linden	TN
CBT LORETTO 46 KV SWITCH HOUSE	Loretto	TN
CBT MAURY 500 KV SWITCH HOUSE	Maury	TN
CBT MONSANTO 161 KV SWITCH HOUSE	N/A	TN
CBT MONSANTO 46 KV SWITCH HOUSE	N/A	TN
CBT MOUNT PLEASANT SWITCH HOUSES	Mount Pleasant	TN
CBT NORTH COLUMBIA 46 KV SWITCH HOUSE	North Columbia	TN
CBT ONLY 161 KV SWITCH HOUSE	Only	TN
CBT PULASKI SWITCH HOUSES	Pulaski	TN
CBT SATURN 161 KV SWITCH HOUSE	Spring Hill	TN
CBT SPRING HILL MICROWAVE	Spring Hill	TN
CBT VICTOR SWITCH HOUSE	N/A	TN
CBT WAYNESBORO SWITCH HOUSES	Waynesboro	TN
CBT WEST COLUMBIA SWITCH HOUSES	Columbia	TN
CBT WILLIAMSPORT 46 KV SWITCH HOUSE	Williamsport	TN
CBT WRIGLEY 69 KV SWITCH HOUSE	Wrigley	TN
CCK GILBERTSVILLE SWITCH HOUSES	Gilbertsville	KY
CHC CAPACITORS AND OTHER	Chickmauga	TN
CHC CATOOSA 161 KV SWITCH HOUSE	Catoosa	TN
CHC CHATTANOOGA SWITCH HOUSES & MICROWAVE	Chattanooga	TN
CHC COALMONT SWITCH HOUSE & COMMUNICATION	Coalmont	TN
CHC COOPER HEIGHTS	Cooper Heights	TN
CHC DAYTON 161 KV SWITCH HOUSE	Dayton	TN
CHC DAYTON DISTRICT 69 KV SWITCH HOUSE	Dayton	TN
CHC HALETOWN 69 KV SWITCH HOUSE	Haletown	TN
CHC JASPER TELE	Jasper	TN
CHC LOOKOUT MOUNTAIN RADIO	Lookout Mountain	TN
CHC MOBILE & PORTABLE CAP. & GRD	Chattanooga	TN
CHC MONTLAKE MICROWAVE	Signal Mountain	TN
CHC OGLETHORPE 161 KV SWITCH HOUSE	Oglethorpe	GA
CHC RACCOON MTN MICROWAVE	Tiftonia	TN
CHC SEQUOYAH TRAINING RADIO	Soddy Daisy	TN
CHC SIGNAL MOUNTAIN MICROWAVE	Signal Mountain	TN

CHC STEPHENSVILLE MICROWAVE	Stephensville	GA
CHC TAYLORS RIDGE	N/A	TN
CHC TILTON 115 KV	Tilton	TN
CHC TRENTON MICROWAVE	Trenton	TN
CHC VOLTAGE/CURRENT TRANSFORMERS	Chattanooga	TN
CHH CHICKAMAUGA HYDRO PLANT	Chattanooga	TN
COF COLBERT FOSSIL PLANT	Tuscumbia	AL
CTH CHATUGE HYDRO PLANT	Jefferson City	TN
CUF CUMBERLAND FOSSIL PLANT	Cumberland City	TN
CVT ANDERSON MICROWAVE	Anderson	TN
CVT APH 161 KV SWITCH HOUSE	Ducktown	NC
CVT ATHENS 161 KV SWITCH HOUSE	Athens	TN
CVT BENTON 69 KV SWITCH HOUSE	Benton	TN
CVT BLAIRSVILLE 69 KV SWITCH HOUSE	Blairsville	TN
CVT BLUE RIDGE HYDRO PLANT 69 KV SWITCH HOUSE	Blue Ridge	TN
CVT BOWATER 161 KV SWITCH HOUSE	N/A	TN
CVT BRAWLEY MTN MICROWAVE/RADIO	Brawley	TN
CVT BYRDSTOWN 69 KV SWITCH HOUSE	Byrdstown	TN
CVT CHARLESTON SWITCH HOUSES	Charleston	TN
CVT CHATUGE HYDRO PLANT 69 KV SWITCH HOUSE	N/A	TN
CVT COPPER BASIN 161 KV SWITCH HOUSE	Hayesville	NC
CVT COPPER BASIN COMM	Copper Basin	TN
CVT COTTONPORT RADIO	Cottonport	TN
CVT CRAB ORCHARD 69 KV SWITCH HOUSE	Crab Orchard	TN
CVT CROSSVILLE SWITCH HOUSE & RADIO	Crossville	TN
CVT DECATUR 69 KV SWITCH HOUSE	Decatur	TN
CVT DELANO 26 KV SWITCH HOUSE	Delano	TN
CVT EAST CLEVELAND SWITCH HOUSE & COMMUNICATION	Cleveland	TN
CVT EAVES BLUFF MICROWAVE/RADIO	Decatur	TN
CVT ELLIS MOUNTAIN MICROWAVE	N/A	TN
CVT ENGLEWOOD 69 KV SWITCH HOUSE	Englewood	TN
CVT EPWORTH 69 KV SWITCH HOUSE	Epworth	TN
CVT ETOWAH SWITCH HOUSE 69 KV SWITCH HOUSE	Etowah	TN
CVT FRIENDSVILLE 69 KV SWITCH HOUSE	Briendsville	TN
CVT GEORGETOWN 69 KV SWITCH HOUSE	Georgetown	TN
CVT GRANDVIEW RADIO/MICROWAVE	Grandview	TN
CVT GRIMSLEY 69 KV SWITCH HOUSE	Grimsley	TN
CVT HARRISON BAY 161 KV SWITCH HOUSE	N/A	TN
CVT HAYESVILLE 69 KV SWITCH HOUSE	Hayesville	TN
CVT HIWASSEE HYDRO PLANT 161 KV SWITCH HOUSE	N/A	TN
CVT HIWASSEE MICROWAVE	N/A	TN
CVT HOPEWELL 69 KV SWITCH HOUSE	Hopewell	TN
CVT JAMESTOWN 69 KV SWITCH HOUSE	Jamestown	TN
CVT JENA 69 KV SWITCH HOUSE	N/A	TN
CVT KIE 238 RADIO	N/A	TN
CVT LANG STREET 69 KV SWITCH HOUSE	N/A	TN
CVT LOUDON SWITCH HOUSES	Loudon	TN
CVT MADISONVILLE 69 KV SWITCH HOUSE	Madisonville	TN
CVT MARBLE 69 KV SWITCH HOUSE	Marble	TN
CVT MAYLAND 69 KV SWITCH HOUSE	Mayland	TN
CVT MCDONALD 69 KV SWITCH HOUSE	McDonald	TN
CVT MONTEREY 161 KV SWITCH HOUSE	Monterey	TN

CVT MURPHY 161 KV SWITCH HOUSE	Murphy	NC
CVT NIOTA 69 KV SWITCH HOUSE	Niota	TN
CVT NOTTELY HYDRO PLANT 69 KV SWITCH HOUSE	Blairsville	GA
CVT OCOEE SWITCH HOUSES	Ocoee	TN
CVT OSWALD DOME MICROWAVE	Reliance	TN
CVT POND CREEK - FIBRE OPTIC	N/A	TN
CVT RICEVILLE 69 KV SWITCH HOUSE	Riceville	TN
CVT ROCKWOOD SWITCH HOUSES	Rockwood	TN
CVT ROOSEVELT MT MICROWAVE	Rosevelt Mt	TN
CVT SOUTH ATHENS 69 KV SWITCH HOUSE	Athens	TN
CVT SOUTH CLEVELAND 161 KV SWITCH HOUSE	Cleveland	TN
CVT SPRING CITY 161 KV SWITCH HOUSE	Spring City	TN
CVT SPRING CITY SWITCH HOUSES	Spring City	TN
CVT STALEY 161 KV SWITCH HOUSE	Staley	TN
CVT SWEETWATER SWITCH HOUSES	Sweetwater	TN
CVT TELLICO DISTRICT 69 KV SWITCH HOUSE	Tellico	TN
CVT TEN MILE 161 KV SWITCH HOUSE	Ten Mile	TN
CVT WAUCHECHA BALD RADIO	N/A	TN
CVT WHITE OAK MOUNTAIN RADIO	White Oak	TN
CVT WOOD GROVE 69 KV SWITCH HOUSE	Wood Grove	TN
DGH DOUGLAS HYDRO PLANT	Dandridge	TN
EST ANDERSON 46 KV SWITCH HOUSE	Anderson	TN
EST BLANCHE 46 KV SWITCH HOUSE	Blanche	TN
EST COWAN 46 KV SWITCH HOUSE	Cowan	TN
EST FAYETTEVILLE SWITCH HOUSES	Fayetteville	TN
EST FLINTVILLE 46 KV SWITCH HOUSE	Flintville	TN
EST HILLSBORO 46 KV SWITCH HOUSE	Hillsboro	TN
EST LYNCHBURG 46 KV SWITCH HOUSE	Lynchburg	TN
EST NORTH TULLAHOMA 161 KV SWITCH HOUSE	Tullahoma	TN
EST ORME MOUNTAIN MICROWAVE	N/A	TN
EST PARK CITY 46 KV SWITCH HOUSE	Park City	TN
EST PETERSBURG 46 KV SWITCH HOUSE	Petersburg	TN
EST SEWANEE SWITCH HOUSE & MICROWAVE	Sewanee	TN
EST SHERWOOD 46 KV SWITCH HOUSE	Sherwood	TN
EST WINCHESTER SWITCH HOUSES	Winchester	TN
ESTILL SPRINGS 46 KV SWITCH HOUSE	Estill Springs	TN
EZT WELLHOUSE (WATAUGA DAM)	Elizabethton	TN
FNH FONTANA HYDRO PLANT	Fontana Village	NC
FPH FORT PATRICK HENRY	Kingsport	TN
FTL FORT LOUDON HYDRO PLANT	Lenoir City	TN
GAF GALLATIN FOSSIL PLANT	Gallatin	TN
GEK CADIZ DISTRICT 69 KV SWITCH HOUSE	Cadiz	KY
GEK CERULEAN 69 KV SWITCH HOUSE	Cerulean	KY
GEK DUNMOR 69 KV SWITCH HOUSE	Dunmor	KY
GEK EDGOTEN 161 KV SWITCH HOUSE	Edgoton	KY
GEK ELKTON HILL RADIO/MICROWAVE	Elkton Hill	KY
GEK GREENVILLE RADIO	Greenville	KY
GEK HOPKINSVILLE SWITCH HOUSE & MICROWAVE	Hopkinsville	KY
GEK KIRKMANSVILLE 69 KV SWITCH HOUSE	Kirkmansville	KY
GEK LYON 69 KV SWITCH HOUSE	Lyon	KY
GEK PARADISE FOSSIL PLANT 500 KV	Drakesboro	KY
GEK PEEDEE 69 KV SWITCH HOUSE	Peedee	KY

GEK PEMBROKE 69 KV SWITCH HOUSE	Pembroke	KY
GEK PRINCETON 161 KV SWITCH HOUSE	Princeton	KY
GFH GREAT FALLS HYDRO PLANT	Great Falls	TN
GUH GUNTERSVILLE HYDRO PLANT	Guntersville	AL
HDC HARTSVILLE N.P. 161KV SWITCH HOUSE	Hartsville	TN
HIH HIWASSEE HYDRO PLANT	Murphy	NC
HTA ADDISON 161 KV SWITCH HOUSE	Addison	AL
HTA ALBERTVILLE SWITCH HOUSES	Albertville	AL
HTA ALPHA 69 KV SWITCH HOUSE	Ft. Payne	AL
HTA ARAB SWITCH HOUSES & TELE	Arab	AL
HTA ARDMORE 161 KV SWITCH HOUSE	Ardmore	AL
HTA ASBURY RADIO	Asbury	AL
HTA ATHENS SWITCH HOUSES & TELE	Athens	AL
HTA BELLE MINA 46 KV SWITCH HOUSE	Belle Mina	AL
HTA BOAZ 46 KV SWITCH HOUSE	Boaz	AL
HTA BREMEN 46 KV SWITCH HOUSE	Bremen	AL
HTA BRINDLEY 46 KV SWITCH HOUSE	Brindley	AL
HTA BRYANT 161 KV SWITCH HOUSE	Bryant	AL
HTA COLLINSVILLE 161 KV SWITCH HOUSE	Collinsville	AL
HTA COURTLAND 46 KV SWITCH HOUSE	Courtland	AL
HTA CULLMAN SWITCH HOUSE & RADIO	Cullman	AL
HTA DANVILLE 46 KV SWITCH HOUSE	Danville	AL
HTA DECATUR 161 KV SWITCH HOUSE	Decatur	AL
HTA FABIUS MICROWAVE	Jackson Co.	AL
HTA FAIRVIEW 46 KV SWITCH HOUSE	Fairview	AL
HTA FALKVILLE 46 KV SWITCH HOUSE	Falkville	AL
HTA FARLEY SWITCH HOUSE & TELE	Farley	AL
HTA FINLEY 161 KV SWITCH HOUSE	Finley	AL
HTA FLINT 46 KV SWITCH HOUSE	Flint	AL
HTA FULTONDALE 115 KV SWITCH HOUSE	Fultondale	AL
HTA GERALDINE 46 KV SWITCH HOUSE	Geraldine	AL
HTA GOOSE POND 161 KV SWITCH HOUSE	Scottsboro	AL
HTA GROVE OAK 46 KV SWITCH HOUSE	Grove Oak	AL
HTA GUNTERSVILLE 161 KV SWITCH HOUSE	Guntersville	AL
HTA HANCEVILLE SWITCH HOUSES	Hanceville	AL
HTA HANEY 161 KV SWITCH HOUSE	Haney	AL
HTA HARTSELLE SWITCH HOUSES	Hartselle	AL
HTA HENEGAR 161 KV SWITCH HOUSE	Henegar	AL
HTA HOLLY POND 46 KV SWITCH HOUSE	Holly Pond	AL
HTA HUNTSVILLE 161 KV SWITCH HOUSE	Huntsville	AL
HTA HUNTSVILLE SWITCH HOUSES & MICROWAVES	Huntsville	AL
HTA JONES CHAPEL 46 KV SWITCH HOUSE	Jones Chapel	AL
HTA LAMBERT CHAPEL MICROWAVE	Jackson Co.	AL
HTA LIMESTONE 500 KV SWITCH HOUSE	Limestone	AL
HTA MADISON 500 KV PUMP HOUSE	Madison	AL
HTA MONSANTO CHEMICAL 161 KV SWITCH HOUSE	Madison	AL
HTA MORGAN 46 KV SWITCH HOUSE	Morgan	AL
HTA MOULTON 161 KV SWITCH HOUSE	Moulton	AL
HTA MOULTON DISTRICT 46 KV SWITCH HOUSE	Moulton	AL
HTA MOUNT HOPE 46 KV SWITCH HOUSE	Mount Hope	AL
HTA MOUNT ROSZELL 46 KV SWITCH HOUSE	Mount Roszell	AL
HTA NANCE 161 KV SWITCH HOUSE	Courtland	AL

HTA PENCE 46 KV SWITCH HOUSE	Pence	AL
HTA POPLAR CREEK 46 KV SWITCH HOUSE	Poplar Creek	AL
HTA PRICEVILLE 161 KV SWITCH HOUSE	Priceville	AL
HTA PRICEVILLE 46 KV SWITCH HOUSE	Priceville	AL
HTA RED BAY 161 KV SWITCH HOUSE	Red Bay	AL
HTA REYNOLDS 161 KV SWITCH HOUSE	Lister Hill	AL
HTA SCOTTSBORO 161 KV SWITCH HOUSE	Scottsboro	AL
HTA SECTION 46 KV SWITCH HOUSE	Section	AL
HTA SHOALS 161 KV SWITCH HOUSE	Sheffield	AL
HTA SOUTH CULLMAN 46 KV SWITCH HOUSE	South Cullman	AL
HTA STEVENSON 161 KV SWITCH HOUSE	Stevenson	AL
HTA THORTON TOWN MICROWAVE	Rogersville	AL
HTA TOWN CREEK 46 KV SWITCH HOUSE	Town Creek	AL
HTA TRINITY 500 KV PUMP HOUSE	Trinity	AL
HTA TRINITY 500 KV SWITCH HOUSE	Decatur	AL
HTA TRINITY TELE	Trinity	AL
HTA UNION GROVE 46 KV SWITCH HOUSE	Union Grove	AL
HTA VALLEY CREEK 115 KV SWITCH HOUSE	Bessemer	AL
HTA WHEELER HYDRO PLANT 161 KV SWITCH HOUSE	Town Creek	AL
HTA WILSON MOUNTAIN RADIO	Muscle Shoals	AL
JCT FINGER	Finger	TN
JCT JACKSON 500 KV SWITCH HOUSE	Oakfield	TN
JCT LIGHTFOOT 69 KV SWITCH HOUSE	Lightfoot	TN
JCT NEW CASTLE MICROWAVE	New Castle	TN
JCT ROCK SPRINGS MICROWAVE	Rock Springs	TN
JCT SAVANNAH 161 KV SWITCH HOUSE	Savannah	TN
JCT SELMER 161KV SWITCH HOUSE	Selmer	TN
JCT SOUTH JACKSON	Jackson	TN
JCT TRACE PARK MICROWAVE	Trace Park	TN
JKT ADAMSVILLE 69 KV SWITCH HOUSE	Adamsville	TN
JKT ALAMO 161 KV SWITCH HOUSE	Alamo	TN
JKT BELLS 69 KV SWITCH HOUSE	Bells	TN
JKT BETHEL SPRINGS 69 KV SWITCH HOUSE	Bethel Springs	TN
JKT BOLIVAR SWITCH HOUSES	Bolivar	TN
JKT BROADVIEW MICROWAVE	Broadview	TN
JKT BROWNSVILLE 161 KV SWITCH HOUSE	Brownsville	TN
JKT CHESTERFIELD TELE	Chesterfield	TN
JKT DOUBLE BRIDGES 161 KV SWITCH HOUSE	N/A	TN
JKT DYERSBURG 161 KV SWITCH HOUSE	Dyersburg	TN
JKT HALLS 69 KV SWITCH HOUSE	Halls	TN
JKT HENDERSON 161 KV SWITCH HOUSE	Henderson	TN
JKT HUMBOLDT 161 KV SWITCH HOUSE	Humboldt	TN
JKT JACKS CREEK 46 KV SWITCH HOUSE	Jacks Creek	TN
JKT JACKSON SWITCH HOUSE	Jackson	TN
JKT LEXINGTON 69 KV SWITCH HOUSE	Lexington	TN
JKT LUKA SWITCH HOUSE & MICROWAVE	Luka	TN
JKT MIDDALE 69 KV SWITCH HOUSE	Middale	TN
JKT MILAN SWITCH HOUSES	Milan	TN
JKT MILLEDGEVILLE 69 KV SWITCH HOUSE	Milledgeville	TN
JKT MONTGOMERY DISTRICT 69 KV SWITCH HOUSE	Montgomery	TN
JKT MORRIS 69 KV SWITCH HOUSE	Morris	TN
JKT MT. PETER	N/A	TN

JKT NATIONAL GUARD	N/A	TN
JKT NEWCASTLE MICROWAVE	Newcastle	TN
JKT NIXON 69 KV SWITCH HOUSE	Nixson	TN
JKT NORTON HILL MICROWAVE	Norton Hill	TN
JKT PARSONS 69 KV SWITCH HOUSE	Parsons	TN
JKT RAMER 161 KV SWITCH HOUSE	Ramer	TN
JKT RIPLEY 161 KV SWITCH HOUSE	Ripley	TN
JKT ROLLINS 46 KV SWITCH HOUSE	Rollins	TN
JKT SAULSBURY 46 KV SWITCH HOUSE	Saulsbury	TN
JKT SELMER SWITCH HOUSE & TELE	Selmer	TN
JKT SOUTH JACKSON SWITCH HOUSE & MICROWAVE	Jackson	TN
JKT TOONE 46 KV SWITCH HOUSE	Toone	TN
JKT TRENTON 69 KV SWITCH HOUSE	Trenton	TN
JKT TULU 69 KV SWITCH HOUSE	Tulu	TN
JKT WHITEVILLE 46 KV SWITCH HOUSE	Whiteville	TN
JOF JOHNSONVILLE FOSSIL PLANT	New Johnsonville	TN
JOT BANNER ELK 69 KV SWITCH HOUSE	Banner Elk	TN
JOT BEAN STATION 69 KV SWITCH HOUSE	Bean Station	TN
JOT BLUFF CITY PUMP & SWITCH HOUSE	Bluff City	TN
JOT BOONE HYDRO PLANT 161 KV	Surgeon	TN
JOT BULLS GAP 69 KV SWITCH HOUSE	Bulls Gap	TN
JOT BUNKER HILL - GEN	Bunker Hill	TN
JOT BUNKER HILL MICROWAVE	Rogersville	TN
JOT CHURCH HILL SWITCH HOUSE & MICROWAVE	Church Hill	TN
JOT COLONIAL HEIGHTS 69 KV SWITCH HOUSE	Colonial Heights	TN
JOT COSBY 161 KV SWITCH HOUSE	Cosby	TN
JOT CRANBERRY 161 KV SWITCH HOUSE	Cranberry	TN
JOT DANDRIDGE 69 KV SWITCH HOUSE	Dandridge	TN
JOT EAST NEWPORT 69 KV SWITCH HOUSE	Newport	TN
JOT ELIZABETHTON SWITCH HOUSES	Elizabethton	TN
JOT ELIZABETHTON SWITCH HOUSES & TELE	Elizabethton	TN
JOT ERWIN 69 KV SWITCH HOUSE	Erwin	TN
JOT FITTS GAP 69 KV SWITCH HOUSE	Fitts Gap	TN
JOT FPH 69 KV SWITCH HOUSE	Kingsport	TN
JOT GRAY 69 KV SWITCH HOUSE	Gray	TN
JOT GREENEVILLE IND PARK 161 KV SWITCH HOUSE	Greeneville	TN
JOT GREENLAND 69 KV SWITCH HOUSE	Greenland	TN
JOT HAMPTON 161 KV SWITCH HOUSE	Hampton	TN
JOT HOLSTON RADIOS	Carter County	TN
JOT JOHN SEVIER FOSSIL PLANT 161 KV SWITCH HO	Rogersville	TN
JOT JOHNSON CITY SWITCH HOUSES	Johnson City	TN
JOT JONESBORO 69 KV SWITCH HOUSE	Jonesboro	TN
JOT JUG 69 KV SWITCH HOUSE	N/A	TN
JOT LOCUST SPRINGS 69 KV SWITCH HOUSE	Locust Springs	TN
JOT LOWLAND 69 KV SWITCH HOUSE	Lowland	TN
JOT MILLIGAN COLLEGE 69 KV SWITCH HOUSE	Milligan	TN
JOT MITCHELL 69 KV SWITCH HOUSE	Mitchell	TN
JOT MORRISTOWN SWITCH HOUSES & MICROWAVE	Morristown	TN
JOT MOUNTAIN CITY 69 KV SWITCH HOUSE	Mountain City	TN
JOT NEWLAND 69 KV SWITCH HOUSE	Newland	TN
JOT NEWPORT SWITCH HOUSES	Newport	TN
JOT NOLICHUCKY HYDRO PLANT 69 KV SWITCH HOUSE	N/A	TN

JOT NORTH BRISTOL 161 KV SWITCH HOUSE	Bristol	TN
JOT OAK GROVE 69 KV SWITCH HOUSE	Oak Grove	TN
JOT PANDORA 69 KV SWITCH HOUSE	Pandora	TN
JOT PINEY FLATS 69 KV SWITCH HOUSE	Piney Flats	TN
JOT POWER STORES - JCTY	N/A	TN
JOT ROGERSVILLE SWITCH HOUSE & MICROWAVE	Rogersville	TN
JOT RUTHTON 69 KV SWITCH HOUSE	Ruthton	TN
JOT RUTLEDGE 69 KV SWITCH HOUSE	Rutledge	TN
JOT SOUTH HOLSTON HYDRO PLANT 69 KV SWITCH HO	Bristol	TN
JOT SOUTHEAST JOHNSON CITY 69 KV SWITCH HOUSE	Johnson City	TN
JOT SULLIVAN 500 KV PUMP HOUSE	Piney Flats	TN
JOT SULLIVAN SWITCH HOUSE & COMMUNICATION	Sullivan	TN
JOT SURGIONSVILLE SWITCH HOUSES	Surgoinsville	TN
JOT TANGLEWOOD 69 KV SWITCH HOUSE	Tanglewood	TN
JOT TUSCULUM SWITCH HOUSE & TELE	Tusculum	TN
JOT WASHINGTON COLLEGE 69 KV SWITCH HOUSE	Jonesborough	TN
JOT WHITE PINE 161 KV SWITCH HOUSE	White Pine	TN
JOT WINNER 69 KV SWITCH HOUSE	Winner	TN
JSF JOHN SEVIER FOSSIL PLANT	Rogersville	TN
JTN ATOKA 161 KV SWITCH HOUSE	Atoka	TN
JTN CORDOVA 500 KV PUMP HOUSE	Cordova	TN
JTN COVINGTON COMM	Covington	TN
JTN DANCYVILLE 161 KV SWITCH HOUSE	Dancyville	TN
JTN FREEPORT 500 KV SWITCH HOUSE	Freeport	TN
JTN MASON 69 KV SWITCH HOUSE	Mason	TN
JTN MEMPHIS PUMP & SWITCH HOUSES & TELE	Memphis	TN
JTN MILLER SWITCH HOUSES	Miller	TN
KCT KEMPER CUMBUSTION TURBINE	Scooba	MS
KIF KINGSTON FOSSIL PLANT	Kingston	TN
KXT ALCOA TELE	Alcoa	TN
KXT ANDERSONVILLE SWITCH HOUSE & MICROWAVE	Andersonville	TN
KXT BLOCKHOUSE 69 KV SWITCH HOUSE	N/A	TN
KXT CARYVILLE 161 KV SWITCH HOUSE	Caryville	TN
KXT CHANDLER 161 KV SWITCH HOUSE	Chandler	TN
KXT CHEROKEE HYDRO PLANT 161 KV SWITCH HOUSE	Jefferson City	TN
KXT COMBS KNOB MICROWAVE	Combs Knob	TN
KXT DOUGLAS HYDRO PLANT 161 KV SWITCH HOUSE	Dandridge	TN
KXT DUNCAN 69 KV SWITCH HOUSE	Duncan	TN
KXT FNH SWITCH HOUSE & RADIO	Fontana Village	NC
KXT FTL PLANT 161 KV SWITCH HOUSE	N/A	TN
KXT GREEN TOP MOUNTAIN MICROWAVE	N/A	TN
KXT HARRIMAN SWITCH HOUSES & MICROWAVE	Harriman	TN
KXT HUNTSVILLE 161 KV STORAGE	Huntsville	TN
KXT JEFFERSON CITY 69 KV SWITCH HOUSE	Jefferson City	TN
KXT KINGSTON SWITCH HOUSES	Kingston	TN
KXT KNOXVILLE SWITCH HOUSES & MICROWAVE	Knoxville	TN
KXT LAFOLLETTE SWITCH HOUSES & TELE	Lafollette	TN
KXT LENOIR CITY 69 KV SWITCH HOUSE	Lenoir City	TN
KXT LONSDALE COMM	Lonsdale	TN
KXT MARYVILLE 69 KV SWITCH HOUSE	Maryville	TN
KXT NORRIS HYDRO PLANT 161 KV SWITCH HOUSE	Norris	TN
KXT NORTH GATLINBURG 161 KV SWITCH HOUSE	Gatlinburg	TN

KXT ONEIDA 69 KV SWITCH HOUSE	Oneida	TN
KXT PIGEON FORGE 161 KV SWITCH HOUSE	Pigeon Forge	TN
KXT PINEVILLE 161 KV SWITCH HOUSE	Pineville	TN
KXT POWER STORES - KNOX	Knoxville	TN
KXT SEVIERVILLE 69 KV SWITCH HOUSE	Sevierville	TN
KXT SHOOKES GAP	Shooks Gap	TN
KXT SPEEDWELL 69 KV SWITCH HOUSE	Speedwell	TN
KXT SUNBRIGHT 69 KV SWITCH HOUSE	Sunbright	TN
KXT TWIN TOWERS MICROWAVE	N/A	TN
KXT WARTBURG 69 KV SWITCH HOUSE	Wartburg	TN
KXT WESTBOURNE 69 KV SWITCH HOUSE	Westbourne	TN
KXT WILDWOOD 69 KV SWITCH HOUSE	Wildwood	TN
KYH KENTUCKY HYDRO PLANT	Gilbertsville	KY
LCT BROWNSVILLE PLANT	Brownsville	TN
MFK BENTON 161 KV SWITCH HOUSE	Benton	KY
MFK BENTON CITY 69 KV SWITCH HOUSE	Benton	KY
MFK CALVERT 161 KV SWITCH HOUSE & TELE	Calvert City	KY
MFK CLINTON 161 KV SWITCH HOUSE	Clinton	KY
MFK COLDWATER 69 KV SWITCH HOUSE	Coldwater	KY
MFK EAST MURRAY 69 KV SWITCH HOUSE	Murry	KY
MFK FULTON 69 KV SWITCH HOUSE	Fulton	KY
MFK GRAND RIVER RADIO/MICROWAVE	Grand Rivers	KY
MFK HARDIN 69 KV SWITCH HOUSE	Hardin	KY
MFK HICKMAN 69 KV SWITCH HOUSE & MICRO	Hickman	KY
MFK HICKORY GROVE 69 KV SWITCH HOUSE	Hickory Grove	KY
MFK HORNBEAK RADIO/MICROWAVE	Hornbeak	KY
MFK LYNN GROVE MICROWAVE	Lynn Grove	KY
MFK MARSHALL 500 KV SWITCH HOUSE	Calvert City	KY
MFK MARTIN STEAM PLANT	Martin	KY
MFK MARTIN SWITCH HOUSE & RADIO	Martin	TN
MFK MAYFIELD SWITCH HOUSES & RADIO	Mayfield	KY
MFK MILBURN 69 KV SWITCH HOUSE	Milburn	KY
MFK MOSCOW 161 KV SWITCH HOUSE	Moscow	KY
MFK MURRAY SWITCH HOUSES & TELE	Murray	KY
MFK NATIONAL CARBIDE 161 KV SWITCH HOUSE	Calvert City	KY
MFK PADUCAH SWITCH HOUSE & TELE	Paducah	KY
MFK PILOT OAK 69 KV SWITCH HOUSE	Pilot Oak	KY
MFK SHAWNEE REPEATER STATION	West Paducah	KY
MFK SOUTH CALVERT 161 KV SWITCH HOUSE	Calvert City	KY
MFK WEST MURRAY 69 KV SWITCH HOUSE	Murray	KY
MFT BEECH GROVE MICROWAVE	Beech Grove	TN
MFT EAST MCMINNVILLE 161 KV SWITCH HOUSE	McMinnville	TN
MFT EAST MURFREESBORO 161 KV SWITCH HOUSE	Murfreesboro	TN
MFT EAST SHELBYVILLE SWITCH HOUSES	Shelbyville	TN
MFT FRANKLIN 500 KV SWITCH HOUSE	Tullahoma	TN
MFT GREAT FALLS HYDRO PLANT 161 KV SWITCH HOU	Great Falls	TN
MFT LEBANON PUMP & SWITCH HOUSES	Lebanon	TN
MFT LIVINGSTON 161 KV SWITCH HOUSE	Livingston	TN
MFT MANCHESTER 161 KV SWITCH HOUSE	Manchester	TN
MFT MCMINNVILLE 161 KV SWITCH HOUSE	Mcminnville	TN
MFT MOBILE TRANSFORMER NO. 6 69 KV SWITCH HOU	N/A	TN
MFT MORRISON 161 KV SWITCH HOUSE	Morrison	TN

MFT MURFREESBORO SWITCH HOUSE & RADIO	Murfreesboro	TN
MFT RUSSELL HILL MICROWAVE	Russell Hill	TN
MFT SHELBYVILLE 46 KV SWITCH HOUSE	Shelbyville	TN
MFT SMITHVILLE SWITCH HOUSE & RADIO	Smithville	TN
MFT SMYRNA SWITCH HOUSE & TELE	Smyrna	TN
MFT SOUTH JACKSON 161 KV GENERATOR BLDG	Jackson	TN
MFT SPARTA SWITCH HOUSES	Sparta	TN
MFT TRIUNE 161 KV SWITCH HOUSE	Tuiune	TN
MFT TULLAHOMA 46 KV SWITCH HOUSE	Tullahoma	TN
MFT UNIONVILLE 46 KV SWITCH HOUSE	Unionville	TN
MFT WARTRACE 161 KV SWITCH HOUSE	Wartrace	TN
MFT WATERTOWN 161 KV SWITCH HOUSE	Watertown	TN
MFT WEST COOKEVILLE TELE	Cookeville	TN
MFT WILSON 500 KV SWITCH HOUSE	Mt. Juliet	TN
MFT WINCHESTER 161 KV SWITCH HOUSE	Winchester	TN
MFT WOODBURY 161 KV SWITCH HOUSE	Woodbury	TN
MHH MELTON HILL HYDRO PLANT	Oak Ridge	TN
NHD NOTTELY HYDRO PLANT	Blairsville	GA
NJH NICKAJACK HYDRO PLANT	So. Pittsburg	TN
NLC HYDRO PLANT	Greeneville	TN
NOH NORRIS HYDRO PLANT	Norris	TN
NSC ADAMS 69 KV SWITCH HOUSE	Adams	TN
NSC ASHLAND CITY 69 KV SWITCH HOUSE	Ashland City	TN
NSC BOGOTA 69 KV SWITCH HOUSE	Bogota	KY
NSC BRUCETON 69 KV SWITCH HOUSE	Bruceton	KY
NSC CAMDEN 161 KV SWITCH HOUSE	Camden	KY
NSC CENTRAL PIKE 161 KV SWITCH HOUSE	Central Pike	TN
NSC CHARLOTTE 69 KV SWITCH HOUSE	Charlotte	TN
NSC CLARKSVILLE SWITCH HOUSES & COMMUNICATION	Clarksville	TN
NSC CUMBERLAND CITY SWITCH HOUSES	Cumberland City	TN
NSC DAVIDSON 500 KV PUMP, SWITCH & TELE	Nashville	TN
NSC DICKSON SWITCH HOUSES & TELE	Dickson	TN
NSC DOVER 69 KV SWITCH HOUSE	Dover	TN
NSC DRESDEN 69 KV SWITCH HOUSE	Dresden	KY
NSC ERIN 161 KV SWITCH HOUSE	Erin	TN
NSC FRANKLIN 161 KV SWITCH HOUSE	Franklin	TN
NSC GLEASON 69 KV SWITCH HOUSE	Gleason	KY
NSC GREEN BRIER 69 KV SWITCH HOUSE	Green Brier	TN
NSC GREENFIELD 69 KV SWITCH HOUSE	Greenfield	KY
NSC HENDERSONVILLE 161 KV SWITCH HOUSE	H'Ville	TN
NSC HUNTINGDON SWITCH HOUSES	Huntingdon	KY
NSC KENTON 69 KV SWITCH HOUSE	Kenton	KY
NSC KINGSTON SPRINGS 161 KV SWITCH HOUSE	Kingston	TN
NSC LONE OAK 69 KV SWITCH HOUSE	Loan Oak	TN
NSC MCKENZIE 69 KV SWITCH HOUSE	McKenzie	KY
NSC MODEL MICROWAVE	N/A	TN
NSC MONTGOMERY PUMP HOUSE & RADIO	Montgomery	TN
NSC NASHVILLE SWITCH HOUSES & MICROWAVES	Nashville	TN
NSC NEW PROVIDENCE 69 KV SWITCH HOUSE	New Providence	TN
NSC NEWBERN 161 KV SWITCH HOUSE	Newbern	KY
NSC ORLINDA	Orlinda	TN
NSC PARIS 161 KV SWITCH HOUSE	Paris	KY

NSC PIN HOOK 500 KV SWITCH HOUSE & COMM	Pin Hook	TN
NSC PLEASANT VIEW 69 KV SWITCH HOUSE	Pleasant View	TN
NSC POMONA 161 KV SWITCH HOUSE	Pomona	TN
NSC RIDGELY 69 KV SWITCH HOUSE	Ridgely	KY
NSC RUTHERFORD 161 KV SWITCH HOUSE	Rutherford	KY
NSC SHADY GROVE 69 KV SWITCH HOUSE	Shady Grove	TN
NSC SPRINGFIELD SWITCH HOUSES & COMM	Springfield	TN
NSC TREZEVANT 69 KV SWITCH HOUSE	Trezevant	KY
NSC TROY 69 KV SWITCH HOUSE	Troy	KY
NSC UNION CITY SWITCH HOUSE & MICROWAVE	Union City	KY
NSC VANLEER MICROWAVE	Vanleer	TN
NSC WEAKLEY SWITCH HOUSE & MICROWAVE	Weakley	KY
NSC WHITE BLUFF 69 KV SWITCH HOUSE	White Bluff	TN
NSC WHITE HOUSE 69 KV SWITCH HOUSE	N/A	TN
OC1 HYDRO PLANT	Parksville	TN
OC2 HYDRO PLANT	Copperhill	TN
OC3 HYDRO PLANT	Copperhill	TN
PAF PARADISE FOSSIL PLANT	Drakesboro	KY
PHM ACKERMAN 69 KV SWITCH HOUSE	Ackerman	MS
PHM HANDLE 46 KV SWITCH HOUSE	Handle	MS
PHM LOUISVILLE 161 KV SWITCH HOUSE	Louisville	MS
PHM MACON 161 KV SWITCH HOUSE	Macon	MS
PHM NOXAPATER 161 KV SWITCH HOUSE	Noxapater	MS
PHM PHILADELPHIA SWITCH HOUSE & MICROWAVES	Philadelphia	MS
PHM SEBASTOPOLE 161 KV SWITCH HOUSE	Sebastopole	MS
PHM STURGIS DISTRICT 69 KV SWITCH HOUSE	Sturgis	MS
PKH PICKWICK HYDRO PLANT	Luka	TN
RAC ALTAMONT 69 KV SWITCH HOUSE	Altamont	TN
RAC COALMONT 161 KV SWITCH HOUSE	Coalmont	TN
RAC DUNLAP 69 KV SWITCH HOUSE	Dunlap	TN
RAC JASPER 161 KV SWITCH HOUSE	Jasper	TN
RAC KIMBALL 161 KV SWITCH HOUSE	Kimball	TN
RAC MONTEAGLE 69 KV SWITCH HOUSE	Monteagle	TN
RAC NICKAJACK HYDRO PLANT 161 KV SWITCH HOUSE	South Pittsburg	TN
RAC PALMER 69 KV SWITCH HOUSE	Palmer	TN
RAC PIKEVILLE 161 KV SWITCH HOUSE	Pikeville	TN
RAC RACCOON MOUNTAIN PUMPED STORAGE PLANT	Tiftonia	TN
SHF SHAWNEE FOSSIL PLANT	West Paducah	KY
SHH SOUTH HOLSTON HYDRO PLANT	Bristol	TN
SQN SEQUOYAH NUCLEAR PLANT	Soddy Daisy	TN
TFH TIMS FORD HYDRO PLANT	Winchester	TN
TPM AMORY SWITCH HOUSES	Amory	MS
TPM ASHLAND 46 KV SWITCH HOUSE	Ashland	MS
TPM BALDWYN 161 KV SWITCH HOUSE	Baldwyn	MS
TPM BATESVILLE 161 KV SWITCH HOUSE	Batesville	MS
TPM BELDEN 46 KV SWITCH HOUSE	Belden	MS
TPM BELMONT 46 KV SWITCH HOUSE	Belmont	MS
TPM BLUE MOUNTAIN 46 KV SWITCH HOUSE	Blue Mountain	MS
TPM BOONEVILLE SWITCH HOUSES	Booneville	MS
TPM BRUCE SWITCH HOUSES & MICROWAVE	Bruce	MS
TPM BURNSVILLE 161 KV SWITCH HOUSE	Burnsville	MS
TPM CHARLESTON 26 KV SWITCH HOUSE	Charleston	MS

TPM COFFEEVILLE 161 KV SWITCH HOUSE	Coffeeville	MS
TPM CORINTH SWITCH HOUSES	Corinth	MS
TPM CORNERSVILLE 46 KV SWITCH HOUSE	Ecru	MS
TPM ENTERPRISE 46 KV SWITCH HOUSE	Enterprise	MS
TPM FULTON SWITCH HOUSES	Fulton	MS
TPM GRAHAM - KIE 255	Graham	MS
TPM GRAHAM MICROWAVE	Union County	MS
TPM GUNTOWN 161 KV SWITCH HOUSE	Guntown	MS
TPM HICKORY FLAT 46 KV SWITCH HOUSE	Hickory Flat	MS
TPM HOLLY SPRINGS SWITCH HOUSE, MICRO. & TELE	Holly Springs	MS
TPM KIRKVILLE 46 KV SWITCH HOUSE	Kirkville	MS
TPM LAMAR ENG GEN	Lamar	MS
TPM LAMAR KIE 241	Lamar	MS
TPM NASA 161 KV SWITCH HOUSE	Iuka	MS
TPM NEW ALBANY SWITCH HOUSE & TELE	New Albany	MS
TPM NORTH SARDIS 161 KV SWITCH HOUSE	Sardis	MS
TPM NORTHEAST CORINTH 161 KV SWITCH HOUSE	Corinth	MS
TPM NORTHWEST TUPELO 46 KV SWITCH HOUSE	Tupelo	MS
TPM OKOLONA SWITCH HOUSES	Okolona	MS
TPM OXFORD 161 KV SWITCH HOUSE & TELE	Oxford	MS
TPM PONTOTOC 161 KV SWITCH HOUSE	Pontotoc	MS
TPM RIENZI 46 SWITCH HOUSE	Rienzi	MS
TPM RIPLEY 161 KV SWITCH HOUSE	Ripley	MS
TPM SARDIS 161 KV SWITCH HOUSE	Sardis	MS
TPM SHANNON 46 KV SWITCH HOUSE	Shannon	MS
TPM TERRAPIN MTN RADIO	Sardis	MS
TPM TISHOMINGO 46 KV SWITCH HOUSE	Tishomingo	MS
TPM TUPELO SWITCH HOUSES & COMMUNICATION	Tupelo	MS
TPM UNION SWITCH HOUSE & COMM	Union	MS
TPM WALNUT 46 KV SWITCH HOUSE	Walnut	MS
TPM WATER VALLEY 161 KV SWITCH HOUSE	Water Valley	MS
TPM WOODALL MOUNTAIN MICROWAVE	Iuka	MS
TPM YELLOW CREEK NP CONST 161 KV SWITCH HOUSE	N/A	MS
WAH WATAUGA HYDRO PLANT	Elizabethton	TN
WBF WATTS BAR FOSSIL PLANT	Spring City	TN
WBH WATTS BAR HYDRO PLANT	Spring City	TN
WBN WATTS BAR NUCLEAR PLANT	Spring City	TN
WCF WIDOWS CREEK FOSSIL PLANT	Bridgeport	AL
WEH WHEELER HYDRO PLANT	Town Creek	TN
WIH WILBUR HYDRO PLANT	Leighton	AL
WLH ABERDEEN SWITCH HOUSES & MICROWAVES	Aberdeen	MS
WLH CHEMICAL PLANT PS 46 KV SWITCH HOUSE	Lexington	AL
WLH LEIGHTON SWITCH HOUSES & RADIO	Leighton	AL
WLH TUSCUMBIA SWITCH HOUSES	Tuscumbia	AL
WLH WILSON HYDRO PLANT	Muscle Shoals	AL
WPM ARTESIA 46 KV SWITCH HOUSE	Bonicord	MS
WPM BOLIVAR	Caledonia	MS
WPM BONICORD	Bonicord	MS
WPM CALEDONIA 46 KV SWITCH HOUSE	Caledonia	MS
WPM CALHOUN CITY 161 KV SWITCH HOUSE	Covington	MS
WPM COLUMBUS AIR FORCE BASE 46 KV SWITCH HOUS	Clarksburg	MS
WPM COLUMBUS DISTRICT 46 KV SWITCH HOUSE	Columbus	MS

WPM COLUMBUS SWITCH HOUSES & MICROWAVES	Columbus	MS
WPM COUNCE 161 KV SWITCH HOUSE	Counce	TN
WPM DEKALB 161 KV SWITCH HOUSE	Dekalb	MS
WPM EAST COLUMBUS 161 KV SWITCH HOUSE	Columbus	MS
WPM EUPORA 161 KV SWITCH HOUSE	Eupora	MS
WPM HANDLE 161 KV SWITCH HOUSE	Handle	TN
WPM HICKORY VALLEY 161KV SWITCH HOUSE	Hickory Valley	MS
WPM HINZE RADIO/MICROWAVE	Louisville	MS
WPM HOOKER 46 KV SWITCH HOUSE	Hooker	MS
WPM HOUSTON 161 KV SWITCH HOUSE	HoustOn	MS
WPM LEAKE 161 KV SWITCH HOUSE	Carthage	MS
WPM LENA RADIO/MICROWAVE	Lena	MS
WPM LOUISVILLE 161 KV SWITCH HOUSE	Louisville	MS
WPM LOWNDES 500 KV SWITCH HOUSE	Lowndes	MS
WPM LUDLOW 46 KV SWITCH HOUSE	Ludlow	MS
WPM MABEN 46 KV SWITCH HOUSE	Maben	MS
WPM MIDWAY 161 KV SWITCH HOUSE	Louisville	MS
WPM MONROE COUNTY 46 KV SWITCH HOUSE	Monroe	MS
WPM OLIVE BRANCH 161 KV SWITCH HOUSE	Olive Branch	MS
WPM PHILADELPHIA	Philadelphia	MS
WPM PRAIRIE 46 KV SWITCH HOUSE	Prairie	MS
WPM SAND HILL MICROWAVE	Sand Hill	MS
WPM SCOTT 115 KV SWITCH HOUSE	Ludlow	MS
WPM STARKVILLE SWITCH HOUSES	Starkville	MS
WPM WESTPOINT SWITCH HOUSES & MICROWAVES	Westpoint	MS

Attachment 5

Tennessee Valley Authority
Fleet Strategy

Original: October 4, 2002
Revised: November 4, 2004
Revised: November 30, 2005
Revised: December 13, 2006
Revised: December 20, 2007

Tennessee Valley Authority Fleet Strategy

Executive Summary

TVA's mission includes generating and transmitting electric power to fulfill the needs of almost eight million users throughout its seven-state service territory, and specifically includes the major objective of selling power at rates as low as feasible. All TVA operations (including but not limited to 29 hydroelectric plants, 15 fossil-fueled plants, three nuclear plants, and 17,000 miles of transmission lines and facilities) are independently funded by power sales and by power revenue bonds (which are not obligations of, nor backed by, the United States); TVA receives no appropriated funds. Consistent with its mission requirements and its independent corporate status, TVA intends to comply with E.O. 13423 to the extent feasible. TVA has a long history of demonstrating stewardship toward energy reduction and fuel efficiency and will continue to work toward meeting fuel reduction and vehicle efficiency.

TVA's fleet strategy is to examine current vehicle use and replacement and where possible, choose replacement vehicles that are most efficient. TVA, as a major provider of electricity will continue to make use of alternative fueled vehicles (AFVs) including those that use electric power and acquire additional vehicles to meet requirements under the Energy Policy Act of 1992 and 2005 (EPAct92/05). TVA has recognized the value of hybrid electric vehicle technology in reducing fuel consumption, increasing versatility, and promoting electric propulsion and has included these vehicles in its fleet. TVA created a hybrid-fleet program in FY 2002 which is a partnership effort between TVA's Energy Management and Fleet Management organizations. In FY 2007, TVA added seven hybrid gas/electric vehicles and 61 AFV's to its fleet, bringing the total number of hybrid vehicles to 37 and AFV's to 132.

In FY 2007 TVA reported in its "Federal Agency Annual Report on Energy Management" the following data:

- Annual MPG Sedans – 27.1
- Annual MPG Light Trucks (4x2) – 16.3
- Annual MPG Light Trucks (4x4) – 14.0

I-1. TVA Petroleum Use

Petroleum use for covered vehicles will continue to be reported in FAST; however, gasoline and diesel fuel usage for FY 2007 and associated cost is listed below. This data includes fuel used by light duty, medium duty and heavy duty vehicles. The source of this data is the "TVA Energy Management Annual Report for FY 2007."

- Gasoline – 2.646 million gallons. Cost: $6.218 million
- Diesel Fuel – 587 thousand gallons. Cost: $1.514 million

To increase MPG for FY 2008, TVA plans to purchase more fuel efficient vehicles where possible, including additional hybrid vehicles. Fuel saving activities will be reported each year in the TVA Energy Management Annual Report.

I-2. TVA Fleet Characteristics and AFVs

TVA vehicles are spread across its seven-state service area. The TVA service area covers all of Tennessee and portions of six other states; therefore, employees are widely dispersed and often travel significant distances to attend meetings and presentations. TVA vehicles are used primarily outside of metropolitan statistical areas as described in EPAct92/05. Also, significantly for purposes of EPAct92/05 Alternative Fueled Vehicle requirements, TVA has no central fueling facilities in metropolitan statistical areas. Further, as coordinated with DOE, TVA vehicles used in maintaining the reliable operation of the power system appear to be within the intent of EPAct92/05 exemptions such as for emergency or off-road vehicles. Based on these facts, EPAct92/05 does not impose significant AFV purchase requirements on TVA but, TVA nonetheless does intend to continue to add to its current fleet of AFVs. Annual fleet characteristics for vehicles covered under EPAct92/05 will be reported in FAST.

I-3. TVA Fleet Strategy to Reduce Fuel Use and Increase Efficiency

TVA's fleet strategy is to replace vehicles with those that are more efficient where practical. To facilitate this effort, TVA has produced several guides accessible to employees as needed, which graphically compare the fuel use and operating costs of various types of vehicles.

TVA will continue to utilize various transportation options related to increasing efficiency including the use of personal vehicles, short term rental cars, and assigned vehicles. This information will also be made available to employees to determine the best method of transportation based on trip duration and miles driven.

TVA examines current vehicle use and replacement and, where possible, chooses replacement vehicles that are most efficient. TVA, as a major provider of electricity, will continue to make use of alternative fueled vehicles that use electric power and acquire additional vehicles to meet requirements under EPAct92/05. TVA recognizes the value of hybrid electric vehicle technology in reducing fuel consumption, increasing versatility, and promoting electric propulsion. TVA has added hybrid vehicles to its fleet and will continue to do so.

TVA's Agency Energy Management Committee (AEMC) facilitates 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, including fuel use and increased vehicle efficiency. This committee meets every other month.