

Tennessee Valley Authority Annual Report on Energy Management FY 2009

(Including Department of Energy
Reporting Guidance and Outline)

12-18-09

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Including - TVA Internal Energy Management Program (IEMP)

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.

In October, as a result of the issuance of E. O. 13514, TVA identified in a letter from its CEO, Tom Kilgore to both CEQ and OMB that it was naming Anda Ray as the agency Senior Sustainability Officer. TVA is undergoing significant changes in infrastructure and will follow-up in January with further information regarding the contact(s) for the agency on both E.O.s .

Allard J. Nayadley, Jr. is the designated Chief Energy Manager and manages the TVA Internal Energy Management Program (IEMP) under Customer Resources

David R. Zimmerman is the manager of Sustainable Design under Customer Resources.

- 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 as of December 15, 2009:

- **Chris Azar, Customer Resources**
- **Jack Brellenthin – Office of Environment & Research**
- **Tina Broyles – Office of Environment & Research**
- **Sherri Collins – Office of the General Counsel**
- **Annemarie S. Cooper – Government Relations**
- **Jonnie Cox – Facilities Management**
- **Joe Dempsey – Fossil Power Group**
- **David Dinse – Office of Environment & Research**
- **Laura Marie Duncan – Office of Environment & Research**
- **Kevin Dutton - Nuclear Power Group**
- **David Halicks – Fossil Power Group**

- **Janet Keith – Fleet Management**
- **James M Linder - Customer Resources**
- **Justin Maierhofer – Government Relations**
- **Mike McDowell – Nuclear Power Group**
- **Bill McNabb – Facilities Management**
- **Jim Miller - River Operations**
- **Allard Nayadley - Customer Resources**
- **Aaron Nix – Office of Environment & Research**
- **James Paris - Information Services**
- **Wayne Poppe – River Operations**
- **David Smith – Facilities Management**
- **Stacey Stewart - Financial Services**
- **Bruce E. Vincent - Fleet Services**
- **David Zimmerman – Customer Resources**

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. (See *Instructions for Implementing Executive Order 13423*, Section I, part D (5), http://www.ofee.gov/eo/eo13423_instructions.pdf).

TVA utilizes a “Winning Performance” process as a method to reward employees’ efforts toward meeting agency performance 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. TVA also has in place other policies and procedures which provide an avenue for employees to be recognized for their outstanding efforts including awards for Engineer of the Year, TVA Salute to Excellence and Environmental Excellence.

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. (See *Instructions for Implementing Executive Order 13423*, Section I part D (4)).

To the extent to which employees are responsible for activities that are related to the objectives of E.O. 13423 and the Energy Independence and Security Act of 2007, their job descriptions contain reflective line items, and their individual 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. This reporting is required by a section of Energy Policy Act of 1992 (42 U.S.C. § 8262c) that is still in effect. (Note: The expenditures and number of employees trained will be reported on the agency’s 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.

TVA uses various methods of employee training 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. TVA has continued their facility poster campaign which shows employees their impact on a facilities energy use compared to previous years. The campaign uses posters placed in the lobbies of major energy-using facilities which show monthly energy use and energy saving tips. TVA has expanded its energy awareness activities to its power plant sites which included banners and posters highlighting their individual results of the EISA 2007 surveys.

Energy management and associated environmental training is provided to managers and employees as needed. Energy efficiency and information updates on current federal requirements and regulations are tracked by a dedicated staff and are provided to employees, managers, and TVA customers as part of TVA's policy and planning processes. TVA also educates staff on energy and environmental related topics through the TVA Training and Development Organization. This FY 2009 TVA provided energy-environmental training to 1,344 employees at an estimated cost of \$80,600.

TVA provides products, services, and programs to better satisfy its customers. There are 158 distributors that resell TVA power to consumers—108 municipal utility companies and 50 cooperatives. The municipal utilities (munis) make up the largest block of CR customers. Cooperatives (co-ops) are customer-owned companies, many of which were originally formed to bring electricity to the farthest reaches of the Valley. The co-ops and the munis represent the wholesale base of TVA's business, accounting for about 83 percent of TVA's revenue. Question 5, "Other Energy and Related Environmental Initiatives," contains information on TVA initiatives for the customer.

TVA's Energy Efficiency & Demand Response (EEDR) organization is focused on new products that will allow TVA to achieve its demand-reduction goals going forward - including a 1400 MW reduction. The EEDR organization will operate on a larger scale to design and deliver products that will benefit customers, consumers and the TVA system. EEDR is comprised of five key areas: Efficiency Program Design; Energy Efficiency and Demand Response Delivery; End-Use Generation and Storage; Demand Response and Market and Program Analysis.

- 4. Showcase Facilities.** Highlight exemplary new or existing facilities that the agency has designated Showcase Facilities. Describe why the facilities are considered Showcase Facilities (i.e., discuss the facility design, the improvements made in energy or water efficiency, the use of renewable energy, etc.).

TVA's Chattanooga Office Complex (COC), a 1.2-million-square-foot office facility completed in 1986, integrates the use of passive energy strategies, energy management practices, environmental programs and activities, and aggressive energy reduction operation and maintenance efforts resulting in the complex remaining a model facility in TVA. It makes up approximately 13 percent of the total standard building square feet for TVA and was recognized for its energy and related environmental performance by receiving an ENERGY STAR[®] Building Label from the EPA and DOE.

- 5. Other Energy and Related Environmental Initiatives:** Highlight new or existing energy and related environmental initiatives that the agency has accomplished in FY 2009. Provide a brief description of these initiatives.

ENVIRONMENTAL PROGRAMS AND ACTIVITIES

In 2008 the TVA board of Directors approved an agency Environmental Policy and identified objectives in each of six areas: Climate Change Mitigation, Air Quality Improvement, Water Resources Improvement, Waste Minimization, Sustainable Land Use and Natural Resource Management. The COC is the agency's facility with the highest occupancy of TVA employees.

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 material reduction, affirmative procurement, waste minimization, and recycling.

Toxic Material Reduction:

TVA continues its efforts to reduce the amount of toxic chemicals used in its operation and maintenance activities for the building. The volume of toxic chemicals purchased in corporate office buildings has been reduced by over 90 percent since 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 includes EPA Act 05, EISA 2007 and other federal requirements. In FY 2009, TVA spent \$13.3 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 \$58 million on other recycled materials, meeting guidelines established under the Resource Conservation and Recovery Act (RCRA).

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
- 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 2009, TVA generated 22,542 tons of municipal solid waste in facilities including the COC. Of that solid waste, TVA capture and provided recyclers 777 metric tons of office recyclables which includes mixed paper, plastics, aluminum, cardboard and glass. 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.

Sustainable carpet is used throughout the COC. This carpet uses high performance backing made from one hundred percent recycled content. The carpet is installed as tiles facilitating removal and replacement of small worn or damaged sections of carpet instead of large areas. TVA has an agreement with the carpet manufacturer to recycle carpet removed from the COC, keeping used TVA facility carpet out of landfills in addition to saving an equivalent amount in raw materials.

Commercial and Industrial (C&I) Initiatives

TVA, in cooperation with the distributors of TVA power, continues to provide solutions to Tennessee Valley commercial and industrial customers for their energy-related problems, to encourage energy efficient operations, and slow power demand growth in the Valley. Presently, TVA offers two programs that target large industrial as well as large commercial customers: the Major Industrial Program and the Commercial Efficiency Advice and Incentive Program.

The Major Industrial Program is a holistic approach that identifies plant energy efficiency opportunities for industrial customers, both distributor served and served directly by TVA, who have a contract demand greater than 5 MW. This program leverages Department of Energy (DOE) funded Save Energy Now (SEN) assessments, which are offered at no cost to large manufacturers who meet DOE program qualifications and is supplemented as needed with onsite assessments performed by independent private sector professional engineers funded by TVA. In addition to advice, this program provides monetary incentives for customers who implement assessment recommendations. The Major Industrial Program is available Valley-wide to qualifying industrial customers and achieved 4.1 MW demand reductions during FY 2009, its first year of operation.

The Commercial Efficiency Advice and Incentive Program was piloted in 13 distributor areas in FY 2009 and will be expanded to additional areas in FY 2010. The program offers three levels of advice: the Initial Energy Assessment, the Onsite Energy Review, and the Detailed Energy Study. In addition, monetary incentives are offered to those customers that implement energy saving measures. This program targets large commercial facilities that have a power demand greater than 250kW including schools, government buildings, offices, hospitals, warehouses and other commercial segments. This program also provides pre and post installation validation of school energy efficiency projects to support the State of Tennessee Energy Efficient Schools Initiative.

C&I energy efficiency programs targeting other industrial customer segments and small business customers are now under development. Requests from commercial, industrial, and institutional customers for TVA energy related assistance continue to grow.

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 General Motors, Spring Hill automobile assembly plant. The team has achieved savings of over \$11.3 million since the beginning of the initiative nine years ago. This includes electricity demand reduction of 1.0 MW in FY 2009.

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

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 7% better than the minimum rating qualify as *energy right*[®] while those built 15 percent better qualify as *energy right*[®] Platinum or *energy right*[®] Platinum Certified (ENERGY STAR[®] certified). (FY 2009 installations: *energy right*[®] – 3,649 units; *energy right*[®] Platinum – 928 units; *energy right*[®] Platinum Certified – 1,347 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 2009 installations - 9,584)

Water Heater Plan promotes the installation of energy-efficient electric water heaters in homes and small businesses. (FY 2009 installations - 12,950)

New Manufactured Homes Plan promotes the installation of high efficiency 13 SEER heat pumps in new manufactured homes. TVA is also conducting an ENERGY STAR[®] Manufactured Homes pilot with MHRA (Manufactured Housing Research Alliance) to promote ENERGY STAR[®] homes in the Valley. (FY 2009 installations - 1,555 *energy right*[®] units, plus 8 ENERGY STAR[®] units)

In Concert With The Environment (in partnership with Aclara) 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 2009 audits - 544)

energy right Home e-valuation[®] (in partnership with Aclara) 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. This audit is available electronically or in hard copy. Additionally, each customer who completes the survey is mailed an energy conservation kit. (FY 2009 audits - 40,036)

In-Home Energy Evaluation is a basic walk through audit for residential customers. After the audit, the customer receives a detailed report including energy efficiency recommendations based on cost and payback. There is an initial fee for the evaluation; however, that amount is refunded if the customer spends the equivalent amount on recommended improvements.

Also, either cash incentives or convenient financing are available for recommended measures. (FY 2009 - 1,671 evaluations)

THE ENERGIZED GUYZ

TVA is partnering with local power distributors during the school year to get the message to young children about the importance of saving energy. During the 2009 school year, approximately 120,000 children at 300 elementary schools in the Tennessee Valley attended performances of “The Energized Guyz Daylight Savings Crime.” This is a new 25-minute play written especially to teach energy-saving actions to school children during 2009 and into the 2010 school year.

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 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 39.5 MW of demand reduction in FY 2009.

DEMAND RESPONSE

In FY 2008, TVA initiated a three year Demand Response pilot program with EnerNOC. The pilot program offers participants monthly payments for allowing a portion of their load to participate in a peak reduction event. This program provides TVA with reliable, cost-effective peak reduction, helps end-use customers to control energy costs, and TVA power distributors to promote economic development. Customers of participating Distributors that can provide at least 100 kW of load reduction are eligible for this program.

Since launching the TVA-EnerNOC Demand Response Pilot Program in June of 2008, TVA works in close partnership with EnerNOC, a supplier of demand response services, to market the program to Distributors and to end-use customers. As of September 30th 2009, the program has approximately 150 MW of capacity under control. Participation of over 350 facilities served by 80 different TVA Power Distributors delivers this controlled capacity reduction. TVA dispatches the program with 30 minutes notice for up to 80 hours per calendar year. Twice during the summer of 2009, the program reduced nearly 125 MW of demand for each event totaling 9 hours of interruptions. In addition to reducing demand during peak periods, the program enhances Distributor relationships with their end-use customers, since it provides participants with financial incentives and with access to web-based, real-time, five-minute energy data.

As of September 30, 2009, there are 80 TVA Power Distributors participating in the EnerNOC program which is capable of delivering 147.55 MW of capacity reduction. (FY09 totals 139 MW)

TVA and 12 Power Distributors currently participate in a Residential Direct Load Control (DLC) program that was initiated in the late 1970s that reduces TVA’s load during Peak Demand periods. When TVA operators deem load management necessary to meet native load

requirements, the automated Cycle and Save Program is initiated, and the system signals load cycling switches installed on residential water heaters throughout TVA's service territory. Load on the water heaters is cycled following a seasonal cycling schedule for either winter or summer. 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 approximately 19 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.

SMART GRID

TVA has plans to invest in distributor smart grid infrastructure to reduce peak and provide clarity around future investments.

Facilitating peak reduction (avoiding use at the most expensive times) in the Valley requires the cooperative effort of TVA, power distributors and end-use consumers of electricity. Peak-shaving is a key component of TVA's future resource mix. A smarter grid is the foundation of this cooperative effort.

GREEN POWER SWITCH[®] (GPS)

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

GENERATION PARTNERS

TVA launched the Generation Partners in support of Green Power Switch[®] in FY 2003. In the spring of 2009, the pilot was expanded to offer new incentives for homeowners and businesses that install renewable generation systems up to just less than 1 MW in capacity. This represents a significant growth in system size compared to the original maximum system size of 50 kW.

In addition, two new qualifying resources were added to the pilot- low-impact hydro, and biomass. Generation Partners purchases 100 percent of the green energy output at a rate of 12 cents per kilowatt-hour for solar and 3 cents per kilowatt-hour for other renewable generation as a premium payment above the retail electric rate, plus any fuel cost adjustments. Also, all new participants who sign up qualify for a \$1,000 incentive to help offset the start-up costs.

As of September 30, 2009, there were 125 solar installations and 7 wind installations for 806 kW in total capacity in TVA's Generation Partners. Eighty-three Power Distributors participate in the pilot, with more Power Distributors expected to sign-up to offer the product. Installations continue to support Green Power Switch.

TVA'S ENVIRONMENTAL POLICY, SCIENCE AND TECHNOLOGY

TVA 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.

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

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

EPS&T RECENT HIGHLIGHTS AND ACCOMPLISHMENTS

- **TVA was awarded a patent (patent number 6,751,959 B1) for the Advanced Low Temperature Power Cycle (ALTPC) technology. ALTPC technology 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, Incorporated (FMC) of Boston, Massachusetts executed a license agreement that gives FMC the exclusive license in the United States to build, own, operate, and market TVA's patented 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.**
- **Evaluating and demonstrating Demand Side Management (DSM) initiatives to prepare for future changes in the energy market place. Demonstrations underway include:**
 - **Near Zero Energy House research- TVA is continuing to work with Oak Ridge National Lab (ORNL) and the Electric Power Research Institute (EPRI) in testing three lab houses representing an ENERGY STAR® house (Base House - HERS Index 85); a high-efficiency Retrofit House (HERS Index 66); and a near-Zero Energy House (HERS Index 32). The three houses are being operated with simulated occupancy which includes controlling lighting, clothes washer, dryer, dish washer, refrigerator and freezer doors, plug loads, etc. The houses have approximately 100 sensors each which monitor temperatures, humidity, and branch circuit loads to evaluate the different envelope and equipment performance. The houses were completed to TVA/ORNL specifications in early 2009, and simulated occupancy started in June 1, 2009.**
 - **Four other lab houses are being constructed by the Zero Energy Building Research Alliance (ZEBR Alliance) in Oak Ridge, Tennessee. TVA is one of the partners funding this effort that will measure the performance of four different envelope designs. The envelope designs are structurally insulated panels (SIPS), advanced framing using 2x6 on 24 inch centers, double wall with phase change material mixed onto the insulation of one of the walls; and conventional framing with exterior insulation and finish system (EFIS). Two of the four houses are testing geothermal ground heat exchangers that utilize the foundation excavations and rainwater gardens. The third house uses a conventional vertical geothermal ground-heat exchanger and the last house uses a high-efficiency air-source heat pump. All four houses are scheduled for completion by the end of calendar year 2009.**

COMPUTER UPGRADES AND EFFICIENCY

TVA replaces older computers and monitors with more energy efficient models that use less energy. TVA is implementing advanced power management technology to reduce PC power consumption. TVA implements server technology that reduces the quantity of servers required, and the energy needs for the servers that are required.

- **PC Efficiency** - TVA replaced approximately 3,100 computers in FY 2009 with units having both ENERGY STAR[®] and Electronic Product Environmental Assessment Tool (EPEAT) Silver or Gold registrations. TVA standard PC systems purchased after July 1, 2009, incorporated the new ENERGY STAR[®] version 5.0 standards. TVA pursues additional energy efficiency by aggressively implementing the most efficient processor technologies.
- **Monitor Efficiency** - TVA maintains standardized monitor management processes that automatically suspend inactive displays. Monitors purchased in FY 2009 were LCD displays with ENERGY STAR[®] and EPEAT Silver registrations.
- **PC Advanced Power Management** – During FY 2009, TVA acquired enterprise software to comprehensively manage the power states of TVA PCs. TVA is on track to implement this enterprise wide project during calendar year 2010. PC Advanced Power Management uses software and hardware features to ensure PCs are turned off when not in use.
- **Server Virtualization** - TVA uses server virtualization to operate 431 servers on 46 hosts, a net reduction/avoidance of 385 servers. In virtualization, a single physical server is partitioned into multiple logical constructs that operate as independent servers while sharing the resources of the partitioned server.
- **Blade Server Technology Standard** – When a physical server is required, the TVA standard server is based on a blade server architecture. This architecture requires less power and generates less heat than traditional server architectures.

II. Energy Efficiency Performance. This section will highlight progress toward the performance metrics compiled and calculated in the Annual Energy Management Data Report. 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, E.O. 13423, and EISA.

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. To benchmark success, the AEMC utilizes many tools including the OMB Energy Scorecard and Internal Energy Management Program Database. 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

TVA incorporates sustainable practices and energy efficiency standards into new building designs. These designs consider the incorporation of technologies such as day lighting, passive solar heating, geothermal heat pumps, premium efficiency motors, demand reduction, 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.**
- **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 2009:

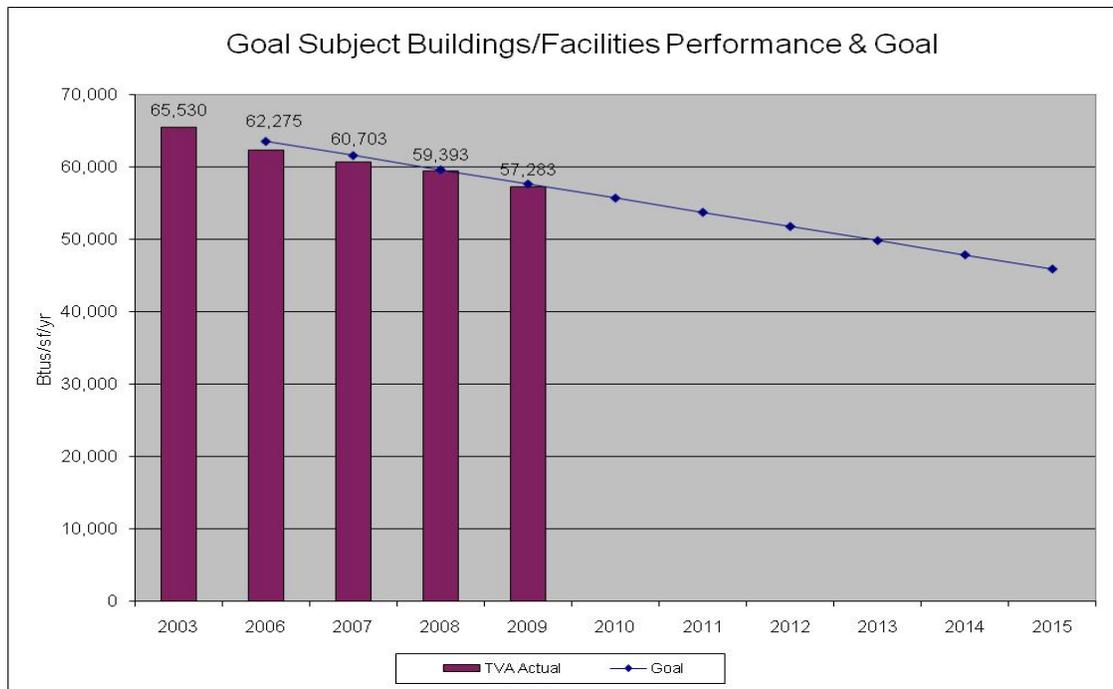
- **Recycle scrap metals, used oil, substation and communication station service batteries, and storm damaged or deteriorating steel structures**
- **Recycle expired fluorescent lamps**
- **Recycle or reuse waste material when feasible**
- **Educate employees on energy efficiency**
- **Encourage employees 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 re-lamping
- 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 (re-commissioning)
- 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
- Replace 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**
- **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 2009. Report the percent change from FY 2003 and from FY 2009. (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 ended FY 2009 with a Btu/GSF/Yr of 57,283 (including the renewable energy credit); this is a 12.6 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 2 contains a list of TVA's excluded facilities for FY 2009. The TVA Internal Energy Management Program is surveying many of these facilities to identify energy reduction opportunities and meet the covered facilities survey requirements under EISA 2007. In FY 2009, 4,705, 655 sq. ft. of excluded facilities were surveyed meeting the 25 percent goal. Energy Conservation Measures (ECM's) meeting the Life Cycle and Simple Payback (SPB) criteria were identified. These ECMs included lighting improvements, controls, water improvements, insulation and window replacement. The following is a list of projects developed in FY 2009 that meet the payback criteria related to energy/water efficiency and sustainability.

Agency Facility Number	Facility Name	Gross Square Footage (Thou.)	Annual Energy Use (Site Billion Btu)	1. Gross Square Footage Evaluated (Thou.)	2. Estimated Implementation Cost of Measure(s) (\$)	Annual Data				
						3a. Estimated Annual Energy Savings (Million Btu)	Estimated Kwh Savings	Estimated Kw Savings	3b. Estimated Annual Water Savings (Thou. Gallons)	3c. Estimated Annual Cost Savings (\$)
3645	PAF POWERHOUSE	1,823.000	128.85	1,823,000	\$ 1,038,450	7,978.7	2,338,428	247	681.0	\$ 118,852
3663	CUF POWERHOUSE	1,564.438	115.77	1,564,438	\$ 1,216,950	12,519.1	3,669,126	375	0.0	\$ 183,456
715	KIF POWERHOUSE	1,229.287	106.624	1,229,287	\$ 1,821,527	7,965.2	2,334,477	568	638.2	\$ 241,208
694	GUH POWERHOUSE/DAM	88.930	5.086	88,930	\$ 235,000	1,742.1	510,565	68	0	\$ 23,847
	TOTALS	4,705.655	356.33	4,705,655	\$ 4,311,927	30,205.1	8,852,596	1,258	1,319.2	\$ 567,363

POWER SYSTEM OPERATION EFFICIENCY

TVA's staff considers energy efficiency and environmental impacts for each project and activity. The following activities have been completed in FY 2009 or are planned for FY 2010.

- **Construction of New Transmission Lines (TLs):** 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. New transmission lines were constructed at several locations across the TVA region including Murfreesboro to E. Franklin, Columbus Primary to Columbus District, MS, North Lee to Booneville, MS, Widows Creek to Winchester, AL, Center Point to Tilton, GA, and Tilton to Resaca, GA. Projects in progress or planned for FY2010 include the Maury-Rutherford 500kV, Rutherford-Christiana, Rutherford-Alamaville, Catalpa Creek, MS, Resaca to Moss Lake, GA, Leake to Sebastopol, MS, Gallatin to Murfreesboro, TN, Huntsville to Oneida, TN, and New Albany-Ingomar.
- **In FY 2009, the Fontana to Santeetlah interconnection with Duke Power was rebuilt and expanded to double the interconnection capacity. There are no new interconnections planned for FY 2010.**
- **New TVA Substations/Breakers:** New substations/switching stations and equipment increase the reliability of the power system by reducing interruptions to area loads. New breaker installations placed in service during FY 2009 include Paradise, Montgomery, Peavine,

replacement of overstressed breakers at Colbert Fossil Plant and Fontana Hydro Plant, and new breakers at Monterey and Wellsprings. No new TVA substations were placed in service during FY 2009, but expansions were made at Montgomery. New substations planned in FY 2010 and beyond include a 500kV substation in Rutherford County, Tennessee and 500kV substation in Clay, MS. In addition, transformers were replaced at Burnsville, MS and Davidson, TN.

- **Transmission Line Upgrades:**
 - In FY 2009, line upgrades were completed for Marshall-Calvert #1 & #2, Johnsonville-Dickson, Gallatin-Compton Road and Barkley-Hopkinsville. This allowed for additional transmission capacity in these areas without requiring acquisition of new right-of-ways.
 - Work continues on TL upgrades in FY 2010 with planned projects including Widows Creek-Oglethorpe, Weakley-Lagoon Creek, Johnsonville – South Jackson, Kentucky Hydro Plant-Calvert #1, Watts Bar Nuclear – Bull Run, and Wheeler-Maury.
- **Delivery points:** Like new transmission lines, designing a system with sufficient connections to the bulk transmission system enables supply to consumers to be closer to the load center which enhances reliability and minimizes losses. A total of 21 new customer delivery points were placed in service during FY 2009. An additional 24 new customer delivery points are planned for FY 2010, including delivery points at Park City, N. Ooltewah, Center Point-Moss Lake, Jena, North Cowan, Wheeler Mountain and Volkswagen.
- **Work continues to replace obsolete or problematic equipment including breakers, switches, instrument transformers, and relays.** In FY 2009, relays were replaced with more efficient solid-state relays at Hiwassee Hydro Plant, Moccasin-Chickamauga 1 & 2, Marshall, KY, Cumberland Fossil Plant, and Bull Run Fossil Plant.

HYDRO EFFICIENCY

The table below accounts for both completed and on-going projects at TVA hydro plants in FY 2009. 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 thereby reducing the amount of carbon released into the atmosphere.

TVA's Hydro Modernization Program (HMOD) is of particular importance in terms of energy management. TVA's HMOD program began in 1992 to address reliability issues on all 95 units and increase capacity and efficiency on some portion of the 95 hydro units. As currently configured, the HMOD program is scheduled to be completed in 2030. To date, 57 hydro units have been completed. The capacity gain has been 560 MW and the average efficiency gain has been 4.8 percent. There are 38 units remaining in the HMOD program for reliability and/or capacity increases.

HYDRO ENERGY PROJECTS COMPLETED IN FY 2009

Plant Name	Project Name	Cost (\$000's)
Hydro System	Modernization program	6,275
Hydro System	Asset preservation/recovery projects	16,707

Hydro System	Regulatory/Commitment projects	1,322
Hydro System	Safety/fire protection projects	1,019
Hydro System	Miscellaneous small capital projects	2,389
	Total All Projects	27,712

NUCLEAR EFFICIENCY

TVA Nuclear considers energy efficiency and environmental impacts for each project and activity. The following is a list of energy management and sustainability projects completed in FY 2009, 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 2009

Plant Name	Project Name	Cost (000's)
Browns Ferry	Unit 3 Main Generator Rewind. Improves Generator efficiency.	18,388
Sequoyah	“B” Low Pressure Turbine Rotor Upgrade. Improves Turbine efficiency.	2,435
Sequoyah	“C” Low Pressure Turbine Rotor Upgrade. Improves Turbine efficiency.	1,674
Watts Bar	Utility Sewage Connection & Retire Existing Plant. Environmental impact.	436
Watts Bar	“C” Low Pressure Turbine Rotor Upgrade. Improves Turbine efficiency.	5,503
Watts Bar	Main Generator Core Torque and Re-Wedge. Improves Generator efficiency.	3,117
	Total All Projects	31,553

NUCLEAR ENERGY PROJECTS IN PROGRESS IN FY 2009, OR PLANNED FOR FUTURE IMPLEMENTATION

Plant Name	Project Name	Cost (000's)
Browns Ferry	Replace all PCB containing electrical devices. Environmental impact.	3,471
Browns Ferry	Increase Unit 2 and 3 electrical output by 110 MWe per Unit.	306,284
Browns Ferry	Increase Unit 1 electrical output by 110 MWe	33,200

Brown Ferry	Replace portions of the U2 Condenser Tube Cleaning System. Improves steam cycle efficiency (heat rate).	3,345
Brown Ferry	Replace portions of the U3 Condenser Tube Cleaning System. Improves steam cycle efficiency (heat rate).	3,501
Browns Ferry	Replace Unit 3 Control Bay Chillers. Removes ozone depleting refrigerant.	13,071
Browns Ferry	Off-Gas Chiller Replacement. Removes ozone depleting refrigerant.	5,525
Browns Ferry	Cooling Tower Reliability Improvement. Improves Cooling Tower efficiency.	50
Browns Ferry	Circulating Cooling Water Diffuser Repair. Environmental impact.	981
Browns Ferry	2A Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	8,200
Browns Ferry	2B Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	7,700
Browns Ferry	2C Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	8,785
Browns Ferry	3A Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	7,784
Browns Ferry	3B Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	8,040
Browns Ferry	3C Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	8,040
Browns Ferry	Purchase Critical Pump Motor Spares. Improves Motor efficiency.	5,126
Browns Ferry	Unit 1 Circulating Cooling Water Motor Replacement. Improves Motor efficiency.	4,650
Browns Ferry	Unit 3 Circulating Cooling Water Motor Replacement. Improves Motor efficiency.	4,950
Browns Ferry	Residual Heat Removal Motor Replacement. Improves Motor efficiency.	6,030
Browns Ferry	Residual Heat Removal Service Water Motor Replacement. Improves Motor efficiency.	1,680
Browns Ferry	Raw Cooling Water Motor Replacement. Improves Motor efficiency.	1,345
Browns Ferry	Control Rod Drive Motor Replacement. Improves Motor efficiency.	690
Browns Ferry	Containment Spray Motor Replacement. Improves Motor efficiency.	4,020
Sequoyah	Cooling Tower Lift Pump & Motor Replacement. Improves Motor efficiency.	1,200
Sequoyah	Spare Auxiliary Feedwater Pump Motor Replacement. Improves Motor efficiency.	420
Sequoyah	Main Generator Rewind. Improves Generator efficiency.	4,000

Sequoyah	Spare "A" Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	3,820
Sequoyah	Improve Unit 2 heat rate by replacing the Steam Generators	296,432
Sequoyah	PCB Transformer Replacement/ Retrofill. Environmental impact.	4,912
Sequoyah	Rebuild 6 essential raw cooling water pumps. Improves pump efficiency.	5,040
Sequoyah	Replace 480V Board Room Chiller. Removes ozone depleting refrigerant.	1,714
Sequoyah	Replacement of Glycol Chillers. Removes ozone depleting refrigerant.	8,135
Watts Bar	Rebuild 4 essential raw cooling water pumps. Improves pump efficiency.	5,395
Watts Bar	Replace safety related chillers. Removes ozone depleting refrigerant.	26,776
Watts Bar	Rewind/Refurbish Condenser Circulating Water Motors. Improves Motor efficiency.	320
Watts Bar	A Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	4,501
Watts Bar	B Low Pressure Turbine Rotor Modification & Blade Replacement. Improves Turbine efficiency.	4,243
Watts Bar	Convert non-safety related Aux Bldg. General Vent Chillers to non-ozone depleting refrigerants.	963
Watts Bar	Complete and startup Watts Bar Unit 2 (1200 MWe). Provides additional capacity.	2,490,000
Watts Bar	Cooling Tower Fill Retirement/ Replacement. Improves Cooling Tower efficiency.	1,500
	Total All Projects	3,305,839

TVA is evaluating the possibility of completing one of its nuclear generation units at its Bellefonte, Alabama site. The site manager has made a commitment towards obtaining United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) certification for new permanent buildings constructed on site plus obtaining LEED certification for many of the existing buildings that will be renovated. Other items being considered to create a more sustainable site are:

- Use of low emission construction materials, CCPs (Coal combustion products), and photovoltaic electric vehicle recharging stations
- Energy efficiency - lighting, HVAC along with efficiency improvements to other building systems
- Open spaces - avoid or minimize development of the undisturbed portions of the site
- Provide the necessary facilities and equipment for an efficient site recycling program

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 coal-fired power plants, combined cycle plants and combustion turbine sites. Improving system-wide performance means fewer generating unit startups which improves unit operational efficiency and helps reduce the overall delivered cost of power.

Several fossil plants in the fleet marked achievements in plant performance indicators. Although the fossil system generation for fiscal year (FY) 2009 was down from historical levels, FPG still had five units that established new individual continuous run records. The run of 893.9 days on Colbert Unit 1 received a national award from EUCG for the longest run by a sub-critical unit during 2008. This was the second longest run ever by a TVA coal-fired unit. Shawnee Fossil Plant had two units that broke individual unit run records that were more than 40 years old. The Shawnee Unit 9 run of 625.9 days was the fifth longest ever for a TVA coal-fired unit.

The Tennessee Valley enjoys cleaner air today than it has in many decades, thanks in part to TVA's continued commitment to reduce its emissions and their impact on the environment. TVA has spent \$5.1 billion to date on clean air modifications at its coal-fired power plants. Ozone season nitrogen oxide (NOx) emissions for fiscal year 2009 were 22,843 tons. This is the lowest level for ozone season emissions since all 59 fossil units have been in service and represents a 90 percent reduction from the 1995 ozone season emissions. TVA's SO₂ emissions also continue to decline and in FY 2009 were the lowest since SO₂ emissions peaked in 1977. SO₂ emissions in FY 2009 represent a 90 percent reduction relative to 1977. TVA's environmental efforts are continuing via ongoing and future projects and include the addition of technologies to achieve further reductions in NOx 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 2009. These projects included heat rate improvements, maintaining plant availability, reducing energy consumption, lowering maintenance costs, environmental stewardship, and increasing overall efficiency.

FOSSIL PROJECTS COMPLETED IN FY 2009:

Plant	Project Name	Cost (000's)
Allen	ALF-Barge Unloader Structural Upgrade	\$3,924
Allen	ALF-U2 Replace Boiler Reheater Outlet	\$7,200
Bull Run	BRF-Replace Superheat Outlet Headers	\$16,301
Bull Run	BRF-Replace IP Turbine Rotor	\$7,253
Bull Run	BRF- Replace SCR Expansion Joints	\$1,409
Cumberland	CUF-U1 Refurbish IP Turbine	\$8,833
Paradise	PAF-U3 Replace 1A & 1B HP Heaters	\$2,674
Widows Creek	WCF-U7 Replace Precipitator Controls	\$1,989
Widows Creek	WCF-U7 Replace LP Turbine	\$26,312
Widows Creek	WCF-U7 Replace Scrubber Controls	\$3,448
Widows Creek	WCF-U7 Replace Scrubber Booster Fans	\$14,018
Widows Creek	WCF-U7 Replace Air Preheater Baskets	\$2,756
	Total All Projects	\$96,117

FOSSIL PROJECTS ONGOING OR FUTURE PROJECTS:

Plant	Project Name	Budget (000's)
Cumberland	CUF-U2 Replace Precipitator Controls	\$2,385
Cumberland	CUF-U2 Replace Scrubber FRP Spray Headers	\$10,612
Cumberland	CUF-U2 Replace Catalyst Layer	\$5,983
Johnsonville	JOJ-U8 Replace Combustion Controls	\$2,665
Kingston	KIF-U5 Precipitator Improvements	\$1,119
Kingston	KIF-U6 Precipitator Improvements	\$1,119
Kingston	KIF-U6 Add Catalyst Layer	\$942
Paradise	PAF-U1 Replace Air Preheater	\$7,830
Paradise	PAF-U2 Replace Scrubber Controls	\$4,164
Paradise	PAF-U3 Replace Cyclones	\$63,980
Shawnee	SHF-U7 Re-Bag Baghouse	\$879
Shawnee	SHF-U8 Re-Bag Baghouse	\$881
Widows Creek	WCF-U8 Opacity Reduction Project	\$31,290
Widows Creek	WCF-U8 Add Catalyst Layer	\$2,357
	Total All Projects	\$136,206

Kingston Fossil Plant Ash Spill

On Monday, December 22, 2008, TVA experienced a catastrophic failure of its ash storage cell at the Kingston Fossil Plant, resulting in the release of 5.4 million cubic yards of fly ash and bottom ash onto approximately 300 acres of adjacent property, including the Swan Pond Embayment, the shoreline and into the Emory River. The appropriate agencies were notified, including the Environmental Protection Agency (EPA), Tennessee Department of Environment and Conservation (TDEC), and the State and County Emergency Management Agencies. A Unified Incident Command System was initiated to manage the incident. On January 11, 2009, the EPA turned command over to TVA as the lead federal agency and left the site. In February 2009, TVA contracted with Jacobs Engineering as its primary contractor to manage and perform the site recovery work. On April 1, 2009, TVA documented that the site was a CERCLA site (Figure 2). On May 12, 2009, TVA and EPA signed an Agreement on Consent and EPA returned to the site. TVA is on schedule to remove the ash out of the river by the spring of 2010 and the entire physically impacted area restored by 2013.

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 the 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 EPA05 and EISA 2007. 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 2009, TVA added four hybrid gas/electric vehicles and 27 AFV's to its fleet bringing the total number of hybrid vehicles to 47 and AFV's to 201. For more information, see the TVA Fleet Strategy. (Attachment 4)

During FY 2009, TVA gasoline fuel usage under FAST (Federal Automotive Statistical Tool) reporting increased by 2.7 percent compared to FY 2008, while diesel fuel use under FAST reporting increased by 5.5 percent compared to FY 2008. For more information see Attachment 1.

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 continues its practice in FY 2009 of implementing information technologies 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 use of such technologies increased in FY 2009.

- Video Conference Rooms - TVA has 58 video conference rooms throughout the Tennessee Valley service area. Approximately 1,801 video conferences were held in FY 2009, an increase of 22 percent from FY 2007, 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 2,636 such meetings were held monthly using this system, an increase of 6 percent from FY 2007.

HEAVY EQUIPMENT

TVA's Heavy Equipment 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.

TVA has begun to use super high-efficiency air filters on Caterpillar equipment as available. The cost is about 15-20% higher, but the life of the filters is about 300% 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 2009.

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
08	10,115,925	32,345,951	(17)	25
09	9,683,301	32,916,339	(21)	27

*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*		Sedans Base Yr. 75	Trucks*	
		Base Yr. 79			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
08	27.3	15.4	13.2	81	33	61
09	27.8	14.7	12.7	84	27	55

*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 also utilizes electric vehicles at its plant sites to reduce fuel consumption and emissions. TVA currently has 209 electric vehicles from manufacturers including GEM, EZ GO, and Club Car.

- 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.

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://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf.

CLEAN ENERGY

TVA is striving to achieve a 50% clean generation portfolio by 2020 in accordance with the TVA Board of Director's environmental policy decision.

RENEWABLE ENERGY PURCHASES

In April of 2009, the TVA Board authorized the purchase of up to 2,000 MW of renewable energy at prices competitive with forecasted electricity market purchases. In October 2009, TVA entered into two contracts for the purchase of up to 450 MW of wind energy from North and South Dakota beginning in 2012. TVA expects to enter into additional contracts in early 2010.

GREEN POWER SWITCH[®] (GPS)

TVA and 12 public power companies launched GPS on Earth Day, April 22, 2000. GPS was the first green power program 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 at a wastewater treatment plant in Memphis, Tennessee. This 8 MW methane gas project is located at TVA's Allen Fossil plant. Fifteen solar generating facilities are presently operating in Tennessee, Kentucky, Alabama, Virginia and Mississippi. A commercial scale wind power generation site, including 18 wind turbines, operates on Buffalo Mountain in Anderson County, Tennessee. The capacity of these wind units is 29 MW.

Under the GPS program, residential customers can purchase green power in blocks of 150 kilowatt-hours each, at a cost of an additional \$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 environmental benefits are equivalent to planting an acre of trees in the Tennessee Valley.

As of September 30, 2009, residential customers were purchasing 24,515 blocks and business customers were purchasing 17,268 blocks for a total of 41,783 purchased blocks of green power. For the fiscal year, residential and commercial customers purchased a total of 87,306 MWh of green power.

As of September 30, 2009, there were 113 TVA Power Distributors participating in the GPS program throughout the Tennessee Valley. TVA plans to continue expanding the GPS program.

RENEWABLE ENERGY TECHNOLOGY MONITORING

TVA identifies and evaluates emerging renewable energy technologies in support of its strategic needs. The renewable energy program provides information to inform 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.

Project plans include the evaluation of biomass repowering and cofiring options, as well as testing emerging biomass feedstocks such as torrefied woody biomass. Additionally, TVA will be conducting sustainable biomass resource assessments to determine quantities and approximate cost of biomass resources in specific woodsheds. TVA will be collaborating with a number of partners including EPRI, national laboratories, and other utilities to evaluate and test innovative technologies such as concentrated solar thermal integration and waste heat and combined heat and power technologies.

- 1. Self-generated renewable energy:** Summarize agency activities and highlight specific recent projects related to energy use from electricity self-generated from renewable sources and renewable energy thermal projects. Also discuss energy generated on Federal or Indian lands, but which may be sold to other parties.

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 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 2009 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://www1.eere.energy.gov/femp/pdfs/water_guidance.pdf

During FY 2009, energy surveys including water were conducted at multiple TVA sites covering 4.7 million square feet. TVA consumed 711.2 million gallons of potable water in FY 2009 with an estimated cost of \$2.7 million. These numbers include water consumption from excluded buildings (see Attachment 2).

TVA considers water management plans as part of its operation and maintenance activities. As part of these activities, more than 274 facilities have been covered, representing over 4.3 million GSF. To date, and as required by EISA 2007, TVA has uncovered projects, from covered facilities surveyed, with a potential water savings of 1.32 million gallons.

In addition to TVA's internal water saving measures, TVA is involved projects designed to support efforts to reduce water resource impacts. These projects are being jointly funded and/or managed by TVA and include: Identification of technologies to increase water use efficiency and water conservation (EPRI); and Alternative water supply and use opportunities (e.g. using POTW grey water).

- 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. Progress will be measured based on the percentage of appropriate buildings metered and the percentage 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 2009, agencies will be required to report progress on both buildings with standard meters and buildings with advanced meters as well as the total number of buildings for which separate electric meters are appropriate. Agencies should describe progress made in FY 2009 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 2009. Meters were installed in 10 Buildings in FY 2009 at a cost of \$38,000.

- 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, for which designs were started since the beginning of FY 2007 (began since October 1, 2006), and
2. a statement specifying whether the Federal buildings are expected to meet or exceed the Federal building efficiency standards.
3. A template for listing all new Federal building designs initiated since FY 2007 is included as a separate worksheet to the Annual Energy Management Data Report workbook. (Note: Only new buildings which *began the design phase* after the beginning of FY 2007 need to be listed. Buildings for which construction was completed in FY 2007 and after do not need to be listed if they were designed prior to FY 2007.)

During FY 2009, no new buildings were constructed by TVA.

- III. IMPLEMENTATION HIGHLIGHTS OF FY 2009.** 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 2009:

- A. Life-Cycle Cost Analysis
- B. Retrofits and Capital Improvement Projects
- C. Use of Performance Contracts
 - o Energy-Savings Performance Contracts (ESPCs)
 - o 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 use on on-site renewable energy resources and combined cooling, heating, and power systems

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 ensures energy and sustainable requirements are considered.

RENOVATION - TVA takes advantage of renovation activities by incorporating energy efficiency and sustainability into spaces that are being reconfigured.

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 4.

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 EPA Act 05, EISA 2007, E.O. 13423 and TVA's Memorandum of Understanding with the EPA. During FY 2009, TVA surveyed 11 covered facilities accounting for 8,239,163 square feet.

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 2009, 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 2009, TVA did not design or build any major buildings (those that would use \$40,000/year or more energy use). Design was started on two new buildings, but was not completed.

In FY 2009, TVA completed a detailed sustainable evaluation on its 690,000 square foot Knoxville Office Complex. Applying the Sustainable Guiding Principles to this facility, TVA plans to begin implementation on cost-effective projects in FY 2010.

TVA is incorporating sustainable design criteria into major renovation and new construction efforts. TVA reviews 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, low VOC finishes and biobased materials
- 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 buildings program under TVA's IEMP.

TVA continues to buy materials that have positive environmental qualities and include those that meet RCRA, EPA Act 05, EISA 2007 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.

TVA plans to retrofit its Knoxville Office Complex and Chattanooga Office Complex which represent 21% of its goal subject building square footage to meet the required 15% retrofit using the “Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings.”

The TVA Agency Energy Management Committee will be responsible for oversight of the implementation of all sustainable, energy and water requirements. All of these efforts are being done as part of an agency sustainable program under TVA’s IEMP.

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 USE ON SITE RENEWABLE ENERGY RESOURCES AND COMBINED COOLING HEATING AND POWER SYSTEMS:

TVA is an electric utility; however, the use of distributed generation, where applicable, is used or considered for use.

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

A. FY 2009 Annual Energy Management Data Report: A blank Data Report form and instructions for completing the form are included as Attachment 3 of the Guidance. Also include Data Reports for revisions to past years’ energy data along with an explanation.

B. Excluded Facilities Inventory: 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.

Attachments:

- 1) Attachment 1 - Annual Energy Management Data Report FY 2009 (electronic file “Attachment_1_DataReport_12-09.xls”)
- 2) Attachment 2 - Excluded Facility Inventory FY 2009 (electronic file “Attachment_2_Excluded_Facility_Inventory_12-09.xls”)
- 3) Attachment 3 - Reporting Units and Conversion Factors for Federal Energy Management Reporting (electronic file “Attachment_3_Conversion_Factors_12-09.doc”)
- 4) Attachment 4 - TVA Fleet Strategy FY 2009 (electronic file “Attachment_4_Fleet_Strategy_12-09.docx”)

Tennessee Valley Authority FY 2009 Energy Management Performance Summary

Goal Performance

Energy Management Requirement	FY 2003 Btu/GSF	FY 2009 Btu/GSF	Percent Change 2003 - 2009	FY 2009 Goal Target
Reduction in energy intensity in facilities subject to the NECPA/E.O. 13423 goals	65,530	57,283	-12.6%	-12.0%

Renewable Energy Requirement	Renewable Electricity Use (MWH)	Total Electricity Use (MWH)	Percentage	FY 2009 Goal Target
Eligible renewable electricity use as a percentage of total electricity use	39,265.6	523,546.7	7.5%	3.0%

Water Intensity Reduction Goal	FY 2007 Gallon/GSF	FY 2009 Gallon/GSF	Percent Change 2007 - 2009	FY 2009 Goal Target
Reduction in potable water consumption intensity	26.2	25.0	-4.5%	-4.0%

Metering of Electricity Use	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative % of Appropriate Buildings Metered	FY 2012 Goal Target
Standard Electricity Meters in FY 2009	15	100.0%	29.4%	100%
Advanced Electricity Meters in FY 2009	20	34.0%	39.2%	Maximum Extent Practicable
Total Electricity Meters in FY 2009	35	134.0%	68.6%	

Federal Building Energy Efficiency Standards	Percent of New Building Designs	FY 2007 forward Goal Target
Percent of new building designs started since beginning of FY 2007 that are 30 percent more energy efficient than relevant code, where life-cycle cost effective:	100%	100%

Investments in Energy and Water Management

Sources of Investment	Investment Value (Thou. \$)	Anticipated Annual Savings (Million Btu)
Direct obligations for facility energy efficiency improvements	\$2,321.3	17,388.4
Investment value of ESPC Task/Delivery Orders awarded in fiscal year	\$0.0	0.0
Investment value of UESC Task/Delivery Orders awarded in fiscal year	\$0.0	0.0
Total	\$2,321.3	17,388.4

	Percentage
Total investment as a percentage of total facility energy costs	8.6%
Financed (ESPC/UESC) investment as a percentage of total facility energy costs	0.0%

FY 2009 ENERGY MANAGEMENT DATA REPORT

Agency: Tennessee Valley Authority
 Date: 12/18/2009

Prepared by: Al Nayadley
 Phone: 423-751-7360

PART 1: ENERGY/WATER CONSUMPTION AND COST DATA

1-1. NECPA/E.O. 13423 Goal Subject Buildings (1)

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Unit Cost (\$)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions (MTCO ₂ e)	
Electricity	MWH	150,228.5	\$8,195.9	\$0.05 /kWh	512.58	1,780.2	96,770	
Fuel Oil	Thou. Gal.	13.9	\$33.4	\$2.40 /gallon	1.9	1.9	141	
Natural Gas	Thou. Cubic Ft.	2,402.9	\$35.5	\$14.77 /Thou Cu Ft	2.5	2.5	132	
LPG/Propane	Thou. Gal.	16.9	\$40.3	\$2.38 /gallon	1.6	1.6	101	
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	0	
Purch. Renew. Electric.	MWH	1,170.0	\$31.2	\$0.03 /kWh	4.0			
Purch. Renew. Other	BBtu	0.0	\$0.0	#DIV/0! /MMBtu	0.0			
		Total Costs:	\$8,336.3		Total:	522.6	1,786.2	97,144
FY 2009 Goal Subject Buildings Gross Square Feet (Thousands)		9,053.2			Btu/GSF:	57,724	197,303	
Goal Subject Buildings FY 2003 Baseline (Btu/GSF)		65,530			Btu/GSF w/ RE Purchase Credit:	57,283		
					Btu/GSF w/ RE & Source Btu Credit:	57,283		

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

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Unit Cost (\$)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions (MTCO ₂ e)	
Electricity	MWH	372,148.2	\$18,607.4	\$0.05 /kWh	1,269.8	4,410.0	239,720	
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	0	
Purch. Renew. Electric.	MWH	0.0	\$0.0	#DIV/0! /kWh	0.0			
Purch. Renew. Other	BBtu	0.0	\$0.0	#DIV/0! /MMBtu	0.0			
		Total Costs:	\$18,607.4		Total:	1,269.8	4,410.0	239,720
FY 2009 Excluded Facilities Gross Square Feet (Thousands)		19,365.8			Btu/GSF:	65,568	227,719	
Goal Excluded Facilities FY 2003 Baseline (Btu/GSF)		65,417			Btu/GSF w/ RE Purchase Credit:	65,568		
					Btu/GSF w/ RE & Source Btu Credit:	65,568		

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.	6.9	\$15.8	\$2.29 /gallon	0.9	61
Diesel-Distillate	Thou. Gal.	603.1	\$1,447.5	\$2.40 /gallon	83.7	6,119
LPG/Propane	Thou. Gal.	0.0	\$0.0	#DIV/0! /gallon	0.0	0
Aviation Gasoline	Thou. Gal.	0.0	\$0.0	#DIV/0! /gallon	0.0	0
Jet Fuel	Thou. Gal.	64.8	\$263.7	\$4.07 /gallon	8.4	597
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	0
Total Costs:			\$1,727.0		92.9	6,777

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	560,983.8	\$1,569,259.0	70.1
Electric	GEG	0.0	\$0.0	0.0
E-85	GEG	5,585.0	\$8,392.0	0.7
Gasoline	GEG	2,682,864.0	\$5,707,277.0	335.4
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	3,249,432.8	\$7,284,928.0	406.2

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. Include projects that did not retain RECs if they qualify under the grandfather clause.)

Renewable energy project types in service during FY 2009, 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 <i>New Solar</i> projects (MWH)	0	30.0	0.0
Electricity from <i>New Wind</i> projects (MWH)	0	0.0	0.0
Electricity from <i>New Biomass</i> projects (MWH)	0	0.0	0.0
Electricity from <i>New Landfill Gas</i> projects (MWH)	0	0.0	0.0
Electricity from <i>New Geothermal</i> projects (MWH)	0	0.0	0.0
Electricity from <i>New Hydro/Ocean</i> projects (MWH)	0	16,982.8	16,982.8
Electricity from <i>Old Solar</i> projects (MWH)	0	0.0	0.0
Electricity from <i>Old Wind</i> projects (MWH)	0	0.0	0.0
Electricity from <i>Old Biomass</i> projects (MWH)	0	0.0	0.0
Electricity from <i>Old Landfill Gas</i> projects (MWH)	0	0.0	0.0
Electricity from <i>Old Geothermal</i> projects (MWH)	0	0.0	0.0
Electricity from <i>Old Hydro/Ocean</i> projects (MWH)	0	4,100.0	4,100.0
Natural Gas from <i>New Landfill/Biomass</i> projects (Million Btu)	0	0.0	0.0
Renewable Thermal Energy from <i>New</i> projects (Million Btu)	0	0.0	0.0
Other <i>New</i> Renewable Energy (<i>Specify Type</i>) (Million Btu)	0	0.0	0.0
Natural Gas from <i>Old Landfill/Biomass</i> projects (Million Btu)	0	0.0	0.0
Renewable Thermal Energy from <i>Old</i> projects (Million Btu)	0	0.0	0.0
Other <i>Old</i> Renewable Energy (<i>Specify Type</i>) (Million Btu)	0	0.0	0.0
Total New Renewable Electricity (MWH)	0	17,012.8	16,982.8
Total Old Renewable Electricity (MWH)	0	4,100.0	
Total New Non-Electric Renewable Energy (Million Btu)	0	0.0	
Total Old Non-Electric Renewable Energy (Million Btu)	0	0.0	
Total Renewable Energy Generation (Million Btu)	0	72,036.9	

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 2009

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

Type of Renewable Energy Purchase (Two rows are provided for each type. Insert additional rows as necessary for purchases of same type for different end-use categories (Goal or Excluded) or purchase terms (Short or Long). Insert rows between each color-coded category.)	Total Amount Purchased (MWH)	Total Amount Purchased (Million Btu)	Annual Cost (Thou. \$)	Portion of Total Purchased from Projects on Federal or Indian Lands	FY 2009 Goal Application Renewable Energy Goal (RE) Energy Efficiency Goal (EE) Credit	Purchase Term (Enter: Short or Long)	End Use Category (Enter: Goal or Excluded)	Total Amount Purchased for Goal Buildings (Billion Btu)	Total Amount Purchased for Excluded Fac. (Billion Btu)
Electricity from <i>New</i> Renewable Source	1,170.0		\$31.2	0.0	RE: 100% EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	4.0	0.0
Electricity from <i>New</i> Renewable Source	0.0		\$0.0	0.0	RE: 100% EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
Electricity from <i>Old</i> Renewable Source	0.0		\$0.0	0.0	RE: Up to 1.5% of total electricity use. EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	0.0	0.0
Electricity from <i>Old</i> Renewable Source	0.0		\$0.0	0.0	RE: Up to 1.5% of total electricity use. EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
RECs from <i>New</i> Renewable Source	0.0		\$0.0	0.0	RE: 100% EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	0.0	0.0
RECs from <i>New</i> Renewable Source	0.0		\$0.0	0.0	RE: 100% EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
RECs from <i>Old</i> Renewable Source	0.0		\$0.0	0.0	RE: Up to 1.5% of total electricity use EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	0.0	0.0
RECs from <i>Old</i> Renewable Source	0.0		\$0.0	0.0	RE: Up to 1.5% of total electricity use EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
Non-Electric Energy from <i>New</i> Renewable Source		0.0	\$0.0	0.0	RE: no contribution to goal (see comment) EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	0.0	0.0
Non-Electric Energy from <i>New</i> Renewable Source		0.0	\$0.0	0.0	RE: no contribution to goal (see comment) EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
Non-Electric Energy from <i>Old</i> Renewable Source		0.0	\$0.0	0.0	RE: no contribution to goal EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Short	Goal	0.0	0.0
Non-Electric Energy from <i>Old</i> Renewable Source		0.0	\$0.0	0.0	RE: no contribution to goal EE-Credit: Up to 4.8% reduction for short-term and 7.2% reduction for long-term.	Long	Excluded	0.0	0.0
Total Purchases of <i>New</i> Renewable Electricity	1,170.0		\$31.2	0.0	Eligible Short-Term Purchase				
Total Purchases of <i>New</i> RECs	0.0		\$0.0	0.0	Goal Building EE Credit (BBtu):	4.0			
Bonus for Purchases from New Projects on Federal or Indian Land	0.0				Eligible Long-Term Purchase				
Total Purchases of <i>Old</i> Renewable Electricity	0.0		\$0.0	0.0	Total Goal Building EE Credit (BBtu):	4.0			
Total Purchases of <i>Old</i> RECs	0.0		\$0.0	0.0	Eligible Short-Term Purchase				
Total Purchases of <i>New</i> Non-Electric Renewable Energy		0.0	\$0.0		Excluded Fac. EE Credit (BBtu):	0.0			
Total Purchases of <i>Old</i> Non-Electric Renewable Energy		0.0	\$0.0		Eligible Long-Term Purchase				
Total Purchases for Goal Buildings	1,170.0	0.0	\$31.2		Excluded Fac. EE Credit (BBtu):	0.0			
Total Purchases for Excluded Facilities	0.0	0.0	\$0.0		Total Excluded Fac. EE Credit (BBtu):	0.0			
Total All Purchases	1,170.0	0.0	\$31.2						

1-7. GOAL-ELIGIBLE RENEWABLE ELECTRICITY 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 Renewable Electricity Total	39,265.6	523,546.7	7.5%
New Renewable Electricity (without Bonus)	18,182.8		
Bonus, Federal or Indian Land	16,982.8		
Eligible Old Renewable Electricity	4,100.0		

1-8. ALL RENEWABLE ENERGY USE (INCLUDING NON-ELECTRIC) AS A PERCENTAGE OF FACILITY ELECTRICITY USE (WITHOUT BONUS)

(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
76.0	1,786.3	4.3%

1-9. WATER USE INTENSITY AND COST (3)

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	711.2	\$2,686.0	28,419.0	25.0
				Percent
Approx. percentage of reported water consumption that is estimated:				20%
Is the FY 2007 agency water intensity baseline preliminary or final?				Final

PART 2: ENERGY EFFICIENCY IMPROVEMENTS

2-1. DIRECT AGENCY OBLIGATIONS

	FY 2009		Projected FY 2010	
	(Million Btu)	(Thou. \$)	(Million Btu)	(Thou. \$)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		\$2,321.3		\$7,750.0
Estimated annual savings anticipated from obligations	17,388.4	\$254.8	58,052.7	\$850.7

2-2. ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC) (4)

	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) (5)

	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

FY	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2009	15	100.0%	20	34.0%	51	68.6%
2010 planned	15	0.0%	28	49.0%	51	84.3%

2-5. FEDERAL BUILDING ENERGY EFFICIENCY STANDARDS

	Number of New Building Designs
Total new building designs started since beginning of FY 2007:	2
Total new building designs started since beginning of FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	2
	Percent
Percent of new building designs started since beginning of FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	100%

2-6. TRAINING

	(number)	(Thou. \$)
Number of personnel trained in FY 2009/Expenditure	1,344	\$80.6

- (1) Cell C11 includes hydro modernization improvements.
- (2) "1-2. EPACT Goal Excluded Facilities", does not include energy used for the generation or transmission of power.
- (3) Estimated based on normalized actual data.
- (4) TVA considers the use of ESPCs where cost effective and in the best interest of the agency and its customers.
- (5) TVA is a utility.

Tennessee Valley Authority

List of New Federal Building Designs and Construction

(Note: Only new buildings which began the design phase after the beginning of FY 2007 need to be listed.

Buildings for which construction was completed in FY 2007 and after do not need to be listed if they were designed prior to FY 2007.)

New Construction Project Information			Design			Completed New Construction	
Project ID	Building Name	Location (City, State)	Design Started (FY)	Percentage below ANSI/ASHRAE/IESNA Standard 90.1--2004 in terms of energy use	If not at least 30% below ANSI/ASHRAE/IESNA Standard 90.1--2004, will design achieve maximum level of energy efficiency that is life-cycle cost- effective?	Date Construction Completed (FY)	In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1--2004 achieved
			20??	0%	Yes or No	20??	0%
	11,800 sf Dynamic Learning Center	Browns Ferry Nuclear Plant	2009	See note below	Yes	Project on hold	
	Control Bldg. & Warehouse	Lagoon Creek Combustion Turbine Plant	2009	See note below	Yes	Project on hold	
Total new building designs started since beginning of FY 2007:			2				
Total new building designs started since beginning of FY 2007 expected to be 30% more energy efficient than relevant code, where life-cycle cost effective:			2				

Recommendations were made to the design teams which would result in the final design complying with the ASHRAE standards.

AGENCY COMPILATION WORKSHEET FOR CREDIT FOR PROJECTS THAT INCREASE SITE ENERGY USE BUT SAVE SOURCE ENERGY

(See http://www.eere.energy.gov/femp/pdfs/sec502e_%20guidance.pdf)

EPACT Goal Subject Buildings

Name of Project Saving Source Energy in Current Fiscal Year (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(Million Btu)	(Million Btu)	(Million Btu)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

EPACT Excluded Facilities

Name of Project Saving Source Energy in Current Fiscal Year (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(Million Btu)	(Million Btu)	(Million Btu)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

Attachment 2

TVA Excluded Facility Inventory - FY2009

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 SWITCHHOUSE	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

Building Name	City	State
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	Lewsbury	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

Building Name	City	State
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

Building Name	City	State
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

Building Name	City	State
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 MIDDLE 69 KV SWITCH HOUSE	Middle	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	Nixon	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

Building Name	City	State
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

Building Name	City	State
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

Building Name	City	State
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

Building Name	City	State
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	luka	MS
TPM NEW ALBANY SWITCH HOUSE & TELE	New Albany	MS

Building Name	City	State
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 HOUSE	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 3

REPORTING UNITS AND CONVERSION FACTORS FOR FEDERAL ENERGY MANAGEMENT REPORTING

Standard Buildings/Facilities

Industrial, Laboratory, and Other Energy-Intensive Facilities

Exempt Facilities

<i>Fuel Type</i>	<i>Reporting Units</i>	<i>BTUs per Reporting Unit</i>	<i>Joules per Reporting Unit</i>	<i>GigaJoules (GJ) per Reporting Unit</i>
Electricity	Megawatt Hour (MWH)	3,412,000	3,599,660,000	3.59966
Fuel Oil	1,000 Gallons	138,700,000	146,328,500,000	146.3285
Natural Gas	1,000 Cubic Feet	1,031,000	1,087,705,000	1.087705
LPG/Propane	1,000 Gallons	95,500,000	100,752,500,000	100.7525
Coal	Short Ton	24,580,000	25,931,900,000	25.9319
Purchased Steam	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.00
Other	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.00

Vehicles/Equipment

<i>Fuel Type</i>	<i>Reporting Units</i>	<i>BTUs per Reporting Unit</i>	<i>Joules per Reporting Unit</i>	<i>GigaJoules (GJ) per Reporting Unit</i>
Auto Gas	1,000 Gallons	125,000,000	131,875,000,000	131.875
Diesel	1,000 Gallons	138,700,000	146,328,500,000	146.3285
LPG/Propane	1,000 Gallons	95,500,000	100,752,500,000	100.7525
Aviation Gas	1,000 Gallons	125,000,000	131,875,000,000	131.875
Jet Fuel	1,000 Gallons	130,000,000	137,150,000,000	137.150
Navy Special	1,000 Gallons	138,700,000	146,328,500,000	146.3285
Other	Billion Btu (BBtu)	1,000,000,000	1,055,000,000,000	1,055.00

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

Tennessee Valley Authority Fleet Strategy

Original: October 04, 2002
Revised: November 04, 2004
Revised: November 30, 2005
Revised: December 13, 2006
Revised: December 20, 2007
Revised: December 30, 2008
Revised: December 07, 2009

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, 11 fossil-fueled plants, three nuclear plants, 83 generators powered by combustion turbines 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 (EPA92/05). 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 2009, TVA added four hybrid gas/electric vehicles and 27 AFV's to its fleet, bringing the total number of hybrid vehicles to 47 and AFV's to 201.

In FY 2009 TVA reported in its "Federal Agency Annual Report on Energy Management" the following data:

- Annual MPG Sedans – 27.8
- Annual MPG Light Trucks (4x2) – 14.7
- Annual MPG Light Trucks (4x4) – 12.7

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 2009 and associated cost is listed below. This data includes fuel used by light duty, medium duty, and heavy duty vehicles. and equipment used on the road and equipment used off the road. The source of this data is the "TVA Energy Management Annual Report for FY 2009."

Gasoline - 2.683 million gallons - Cost: \$5.71 million

Diesel Fuel - 0.645 million gallons - Cost: \$1.569 million

To increase MPG for FY 2010, 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 EPA 92/05. Also, significantly for purposes of EPA 92/05 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 EPA 92/05 exemptions such as for emergency or off-road vehicles. Based on these facts, EPA 92/05 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 EPA 92/05 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 EPA 92/05. 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.