

Tennessee Valley Authority
Strategic Sustainability Performance Plan

Executive Order 13514

Federal Leadership in Environmental, Energy, and Economic Performance

Prepared by:



June 3, 2011

Section 1: Agency Policy and Strategy

I. Agency Policy Statement

From our inception, the people of TVA have maintained a proud history of environmental leadership. On May 18, 1933, the President signed the Tennessee Valley Authority (TVA) Act into law to create an Agency that serves the Valley through its Energy, Environment, and Economic Development mission. To this day, TVA remains committed to leading the way in a new era of environmental sustainability. TVA's Environmental Policy is to provide cleaner, reliable, and affordable energy to support sustainable economic growth in the Tennessee Valley and to engage in proactive environmental stewardship in a balanced and ecologically sound manner. TVA's pursuits in these areas benefit the well-being of our employees, our customers, the people we serve and the natural resources we steward.

In August 2010, the TVA Board of Directors adopted a renewed vision that will help TVA lead the Tennessee Valley region and the nation toward a cleaner and more secure energy future. TVA is committed to improving its core business, while emerging as: the nation's leader in improving air quality and increased nuclear production, and the Southeast's leader in increased energy efficiency. Over the next decade, TVA will place greater emphasis on: low rates, high reliability, responsibility, cleaner air, more nuclear generation and greater energy efficiency. Every job in TVA—and every initiative TVA pursues—will be linked to these six focus areas. By accomplishing them, TVA realizes its vision, meets the needs of its customers and promotes a strong foundation for a sustainable future.

Over the years since the passing of the TVA Act, TVA has held fast to its mission and a strategy of innovative and integrated resource management solutions. Today, TVA employees manage many environmental sustainability programs, including technology innovation, environmental stewardship and compliance, a growing renewable energy portfolio and a comprehensive economic development program. TVA also has recently restructured and implemented a comprehensive Environmental Management System (EMS) that allows for TVA to maintain and continuously improve on all environmental aspects throughout the organization.

TVA continues to improve its environmental programs in accordance with the guidance set forth in applicable Executive Orders (EOs) and using our EMS to ensure compliance with applicable environmental and energy statutes and regulations. The TVA EMS platform also enhances our ability to integrate sustainability throughout our operations. The EMS platform supports the integration of sustainability metrics into our overall business planning processes.

As one component of our overall sustainability commitment, TVA is pleased to extend our pledge to our mission by integrating the goals of EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* into our existing innovative programs and new efforts. Pursuant to the EO, this comprehensive Strategic Sustainability Performance Plan (SSPP) addresses key aspects of our energy, environmental, economic, and social resources and responsibilities in the 21st century.

As part of this SSPP, TVA has established specific goals. We will measure and report our progress toward each of these goals annually using our existing EMS platform and performance reporting process. Our SSPP will be driven not only by the goals set forth in EO 13514, but also by the TVA Strategic Plan, the 2010 TVA Environmental Policy, the newly developed TVA Integrated Resource Plan and the Natural Resource Plan, which is currently under development. These environmental goals will be an integral part of how we do business, and will be tracked along with our other business objectives.

For Fiscal Year (FY) 2012, TVA has identified several areas that demonstrate our commitment to meeting our environmental sustainability targets and goals. By using existing systems, TVA will strive to implement these environmental sustainability projects as well as consider additional environmental sustainability aspects throughout the organization.

The following presents a representative, but not exhaustive, list that highlights our key proposed projects and investments for FY 2012.

- Tracking sustainability metrics as part of TVA's Environmental Footprint and Environmental Report Card.

- Further engaging and empowering employees this year and beyond through the TVA Personal Sustainability Initiative, launched on Earth Day, April 22, 2010.
- Continuing to create a culture around sustainability, including awareness around energy and water consumption, greenhouse gas emissions, pollution prevention, recycling, waste reduction, and composting.
- Evaluating the Chattanooga Office Complex (COC) through computer energy modeling, looking at the potential performance of a wide range of energy, water and sustainable technologies such as day-lighting, efficient lighting, efficient heating, ventilation, and air conditioning (HVAC) and control systems and water-saving technologies in order to prioritize upgrades for holistic efficiencies.
- Continuing to implement the applicable provisions of the Energy Independence and Security Act (EISA) of 2007 in order to identify building system energy and water saving opportunities like low-flow water closets, urinals, showerheads, and aerators for lavatories and sinks.
- Enacting developed plans to eliminate wet ash and gypsum storage in the TVA system by converting operating coal-fired power plants to dry storage which will reduce industrial water use.
- Continuing to monitor all printers in use, including both networked printers and personal printers, to reduce paper use through policy and purchase changes.
- Utilizing the TVA-wide waste disposal contract established in 2011 to achieve sustainability projects and reporting goals for waste diversion.
- Completing the establishment of the baseline of chemical usage in order to ultimately decrease use of chemicals that increase GHG emissions.
- Implementing plans to individually meter data centers aside from overall facility energy usage.
- Implementing the Natural Resource Plan (NRP) to guide TVA's reservoir lands planning, natural resource management, water resources management, and recreation processes and strategies.
- Identifying opportunities to reduce energy usage through the installation of less and more energy efficient lighting throughout the fossil powerhouses.

TVA's budget for meeting the TVA SSPP goals will be based upon non-appropriated dollars; therefore, this plan and all proposed goals and projects hereunder shall be subject to the availability of funding as TVA, in its discretion, deems appropriate and practicable.

Furthermore, this SSPP is intended for the internal management of TVA only and is not intended to, and does not create any right or benefits, substantive or procedural, enforceable at law or equity against TVA or the United States, or their officials, employees, or agents or any other person.

Signed,



Senior Sustainability Officer

Coordinated with the offices of:

- Chief Financial Officer
- Chief Information Officer
- Chief Acquisition Officer
- Senior Real Property Officer
- General Counsel
- (others as appropriate)

II. Sustainability and the Agency Mission

The TVA Mission is to serve the Tennessee Valley through Energy, Environment, and Economic Development. These areas of service have a direct, clear relationship with environmental sustainability, so achieving the EO 13514 goals directly supports the broader TVA Mission.

Sustainability focuses on environmental, economic and social criteria, aspects that are already integral to TVA and its mission:

- The TVA Environmental Policy and commitment to cleaner energy correlates exactly with the environmental aspect of sustainability. TVA efforts to manage natural resources responsibly, reduce emissions, explore renewable energy, all while providing affordable and reliable power, are central to this commitment.
- TVA's economic development commitment mirrors the economic aspect of sustainability through goals of increasing capital investment and attracting and retaining good jobs for the people we serve.
- The TVA Mission is supported by our values, all of which reflect sustainability's social aspect: safety, diversity, integrity and respect, honest communication, accountability, teamwork, flexibility, and continuous improvement.

Table 1: TVA Summary of Operations

	Number	Comment
Total # Employees	12,457	
Total Acres Land Managed	~293,000	TVA-managed non-power reservoir land
Total # Facilities Owned	2,841	
Total # Facilities Leased (GSA lease)	0	
Total # Facilities Leased (Non-GSA)	35	
Total Facility Gross Square Feet (GSF)	28,512,948	
Operates in # of Locations throughout U.S.	7	States
Operates in # of Locations outside of U.S.	0	
Total # Fleet Vehicles Owned	1,685	These are light duty (<8.500 lbs) vehicles.
Total # Fleet Vehicles Leased	0	
Total # Exempted-Fleet Vehicles (Tactical, Emergency, etc.)	1,685	
Total Operating Budget FY 2010 (\$MIL)	10,870	
Total # Contracts Awarded FY 2010	90,680	
Total Amount Contracts Awarded FY 2010 (\$MIL)	3,300	
Total Amount Spent on Energy Consumption FY 2010 (\$MIL)	25.6	
Total BTU Consumed per GSF	60,727	Excludes renewable energy.

	Number	Comment
Total Gallons of Water Consumed per GSF	25.0	
Total Scope 1&2 GHG Emissions (Comprehensive) FY 2008 Baseline MMTCO ₂ e	0.573	Based on the guidance in EO 13514, direct emissions from TVA's operations related to the production of power are excluded from the GHG reduction directives.
Total Scope 1&2 GHG Emissions (Subject to Agency Scope 1&2 Reduction Target) FY 2008 Baseline MMTCO ₂ e	0.335	Based on the guidance in EO 13514, direct emissions from TVA's operations related to the production of power are excluded from the GHG directives.
Total Scope 3 GHG Emissions (Comprehensive) FY 2008 Baseline MMTCO ₂ e	0.102	
Total Scope 3 GHG Emissions (Subject to Agency Scope 3 Reduction Target) FY 2008 Baseline MMTCO ₂ e	0.102	

III. Greenhouse Gas Reduction Goals

TVA has established greenhouse gas (GHG) emission reduction targets for Scope 1 (direct) and Scope 2 (indirect) emissions in accordance with EO 13514. The TVA GHG target is a 17 percent reduction of Scope 1 and 2 emissions from the FY 2008 baseline by FY 2020. This emission reduction will be accomplished through two primary mechanisms: 1) improving the energy efficiency of the TVA Chattanooga and Knoxville Office Complexes and other major buildings, and 2) improving the reliability and efficiency of the TVA hydro-generating portfolio. Based on the guidance in EO 13514, directive emissions from TVA's operations related to the production of power are excluded from the GHG reduction directives.

TVA has also established GHG reduction targets for Scope 3 (indirect) emissions associated with employee travel, waste disposal, and transmission and distribution losses from purchased electricity as required by EO 13514. The overall reduction target for Scope 3 emissions is 20.7 percent by FY 2020, compared to a FY 2008 baseline. The target will be achieved primarily through reductions in solid waste disposal, reduced energy usage in TVA buildings, higher fuel efficiency standards for new cars and light trucks, and increased use of employee telecommuting and employee car-pooling.

IV. Plan Implementation

TVA will use the existing EMS to identify high priority environmental sustainability projects and in conjunction with our business planning process to consider environmental sustainability in all projects implemented at TVA. All the metrics for these projects will be tracked through the EMS and our performance reporting process.

a. Internal Coordination and Communication

TVA will communicate the objectives and goals of this SSPP, as well as progress toward objectives, to all TVA employees via the TVA internal website, "InsideNet." Additionally, highlights of initiatives and significant progress toward meeting plan goals will be shared via the daily "TVA Today" email updates and monthly newsletter "Inside TVA." TVA's Environmental Performance Business Unit is responsible for compiling information and reporting on progress under this SSPP as well as other aspects of the TVA Environmental Program. This mechanism will allow the continued identification of opportunities to integrate sustainability requirements into existing planning documents. The Environmental Performance Business Unit works closely with the Employee and Stakeholder Environmental Relations and Environmental Sustainability Business Units and the TVA Corporate Communications Staff to ensure coordination and communication of this plan across TVA.

b. Coordination and Dissemination of the Plan to the Field - Communications Committee

In addition to the Internal TVA communications detailed in Section a above, Environmental Program Objectives and Targets (including targets associated with each Goal Performance Area) will be incorporated into facility-level (field-level) business plans, as appropriate, to ensure implementation in the field as well as at Corporate Offices (see Section 2, Part II c Implementation Methods for details).

c. Leadership and Accountability

TVA implementation of the Sustainability Plan will be accomplished by the following key staff:

- Anda Ray – TVA Senior Sustainability Officer
- Al Nayadley – TVA Environmental Sustainability Manager
- Jason Mitchell – TVA SSPP Senior Project Manager

TVA created the Environmental Sustainability Manager position and staffed the Environmental Sustainability Program to provide leadership and focus for TVA’s Environmental Sustainability efforts. The person in this role serves as the TVA-designated “Chief Energy Manager” as required by past EOs and legislation. The Environmental Sustainability Manager is the TVA point of contact with the Office of Management and Budget (OMB) and Council on Environmental Quality (CEQ) on sustainability reporting.

The Environmental Sustainability Program’s goal is to reduce the TVA environmental footprint as a federal agency. The program achieves this goal by issuing and maintaining the TVA SSPP; directing the TVA internal Environmental Sustainability team; engaging employees on personal sustainability; and implementing actions to improve the TVA internal environmental footprint in collaboration with others.

TVA has set up a governance structure that includes the Sustainability Steering Committee (SSC) and the Energy and Environmental Sustainability Committee (EESC) which develops, prioritizes, and approves projects to coordinate energy-saving and sustainability efforts throughout TVA. This governance structure includes executive leadership and their representatives across TVA strategic business units. Members of the SSC are executive leaders that have buildings, systems, assets, facilities and programs that either implement or are affected directly by the implementation of SSPP projects. They approve annual funding for the most cost-effective and practicable sustainability projects that reflect TVA priorities.

Members of the EESC manage TVA facilities, buildings, vehicles and information technology (IT) assets. They report and communicate about the TVA sustainability goals and accomplishments and also serve on eight subcommittees. The EESC will serve the role required of an Agency Energy Management Committee by past EOs and legislation.

The EESC membership includes Environmental Sustainability Program staff, Working Subcommittee leads, Federal Working Group members, and representatives from organizations that are signatories to the SSPP. This subcommittee leads and manages the collaborative, cross-organizational efforts of the Working Subcommittees as TVA updates and achieves the goals in the SSPP. As part of developing and maintaining the SSPP, this subcommittee sets priorities and agrees on projects. It makes presentations internally and externally to promote the TVA Environmental Sustainability Program.

Representatives on Working Subcommittees are responsible for achieving the EO goals and related TVA environmental sustainability goals. The Working Subcommittees develop, implement and oversee planned projects within their own organizations; report implementation progress and results; and update the SSPP annually. Working Subcommittees include:

- Communications and Innovations

- Electronic Stewardship and Data Centers
- Greenhouse Gas
- Green Procurement
- High-Performance Facilities and Regional and Local Planning
- Pollution Prevention and Waste Elimination.

Accountability for accomplishing the SSPP will be managed through TVA’s Integrated Performance Management (IPM) system. The system is a five-step process designed to improve individual employee performance by providing clear goals, support for learning and development, ongoing coaching and feedback, and periodic performance reviews. The overall goal of the IPM is to promote excellence in business performance and public service through high-performing and fully engaged employees. Through the system, employees clearly see how their individual performance objectives support their Business Unit performance plans, which then support the TVA Critical Success Factors. All employees involved in accomplishing EOs can align their efforts with the TVA Critical Success Factors to continue to reduce the impacts of TVA operations on the environment.

d. Agency Policy and Planning Integration

TVA will seek to incorporate the goals of the SSPP into existing plans and policies. The following describes four major plan and policy documents:

TVA Strategic Plan (May 2007)

The purpose of the TVA Strategic Plan is to set high-level direction to guide TVA. The Strategic Plan establishes the overall direction and framework for decision-making within TVA. Specific actions related to the Strategic Plan are incorporated into the TVA Business and Performance Plans. For implementation activities requiring environmental review, the Business and Performance Plans also provide opportunities for internal and external stakeholder input. The TVA Board of Directors ensures adherence to the strategy direction through the Business and Performance Plans and by tracking performance against key metrics. The Board of Directors periodically reviews and updates the Strategic Plan.

TVA Environmental Policy (2010)

The TVA Environmental Policy objective is to provide cleaner, reliable and affordable energy; support sustainable economic growth in the Tennessee Valley; and engage in proactive environmental stewardship in a balanced and ecologically sound manner. In 2010, a biennial assessment of the 2008 Environmental Policy was conducted and reviewed by the TVA Board of Directors. The results of this review indicated that the Policy continues to reflect TVA’s current environmental intentions and serve as a guide for strategic and operational decision-making.

This Environmental Policy provides Board-level guiding principles to successfully lead TVA to reduce its environmental footprint while continuing to provide reliable and competitively priced power to the Tennessee Valley. There is a growing recognition of the environmental and economic need for an increased emphasis on actions that support sustainable initiatives to most effectively meet the three dimensions of the TVA mission. Following the release of the TVA Strategic Plan, the Board asked for the development of an integrated environmental policy to outline objectives and critical success factors across the multiple areas of TVA activities. The TVA Environmental Policy has objectives in each of the following six areas: Climate Change Mitigation and Adaptation, Air Quality Improvement, Water Resources Improvement, Waste Minimization, Sustainable Land Use and Natural Resource Management.

TVA Natural Resource Plan

On June 15, 2009, TVA published a notice of intent (NOI) to prepare an environmental impact statement (EIS) and to conduct a comprehensive study of future energy and environmental stewardship needs in order to develop an

Integrated Resource Plan. Since publishing the NOI, TVA has determined that planning processes for the Environmental Policy goals not closely tied to energy production and use would be better addressed in a separate study – the Natural Resource Plan (NRP) and EIS. The NRP addresses strategies for Water Resources, Reservoir Lands Planning, Recreation, Biological and Cultural Resources, and Public Engagement and Governance on TVA lands. The content of this EIS will be consistent with the TVA Environmental Policy and TVA Land Policy and with the previous Shoreline Management Initiative EIS and Reservoir Operations Study EIS.

TVA Integrated Resource Plan

TVA has completed its Integrated Resource Plan (IRP), titled “TVA's Energy and Environmental Future.” This plan and the associated EIS are the result of extensive analysis and collaboration with TVA partners and stakeholders.

The IRP supports TVA's comprehensive mission of service, which includes meeting the electric power needs of its customers in a reliable, affordable and sustainable manner. The plan identifies the resources that will be needed to satisfy expected energy demand in the Tennessee Valley region over the next 20 years.

e. Agency Budget Integration

The TVA Business Plan is the fundamental link between the TVA Strategic Plan and its business processes. The implementation of this Business Plan reinforces TVA’s commitment to the TVA Mission and stakeholders and aligns each business unit’s key initiatives with the TVA Critical Success Factors. This alignment enables TVA to manage its priorities and resources in order to effectively address customer, financial, operational and organizational initiatives for each fiscal year.

TVA will establish environmental program objectives and targets for each of the 8 EO 13514 goals as a part of the TVA EMS planning process, and these objectives and goals will be reflected in the annual Business Planning guidance. The guidance will be used by the Strategic Business Units (SBU) for incorporation in SBU and facility-level Business Plans, as appropriate.

EO 13514 projects have been identified and will be monitored manually in FY 2011 and FY 2012. Projects will be incorporated into the TVA project justification process and entered into the project’s accounting system for capturing cost and budget information. The TVA budget for meeting the TVA SSPP goals will be based on non-appropriated dollars; therefore, this plan and all proposed goals and projects hereunder shall be subject to the availability of funding as TVA, in its discretion, deems appropriate and practicable. EO 13514 goals that are identified as part of the TVA routine operations and maintenance activity will be monitored manually by coordinating efforts between senior management and Financial Services. Specific routine tasks will be identified for reporting on a monthly basis.

In FY 2012, the SSPP budget will be derived from the TVA Business Plan and incorporated into the TVA project accounting system. The EO 13514 projects will be flagged in the TVA project accounting system to automate the capture of cost and budget information.

f. Methods for Evaluation of Progress

Objectives and targets for each of the EO 13514 goals have been outlined in this SSPP and will be incorporated into the TVA EMS planning process and in annual Business Plan guidance. As a part of Business Plan development for the upcoming fiscal year, metrics and performance indicators will be established for each goal area and incorporated in applicable SBU and TVA Business Plans. Progress toward achieving the objectives and targets will be tracked using the EMS and the Performance Monitoring and Reporting process, and will be communicated using existing internal reports. Self assessments and periodic independent internal audits at the facility level and program audits conducted under the EMS will also be used to evaluate progress toward meeting the EO 13514 goals. Significant deviations from plans and targets will be managed using the Corrective Action Program as required in the EMS. Table 2 below presents the critical planning coordination activities being conducted by TVA’s Environment and Technology and other Business Units.

Table 2: Critical Planning Coordination

	Scope 1 & 2 GHG Reduction	Scope 3 GHG Reduction	Develop and Maintain Agency Comprehensive GHG Inventory	High-Performance Sustainable Design/ Green Buildings	Regional and Local Planning	Water Use Efficiency and Management	Pollution Prevention and Waste Elimination	Sustainable Acquisition	Electronic Stewardship and Data Centers	Agency Specific Innovation
GPRAs Strategic Plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Agency Capital Plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A-11 300s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual GHG Inventory and Energy Data Report	Yes	Yes	Yes	Yes	No	Yes	No	No	No	N/A
EISA Section 432 Facility Evaluations/Project Reporting/Benchmarking	Yes	Yes	Yes	Yes	No	Yes	No	No	No	N/A
Budget	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Asset Management Plan / 3 Year Timeline	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Circular A-11 Exhibit 53s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OMB Scorecards	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	N/A
DOE's Annual Federal Fleet Report to Congress and the President	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Data Center Consolidation Plan	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	Yes	N/A
Environmental Management System	No	No	No	No	No	No	Yes	Yes	No	N/A

	Scope 1 & 2 GHG Reduction	Scope 3 GHG Reduction	Develop and Maintain Agency Comprehensive GHG Inventory	High-Performance Sustainable Design/Green Buildings	Regional and Local Planning	Water Use Efficiency and Management	Pollution Prevention and Waste Elimination	Sustainable Acquisition	Electronic Stewardship and Data Centers	Agency Specific Innovation
Instructions for Implementing Climate Change Adaptation Planning	No	No	No	No	No	No	No	No	No	N/A
Other (reports, policies, plans, etc.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A

V. Evaluating Return on Investment

TVA considers the economic business case for all new projects and initiatives. Understanding that many projects can increase social and environmental benefits, these costs and benefits also will be analyzed in the future for most projects. There are no mission-specific factors that prevent TVA from implementing sustainability projects.

TVA also has started developing a Return on Investment (ROI) tool to compare the overall economic, environmental, and social costs and benefits of a project. This tool provides an initial rating based on expected project performance. The following summarizes the rating system:

Rating Description

Green: GREEN indicates a project will provide a high ROI in this category.

Yellow: YELLOW indicates a project will provide average ROI in this category.

Red: RED indicates a project will provide minimal or negative ROI in this category.

In developing these ratings, TVA considers the following factors:

a. Economic Cost and Benefits

TVA considers discounted payback, profitability index, upfront investment needed, and ongoing annual costs. TVA has been quantifying economic ROI for seven decades. Capital projects and other major investments are considered on a 10- to 15- year energy savings return for major investments. Under a regulatory framework, TVA also is subject to the National Environmental Policy Act (NEPA) and other statutes. For sustainability projects, TVA is using the life-cycle analysis (LCA) approach to determine the cost effectiveness of identified projects.

b. Social Costs and Benefits

TVA recognizes social benefits to be the following: employee morale and satisfaction; stakeholder interest or support; brand management; increase in jobs; promotion of a healthy workplace; community impact; and safety and reliability. TVA is evaluating approaches for quantifying and measuring these on a regular basis.

c. Environmental Costs and Benefits

TVA considers environmental benefits to include reduction to Scope 1, 2 and 3 GHG emissions, water usage and waste. TVA also takes into consideration sustainable acquisition, recycling, and other environmental issues. Environmental costs and benefits have largely been driven by regulatory considerations (e.g., NEPA, Clean Air Act) over the years. TVA prioritizes the projects with the greatest benefits to the TVA Mission and Environmental Policy. Moving forward, consideration of environmental cost and benefits will continue to include the TVA Mission and Environmental Policy, regulatory requirements and goals in the EO and this sustainability plan.

d. Mission-Specific Costs and Benefits

This SSPP is consistent with the TVA Mission “to serve the Valley through Energy, Environment, and Economic Development.” Sustainability projects that address Tennessee Valley economic development, environmental, and social responsibility are well within the TVA mission. By integrating the EO 13514 responsibilities into the TVA personal scorecard, TVA can demonstrate both management commitment and personal engagement to sustainability.

e. Operations and Maintenance and Deferred Investments

The existing TVA Facilities Asset Preservation (FAP) Program addresses deferred maintenance needs across TVA. FAP sub-teams, each led by a member of the FAP team, along with SBU representatives gather asset information, identify deficiencies, recommend corrective action, implement planned and approved projects, and report status back to the FAP team. Due to the diversity and complexity of facilities, TVA divides the work into the following five focus areas:

1. Building Envelope - (roofs, walls, siding, insulation, doors, windows, caulking, foundations and footings, slabs, damp proofing, waterproofing and fireproofing)
2. Building Systems - (elevators, plumbing, life safety systems, HVAC, chillers, electrical distribution, lighting, emergency generators, water treatment and sewer)
3. Architectural Systems - (finishes and furnishings, specialty finishes, walls, floors, ceilings, partitions and aesthetic / image appearance)
4. Roads, Parking and Grounds - (roads, parking areas, grounds and landscaping, erosion control, sidewalks, trails, recreation areas and signs)
5. Coatings and Corrosion Control - (specialized protective coatings for plant and process equipment subjected to harsh environmental conditions, dam safety spillway gates, other hydro structures and water barriers)

The FAP Program goal is to have all important facility assets in good or better condition and included in a routine preventive maintenance program with minimum backlog. The FAP Program achieves this goal using an approach that focuses available resources first on facility assets with the greatest need for repair and importance to the TVA Mission. Additionally, this approach focuses resources first on maintenance items in “Failed Condition,” then on those in “Poor Condition” and those in “Fair Condition” with the potential of extending their economic life.

The approach relies on a prioritization method that draws on evaluated or gathered data. This data includes asset importance ratings, observed condition ratings, life-cycle expectations, actual age, environmental conditions, and health and safety and environmental regulations. Assets are sorted first by observed condition and then by importance. Other factors are considered when needed to refine lists. Project lists are coordinated with SBUs, line management, TVA Power Planning staff, and the TVA Strategic Facilities Planning organization to gain concurrence and consensus. Finally, project approvals are made contingent on the availability of annual funding.

TVA calculated ROI for the overall FAP program as it was developed and approved. TVA does not calculate ROI on a year-to-year or individual project basis. Because of the large backlog of deferred maintenance, most repairs and replacements are on assets that are beyond their useful life and must be replaced to continue supporting the TVA Mission.

Through the FAP program, TVA continues to reduce its deferred maintenance backlog. The program, started in the early 2000s, has made excellent progress especially in some areas such as coatings and roofing.

TVA has an active program to reduce building/facility footprint size. Financial imperatives drive this program, which also provides GHG reduction benefits. GHG requirements will have only a minor impact on facilities with large, deferred maintenance backlogs. Condition and mission-criticality drive maintenance schedules, with environmental and regulatory issues as secondary concerns. FAP budgets are only sufficient to handle failing or very poor condition assets so additional weighting factors have not been necessary.

f. Climate Change Risk and Vulnerability

In November 2009, the Electric Power Research Institute (EPRI) published a report entitled “Potential Impacts of Climate Change on Natural Resources in the Tennessee Valley Authority Region” (the EPRI Report). TVA co-sponsored this report, with the objective of providing preliminary information on climate change impacts across the Tennessee Valley.

Based on the “Fourth Assessment Report of the Interagency Panel on Climate Change” (the IPCC Report), published in 2007 and subject to substantial uncertainties, EPRI concluded that future precipitation will vary substantially across the Tennessee Valley, with increased precipitation during the winter and unchanged or lower precipitation over the summer. In addition, extreme weather events such as droughts and floods are also expected to become more frequent, although difficult to quantify. The IPCC Report also indicates that temperatures will steadily increase across the Tennessee Valley.

TVA manages the Tennessee River System for multiple purposes, including power generation, water use, commercial navigation, recreation, and water quality and flood control. If realized, projected changes in precipitation and increasing temperatures will directly impact future TVA management of the water resources of the Tennessee Valley.

Power generation is dependent on having sufficient water flow available to produce hydroelectric power, as well as water temperature for cooling fossil and nuclear power plants. Generation of hydroelectric power will depend on the precipitation runoff within each reservoir drainage basin and the upstream flow into each reservoir. A rise in water temperatures would require withdrawing more water to achieve the same amount of cooling at fossil and nuclear power plants, or reducing power generation to match the available water supply.

Agricultural, municipal and industrial water uses are driven by temperature and extreme weather. Warmer temperatures and extreme weather (droughts) will increase water demand for crops, gardens and landscaping. Industrial process cooling water needs will be impacted by water temperature in the same manner as power generation.

Commercial navigation relies on maintaining the minimum channel depth as well as reasonable flow rates. Increasingly frequent extreme weather events (drought episodes and flooding) may create more challenges to maintaining the entire length of the commercial navigation channel.

Recreational uses of the Tennessee River and its tributaries include boating and fishing and are dependent on water levels related to precipitation runoff. Sport fishing may also be impacted by water temperature for certain species in certain areas.

Water quality impacts the aquatic life dependent on the river system. Changes in water flow due to the increasing frequency of extreme weather events may impact the habitats and biodiversity of the Tennessee River system.

As changes in future precipitation and temperature develop, the current river management system employed by TVA (reservoir operating guides) may require periodic reevaluations to balance the competing water uses across the Tennessee Valley.

g. Other, as defined by agency – None identified

VI. Transparency

TVA will communicate to internal and external stakeholders the objectives outlined in this SSPP as well as the measures that will be taken to meet those objectives. This communication will take place in a transparent, easy-to-understand format on the TVA website and in published annual reports. TVA also will communicate anticipated impacts of TVA actions on stakeholders and will include opportunities for stakeholders to participate in programs that improve sustainable performance.

Section 2: Performance Review & Annual Update

I. Summary of Accomplishments

TVA's Mission to serve the Tennessee Valley through Energy, Environment, and Economic Development has already produced many environmental sustainability and social accomplishments. The following summarizes them:

- Although outside the scope of EO 13514 and this SSPP, TVA promotes sustainable practices in the production and use of electrical power. Our current generation portfolio includes wind, solar and landfill gas-to-energy generation, as well as biomass co-firing and dedicated biomass energy generation. The TVA Green Power Switch® (GPS) and the GPS Generation Partners® programs leverage this portfolio to promote use and growth of green power.
- TVA has incorporated many sustainability principles in the Chattanooga and Knoxville office complexes during the past year and is currently evaluating these requirements for potential agency-wide adoption.
- The TVA COC, a 1.2-million square-foot facility completed in 1985, integrates the use of passive energy strategies, energy management practices, environmental programs and activities, and aggressive energy reduction operation and maintenance efforts. This complex remains a model facility within TVA. The U.S. Environmental Protection Agency (EPA) recognized the COC's energy and environmental performance with its Energy Star Building qualification in 2000 and recertification in 2011.
- TVA started EISA surveys in FY 2009. These surveys resulted in identification of \$24.6 million in energy and water improvements with a potential cost savings of \$3.4 million per year with a simple payback of 7.1 years. These cost-effective projects include energy efficient lighting and HVAC upgrades, occupancy sensors to control plug loads, HVAC and lighting controls, insulation and window upgrades and plumbing fixture retrofits. TVA will continue EISA surveys and implementation to further reduce agency energy and water use.
- TVA ended FY 2010 with an annual average building energy usage rate of 55,628 Btu/GSF (including GPS renewable energy blocks), which represents a 15.1 percent reduction from the FY 2003 baseline of 65,536 Btu/GSF.
- During FY 2010, energy surveys including water were conducted at multiple TVA sites covering 5.6 million square feet. TVA consumed 712.8 million gallons of potable water in FY 2010 at an estimated cost of \$3.4 million. To date, and as required by EISA, TVA has identified projects with a potential water savings of 11.8 million gallons.
- The TVA Information Technology (IT) virtualization in years 2006 through 2009 resulted in a 6 to 1 virtual to physical server ratio in the COC, 11 to 1 in the Browns Ferry Nuclear Facility and 4 to 1 in 11 regional sites. Recent server virtualization is more than 40 percent, exceeding the EO goal of 30 percent in FY11.
- To achieve goals set in relation to high-performance facilities, TVA utilizes an array of innovative technologies such as heating and cooling indoor fountains to add humidity during the winter and reduce it during the summer; individual smaller water loop pumps in water source heat pump systems instead of single larger water pumps; membrane heat exchange systems that can transfer latent heat; and personal work station occupancy sensors to control task lights and equipment used in workstations.
- The TVA Environment and Technology is continuing work to develop internal knowledge and expertise to attain carbon offset credits by reducing carbon emissions through terrestrial carbon sequestration.
- TVA developed a required, online training program for Technical Contract Managers and Procurement Managers/Agents to support the Green Procurement Plan.
- TVA continues its practice of implementing information technologies such as Video Conference Rooms, Meeting Place, and SharePoint. These practices reduce employee travel.

- TVA is continuing the Utility Environmental Benchmarking Forum, a utility forum which convenes utility representatives to share environmental performance data and best practices. The first forum was initiated by TVA on May 12 and 13, 2010, with the next meeting planned for September 2011.
- TVA has completed its first annual GHG inventory in accordance with the EO reporting for FY 2010.
- TVA developed a TVA Climate Change Adaption Policy Statement.
- TVA partnered with Solar America Cities across the Tennessee Valley to make solar energy a more viable option for their communities. Solar America Cities uses innovative approaches to remove market barriers to solar energy and to encourage adoption of solar energy technologies at the local level. Knoxville, Tenn., one of 25 cities chosen to participate in the program, formally ended its three-year Solar America Cities program on April 21, 2011. The Department of Energy's \$200,000 grant and \$250,000 in technical assistance led to Knoxville's growth in solar energy production from 14kW in 2008 to 1,300 kW in 2010. Knoxville officials have committed to continue to work with TVA and the Knoxville Utilities Board, along with businesses and nonprofits, to continue to expand solar power in the area.
- TVA has a Memorandum of Agreement (MOA) with the Kentucky Energy and Environment Cabinet (KY EEC) to help develop clean and renewable energy initiatives. The KY EEC and TVA have agreed to hold an annual public meeting on the "Development and Use of Energy Resources." The meetings seek to gather business; utility; governmental; academic; consumer and environmental leaders to promote an understanding of the need for clean, affordable, reliable energy, and the environmental issues associated with its generation and distribution, along with the options for improving performance and efficiencies in its generation and use. TVA also will assist in the analysis and inventory of renewable energy resources in Kentucky, including providing technical assistance and information backing such as analysis and inventory. The KY EEC and TVA have committed to issuing a written report summarizing their analyses by November 2011.
- In the last decade, TVA has beneficially reused more than 29 million tons of coal combustion products (CCPs). TVA is evaluating a number of markets, economic and regulatory issues that will provide the basis for identifying and setting specific targets for increasing the diversion of these materials.
- TVA currently has a solidly performing waste diversion program at the corporate locations. TVA is increasing awareness of and improving on the program at its other sites. The remaining amount of waste to be diverted will be generated through new program ideas such as compost bins for food waste generated in office areas and cafes.
- An Environmental Report Card has been developed to track TVA's environmental performance as set forth in TVA's Environmental Policy. The report card is currently available to all TVA employees.

II. Goal Performance Review

GOAL 1: Scope 1 & 2 Greenhouse Gas Reduction (Basic Performance)

a. Goal Description

Scope 1 GHG emissions are from equipment or operations owned or controlled by TVA that directly emit GHGs. Scope 2 GHG emissions are direct emissions resulting from the generation of electricity, heat or steam purchased by TVA. TVA will report Scope 1 GHG emissions in the baseline year, FY 2010, and annually thereafter. Reportable scope 1 and 2 emissions result from the following types of activities: stationary combustion and generation of electricity, heat or steam (including carbon dioxide (CO₂), methane (CH₄) and nitrous oxides (N₂O) emissions from biomass combusted for production of electricity, heat, cooling, or steam) and combustion of fuels in agency-controlled mobile sources and process operations.

TVA GHG emissions result from a combination of buildings, operations, employee activities, and electric power production. Pursuant to the provisions of EO 13514, direct emissions from the production of power and steam sold commercially to other parties in the course of regular business are excluded from the GHG reduction directives.

TVA has set a Scope 1 and 2 GHG emissions reduction target of 17 percent by FY 2020, relative to the emissions in FY 2008. This emission reduction target is based on a new 5 percent reduction target from FY 2010 through FY 2015 and a new 4.7 percent reduction target from FY 2016 through FY 2020 for Excluded Buildings. In addition, this emission reduction target is based on an existing 30 percent reduction target from FY 2006 through FY 2015 and a new 1 percent reduction target from FY 2016 through FY 2020 for Goal Subject Buildings.

As directed under EO 13514, TVA has also set the following goals:

Buildings

- Reduce Energy Intensity - TVA will strive to reduce facility energy intensity and resulting GHG emissions by 3 percent per year from FY 2006 through FY 2015 (total 30 percent reduction) compared to a baseline year of FY 2003.
- Renewable Energy Installation and Use - TVA has sought to increase agency renewable energy installation and use by 3 percent in FY 2007 through FY 2009, and will strive to continue such increase by 5 percent in FY 2010 through FY 2012, and by 7.5 percent in FY 2013 and beyond.

Motor Vehicle Fleet

TVA has a long history of demonstrating stewardship in energy use reduction and fuel efficiency and will continue to strive in this regard by pursuing the following goals:

- Reduce petroleum use in fleet vehicles
- Increase use of alternative fuels in fleet Alternative Fueled Vehicles (AFVs)
- Optimize use of vehicles and right-size Fleet
- Increase use of low emission and high fuel economy vehicles

b. Agency Lead for Goal

Implementation of Scope 1 and 2 GHG reductions will be accomplished by the following key groups and individuals:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Clean and Renewable Energy Group
- TVA Environmental and Energy Sustainability Committee
- TVA Climate Regulatory Policy Team (RPT)

These groups and individuals will be supported by key areas of the TVA organization including the TVA Internal Energy Management Program headed up by the TVA Environmental Sustainability Manager. The Environmental Sustainability Manager will communicate EO goals and legislative requirements and implementation progress toward Scope 1 and 2 GHG reductions through the TVA EESC and the TVA Climate RPT. The TVA Manager of Sustainable Design and the TVA GHG reporting staff will assist the TVA Environmental Sustainability Manager.

c. Implementation Methods

The following describes the implementation methods specific to buildings and fleets that that will be implemented to meet the targets of the Scope 1 and 2 GHG emission reduction goals.

Buildings

TVA plans to reduce facility energy intensity through a number of strategies. EISA requires the completion of comprehensive energy and water use evaluations on 25 percent of covered facilities each year. These evaluations will be used to identify energy and potable water reduction projects and strategies necessary to meet the energy intensity and resulting GHG targets. These projects will be funded and implemented through existing TVA project justification processes and any new sustainability funding initiatives developed within TVA. In addition, all reductions to Scope 1 and 2 GHG emissions will result in progress toward meeting EO 13514 Goals 2, 3 and 4. The TVA facility inventory and the type of activities for which these facilities are used will continue to evolve in the future and facility information will be updated through the TVA Energy and Environmental Sustainability Committee. To benchmark success, this committee uses many tools including the OMB Energy Scorecard and Internal Energy Management Program Database. The TVA EESC encourages representatives to voice problems in meeting regulations and goals and to share success stories which can then be applied throughout TVA.

Fleet

TVA plans to reduce petroleum use in fleet vehicles and increase the use of alternative fuels in the fleet through a number of initiatives. These initiatives will focus on “right-sizing” the fleet with the development of standard specifications based upon job function. Also, a shared vehicle program is planned that will maximize vehicle utilization and will include the use of plug-in electric vehicles. Given various directives, TVA is currently working with DOE/OMB to determine the best approach to its vehicle strategy. For ‘reduction in fleet petroleum use’ on TVA’s OMB Scorecard, TVA has requested additional time to complete discussions with DOE to finalize its new vehicle strategy and establish baseline data.

d. Positions

TVA has two full time equivalents (FTEs) spending approximately 50 percent of their time dedicated to entering utility bill information into the TVA Internal Energy Management Program database, which tracks energy and water usage at the TVA facilities that receive utility bills.

TVA has three FTEs spending approximately 50 percent of their time dedicated to conducting energy surveys, implementation planning and reporting. In order to effectively manage and reduce facilities’ energy use, TVA estimates that it will need to hire six FTEs to serve as energy managers.

As a power producer, TVA has a number of people with finance, engineering and policy expertise who are working on renewable power development.

TVA currently has no FTEs tracking the information necessary to assess the target Scope 1 and 2 emission reductions associated with facility improvements, building operations and maintenance. TVA estimates one FTE will be required for this task.

e. Planning Table

Table 3: Scope 1 & 2 Greenhouse Gas Reduction Planning Table

	SCOPE 1&2 GHG TARGET	Unit	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Buildings	Energy Intensity Reduction Goals (BTU/SF reduced from FY03 base year)	%	15	18	21	24	27	30	...	hold
Buildings	Planned Energy Intensity Reduction (BTU/SF reduced from FY03 base year)	%	15	18	21	24	27	30	...	hold
Buildings	Renewable Electricity Goals (Percent of electricity from renewable sources)	%	5	5	5	7.5	hold	hold	...	hold
Buildings	Planned Renewable Electricity Use (Percent of electricity from renewable sources)	%	7.8	8.2	9.6	10.2	hold	hold	...	hold
	Petroleum Use Reduction Targets (Percent reduction from FY05 base year)	%	10	12	14	16	18	20	...	30
Fleet	Planned Petroleum Use Reduction (Percent reduction from FY05 base year)	%	TBD	TBD	TBD	TBD	TBD	TBD	...	TBD
Fleet	Alternative Fuel Use in Fleet AFV Target (Percent increase from FY05 base year)	%	61	77	95	114	136	159	...	hold
Fleet	Planned Alternative Fuel Use in Fleet AFV (Percent increase from FY05 base year)	%	TBD	TBD	TBD	TBD	TBD	TBD	...	TBD
Fleet	(New) Senior Executive Fleet Replaced with Low-GHG, High Efficiency Vehicles (Percent replaced from FY08 base year)	%	TBD	TBD	TBD	TBD	TBD	TBD	...	TBD
	Other as defined by agency		none	none	none	none	none	none	...	none
	Total Scope 1&2 GHG Emissions (Comprehensive)	MMTCO ₂ e	0.569

Total Scope 1&2 GHG Emissions (Subject to Agency Scope 1&2 GHG Reduction Target)	MMTCO ₂ e	0.315	0.316	0.309	0.303	0.296	0.289	...	0.278
Overall Agency Scope 1 & 2 Reduction (reduced from FY08 base year)	%	6.1	5.9	7.8	9.8	11.7	13.7	...	17.0
(Percent increase from FY05 base year)	%	N/A	N/A	N/A	N/A	N/A	N/A	...	N/A

f. Agency Status

TVA continues to reduce energy use in its Goal Subject Buildings through the coordination of energy management efforts and implementation of energy efficiency improvements. TVA ended FY 2010 with 55,628 Btu/GSF/Yr (including the renewable energy credit) which is a 15 percent reduction from the FY 2003 baseline year.

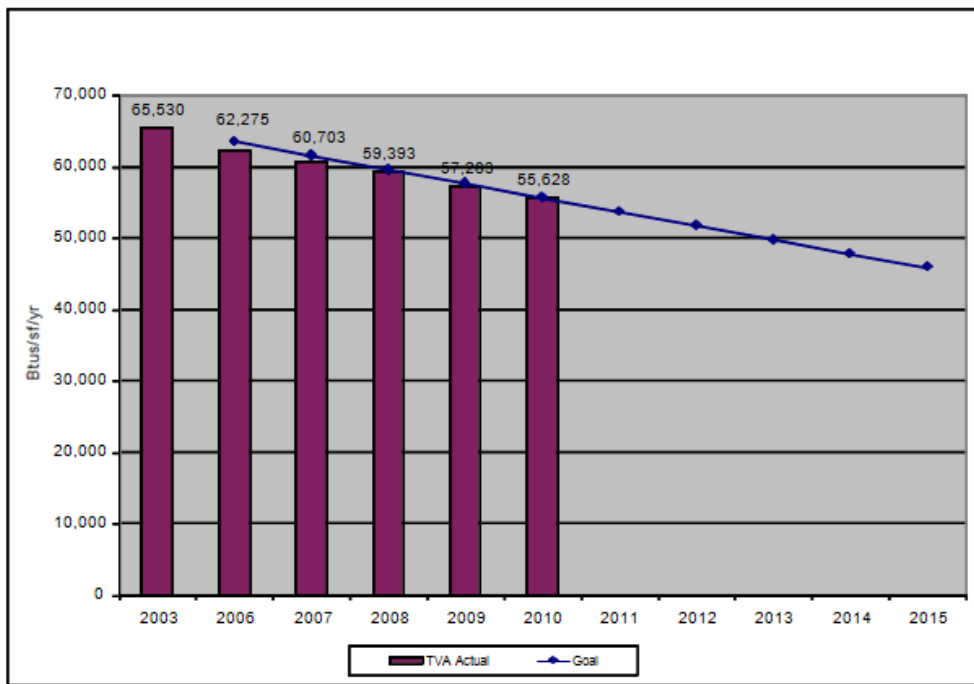


Figure 1 - Goal Subject Buildings and Facilities Performance and Goal for 2015

For TVA excluded buildings, the agency has a long history of demonstrating stewardship toward energy reduction and will continue to work toward reducing energy use in the generation, transmission and related energy-intensive buildings. Energy reduction in these buildings has become increasingly more difficult given that the energy consumption 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. 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. In FY 2010, 5,627,614 square feet of excluded and goal subject facilities were surveyed, meeting the 25 percent goal. Energy Conservation Measures (ECM) meeting the Life Cycle and Simple Payback (SPB) criteria was identified and included lighting improvements, controls, water improvements, insulation and window replacement. Table 4 provides a list of projects, developed in FY 2010 that meets the existing TVA payback criteria related to energy/water efficiency and sustainability.

Table 4: FY 2010 Survey Results

Agency Facility Number	Facility Name	Gross Square Footage	Est. Implementation Cost of Measure(s) (\$)	Annual Data				
				Est. Annual Energy Savings For this Reporting Year Only Million BTU	Est. Annual Energy Cost Savings (\$)	Est. Annual Water Savings Thousand Gallons	Est. Annual Water Cost Savings (\$)	Est. Other Annual Ancillary Cost Savings (\$)
274	GOT COC - CHATTANOOGA OFFICE COMPLEX	1,163,264	\$5,341,208	19,564.8	\$393,956	6,053	\$40,254	\$49,576
6322	JOF POWER HOUSE	1,069,704	\$1,182,940	8,223.9	\$115,598	0	\$0	\$11,304
5799	WCF PLANT A POWERHOUSE	949,877	\$174,305	702.3	\$10,293	875	\$4,210	\$0
5814	WCF PLANT B POWERHOUSE	804,096	\$1,267,726	6,376.2	\$98,249	981	\$4,815	\$0
311	GOT KNOXVILLE OFFICE COMPLEX	690,000	\$1,379,905	11,219.9	\$312,394	3,065	\$25,287	\$0
14730	WIL POWERHOUSE/DAM	265,031	\$257,825	2,561.7	\$38,032	101	\$789	\$0
799	WEH POWERHOUSE/DAM	200,200	\$68,804	938.9	\$16,099	31	\$178	\$1,179
753	PKH POWERHOUSE/DAM	177,200	\$145,781	1,565.1	\$22,436	0	\$0	\$0
268	GOT MONTEAGLE PLACE	149,000	\$1,104,444	6,307.0	\$108,585	335	\$2,383	\$0
308	GOT EDNEY BUILDING	91,842	\$206,280	538.1	\$13,863	415	\$2,954	\$1,632
733	KYH POWERHOUSE/DAM	67,400	\$117,573	695.8	\$11,673	0	\$0	\$3,489
TOTALS		5,627,614	11,246,791	58,694	1,141,178	11,856	80,870	67,180

g. Return on Investment

TVA will continue its project investment with no cancellations and no expansions.

h. Highlights

Projects are proceeding as expected. TVA will add additional information to this section as projects progress further or are completed.

GOAL 1: Scope 1 & 2 Greenhouse Gas Reduction (Goal-Specific Items)

a. Buildings

1) Reduce Facility Energy Intensity

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.

Facility Improvements - TVA implements various energy efficiency improvements in its facilities; including the retrofits and upgrades planned under Goal 3. In addition, some examples of new projects include:

- Addition of lighting upgrades such as motion sensors, occupancy sensors, electronic ballasts and new lighting technologies
- Addition of Energy Management Control Systems to control heating and cooling systems, lighting systems, motors, exhaust fans, pumps and other energy-using equipment
- Addition of Variable Frequency Drives to building heating, ventilating, and air-conditioning units
- Addition of new high-efficiency heat pump systems, air handlers cooling towers, insulation, windows, window shades, and chillers
- Replacement of older emergency generators with smaller generators to reduce fuel use and cost

Operation and Maintenance for Buildings - TVA continues to improve energy efficiency and environmental stewardship through operation and maintenance activities as well as through activities planned under Goal 3. Large reductions in energy usage can be achieved by behavior and procedure modification to ensure that good choices and actions are being taken to minimize usage. A list of operation and maintenance practice revisions for FY 2010 has been included at the end of this section.

Employee Training - TVA provides energy management and associated environmental training to managers and employees as needed. In addition, a dedicated TVA staff tracks energy efficiency and information updates on current federal requirements and regulations. Training is provided to employees, managers and TVA customers as part of the TVA policy and planning processes. TVA also educates staff on energy- and environmental-related topics through the TVA Training and Development Organization. In FY 2010, TVA provided energy/environmental training to 1,514 employees at an estimated cost of \$90,840.

2) Renewable Electricity

TVA plans to meet the renewable electricity targets through a number of initiatives. TVA will meet the target in part by purchasing GPS renewable energy blocks totaling approximately 1,170 megawatt-hours (MWh) for the KOC and a number of TVA customer service center buildings. In addition, credits from the TVA Hydro Modernization Program (HMOD) will contribute to meeting the target. TVA also plans to meet the target through on-site renewable technologies that would be installed at TVA facilities as part of the Sustainable High Performance Buildings Goals.

3) Reduce Per Capita Energy Consumption through Space Management Policies

From 2001 to 2010 TVA implemented a Strategic Facilities Plan (SFP) that resulted in a reduction of more than 1 million square feet.

b. Fleet

1) Increase Use of Alternative Fuels in Fleet AFVs

TVA's light duty vehicles are spread across a seven-state service area and are often required to travel in rural areas outside the major metropolitan areas where alternative fuels are not readily available. TVA intends to develop a program to communicate with drivers TVA's goal of increasing usage of E85 and available retail outlets. TVA has plans to purchase additional hybrid electric vehicles, consistent with budget constraints, and place them in locations where AFV fueling infrastructure is not available.

2) Optimize Use of Vehicles and Right-Size Fleet

TVA is currently reviewing and revising light duty vehicle specifications to further standardize vehicle specifications for each function that carries out TVA's missions. TVA will strive to implement a program to optimize usage efficiencies among personal vehicles, short term rental cars, and assigned vehicles. TVA also endeavors to implement a shared vehicle program to increase utilization of fleet vehicles.

3) Increase Use of Low Emission and High Fuel Economy Vehicles

The TVA fleet strategy is to replace vehicles, where practical, with those that are more efficient. 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 monitors current vehicle use and replacement and, where possible, chooses replacement vehicles that are most efficient.

4) Replace Conventional Senior Executive Fleet with Low-GHG Emitting, Highly-Efficient Vehicles

TVA plans to develop an executive vehicle program environmentally compatible with the designated job function. TVA's current executive light duty vehicle fleet is a mixture of twenty-three vehicles ranging between mid-size sedans to full-size SUVs.

5) Agency Shuttle Buses

TVA does not operate shuttle buses.

6) Additional Agency Efforts

TVA will continue to implement a strategy consistent with the requirements of EO 13514. To improve future compliance, consistent with budget constraints, TVA will strategically replace gasoline vehicles with hybrid electric vehicles in locations which lack an AFV fueling infrastructure.

Additional challenges which may affect TVA's progress in meeting these goals include:

- Acquiring hybrid electric vehicles through GSA at an affordable cost
- The lack of commercial facilities for the refueling of Ethanol (E-85) and fast charging stations for Plug-in electric Vehicles (PEVs)
- Limited range of PEVs

c. Other

Various initiatives will be undertaken in FY 2012 to improve TVA's greenhouse gas accounting capability. These initiatives will include improvements to data quality, activities to improve inventory comprehensiveness and integrate greenhouse gas accounting systems with existing environmental management systems.

Building Operation and Maintenance Actions

TVA continues to improve its energy efficiency through operation and maintenance activities. The following is a list of operation and maintenance practices and activities for FY 2011:

- 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, fixture 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

GOAL 2: Scope 3 Greenhouse Gas Reduction & Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory (Basic Performance)

Scope 3 GHG emissions are a result of TVA activities but originate from sources outside of TVA’s organizational boundary. They include other indirect emissions not accounted for in Scope 2 emissions, such as employee travel, waste disposal, and transmission and distribution (T&D) losses. For FY 2010, TVA reported Scope 3 GHG emissions as outlined in Table 5 below. The overall reduction target for Scope 3 emissions is 20.7 percent by FY 2020, compared to a FY 2008 baseline. The target will be achieved primarily through reductions in solid waste disposal, reduced energy usage in TVA buildings, higher fuel efficiency standards for new cars and light trucks, and increased use of employee telecommuting and employee car-pooling.

Table 5: Scope 3 Emissions Required Categories for Reporting in FY 2010

Employee business travel (air travel)
Contracted disposal of waste generated in operations (solid waste and wastewater treatment)
Transmission and distribution losses
Optional Scope 3 Emission Categories
Employee business travel (ground travel)
Employee commuter travel

a. Goal Description

Scope 3 GHG Reduction

The EO 13514 and guidance from the Office of the Federal Environmental Executive (OFEE) and OMB have established three sub-targets for Scope 3 GHG reductions. TVA will specify reduction targets to meet these sub-targets as summarized in the Planning Table. TVA plans to meet these sub-targets by FY 2020, compared to a FY 2008 baseline. A large component of the Scope 3 GHG emissions are from contracted waste disposal activities. Therefore, a significant portion of the reduction target for Scope 3 GHG is predicated on the successful completion of a pilot Municipal Solid Waste (MSW) reduction program, and the rollout and achievement of the 50 percent MSW reductions goal (see Goal 5 for details).

Comprehensive Greenhouse Gas Inventory

A complete and accurate GHG emissions inventory is a critical data set for planning and assessing GHG emission reduction activities. Overall TVA GHG emissions are generated by sources in the Scopes 1, 2 and 3 categories. These GHG emissions sources include energy use in buildings, employee activities and electrical power production. Consistent with the provisions of EO 13514, the emissions will be those associated with TVA building energy use (both goal subject and excluded buildings) and TVA employee activities. This will allow for a consistent approach with targets and inventory and will provide data consistency within other federal agency reporting requirements. The electrical power production system emissions will be reported to the EPA annually beginning in 2011 per the requirements of the EPA GHG Mandatory Reporting Rule (GHG MRR) (40 CFR Part 98). Together, these inventories will provide a more comprehensive picture of TVA GHG emissions footprint.

b. Agency Lead for Goal

Implementation of GHG emission inventory reporting will be accomplished by the following key groups and individuals:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Environmental Policy, Clean and Renewable Energy Business Unit
- TVA Environmental and Energy Sustainability Committee
- TVA Climate Regulatory Policy Team (RPT)

These groups and individuals will be supported by key areas of the TVA organization including the TVA Internal Energy Management Program headed by TVA's Environmental Sustainability Manager. TVA's Environmental Sustainability Manager will communicate EO and other legislative requirements, and implementation progress through the TVA EESC and TVA's Climate RPT. TVA's Clean and Renewable Energy Group will assist TVA's Environmental Sustainability Manager.

c. Implementation Methods

Scope 3 GHG Reduction

To reduce emissions from employee travel, 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, avoids double handling and multiple trips to the same sites. To meet the Scope 3 GHG goals, TVA will strive to do the following:

- Increase use of Telework - TVA formally established a Telework Program in 2001, allowing certain employees to work remotely from the office. The existing program is primarily used by employees who must perform job responsibilities during non-standard business hours, must work frequently in the field, or are essential to maintaining TVA operations. TVA will evaluate the results of two on-going pilot programs and revise/expand the existing TVA Telecommuting Policy as necessary in order to meet the GHG targets.
- Increase use of car/van pools - TVA has sponsored a vanpool program since 1974. Currently, there are 90 vans in operation and approximately 794 participants (up from 750 participants noted in last year's SSPP), primarily employees at the nuclear and fossil plants. TVA will continue to review the existing car/van pool program and evaluate and implement as necessary a formal program to encourage and/or provide incentives for increasing employee participation at the four office complexes.
- Increase use of video and audio conferencing - TVA continues to implement information technologies that enable employees to perform their jobs more efficiently while also saving energy and reducing GHG emissions. 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 that enable employees to travel less and conduct more meetings from their remote work sites, saving fuel and related travel expenses. In FY 2011, TVA began a four-year process to upgrade its video and audio conferencing capabilities and increase employee awareness of such capabilities in order to reduce employee business travel, as appropriate in order to meet the GHG targets.
- Contracted waste disposal reduction - Scope 3 GHG emission reductions from contracted waste disposal will result from meeting Goal 5 (Pollution Prevention and Waste Reduction).
- T&D Emission Reductions - Scope 3 GHG emission reductions from T&D losses from purchased energy are a direct result of meeting Goal 1 (Scope 1 and 2 GHG Reduction), Goal 3 (High Performance Sustainable Design/Green Buildings), and Goal 4 (Water Use Efficiencies and Management). Any reduction of purchased energy or the use of on-site (and preferably renewable) energy to offset purchased energy will result in reductions to T&D losses. In addition, EISA requires completing comprehensive energy and water evaluations on 25 percent of covered facilities each year. These evaluations will be used to identify energy and potable water reduction projects and strategies necessary to meet the T&D losses reduction target. These projects will be funded and implemented through current existing TVA project justification processes and any new sustainability funding initiatives developed within TVA.

Comprehensive Greenhouse Gas Inventory

The Scope 1, 2 and 3 GHG emissions not required to be reported by an EPA rule, other statute, or other regulatory agency will be determined and reported in accordance with procedures to be developed by the TVA Clean and Renewable Energy Group under the direction of the Agency's Senior Sustainability Officer.

A new Comprehensive EO 13514 GHG Reporting Plan highlighting the reporting procedures was developed by the TVA Clean and Renewable Energy Group. This plan was developed from:

- Guidance issued by the CEQ per Section 9 of EO 13514, including the Scope 3 Target Tool and the "Federal GHG Accounting and Reporting Guidance,"
- Recommendations issued by DOE's Federal Management Program, and/or
- Other such procedures TVA deems necessary to implement to ensure that it is accurately quantifying and accounting for Scope 1, 2 and 3 GHG emissions in a manner consistent with the agency's mission.

The TVA GHG inventory is the basis for reporting targeted GHG reductions provided for in EO 13514.

d. Positions

Scope 3 GHG Reduction

TVA currently has two FTEs spending approximately 50 percent of their time dedicated to entering utility bill information into the TVA Internal Energy Management Program database which tracks energy and water usage at TVA facilities. There is currently not a FTE dedicated to directly tracking GHG T&D Losses.

TVA currently has no FTEs tracking the information necessary to assess the Scope 3 GHG reductions from waste disposal and employee travel. TVA estimates that two FTEs will initially be required for this task, with additional FTEs needed as additional Scope 3 reductions are targeted.

Comprehensive Greenhouse Gas Inventory

TVA currently has two FTEs assigned to preparing the annual GHG emissions inventory from excluded Scope 1 and 2 sources required to be reported to EPA under the Mandatory Reporting Rule.

TVA currently has no FTEs assigned to preparing the annual GHG emissions inventory from targeted Scope 1, 2 and 3 sources, or from other sources excluded from both the EPA Mandatory Reporting Rule and the EO. TVA estimates that two FTEs will be required for this task, with additional FTEs needed as additional Scope 3 reductions are targeted.

e. Planning Table

Table 6: Scope 3 Greenhouse Reduction Planning Table

SCOPE 3 GHG TARGET	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Total Scope 3 GHG Emissions (Comprehensive)	MMTCO ₂ e	0.105	0.102	0.099	0.096	0.092	0.089	...	0.082
Total Scope 3 GHG Emissions (Subject to Agency Scope 3 GHG Reduction Target)	MMTCO ₂ e	0.105	0.102	0.099	0.096	0.092	0.089	...	0.082
Overall Agency Scope 3 Reduction (reduced from FY08 base year)	%	-2.4	-0.1	3.2	6.7	9.8	12.8	...	20.7
Other, as defined by agency		none	none	none	none	none	none	...	none

f. Agency Status

Scope 3 GHG Reduction

TVA is currently conducting two pilot studies to evaluate enhanced employee telecommuting opportunities. One pilot involves employees telecommuting one day per week, while the other pilot is evaluating employees telecommuting five days per week. TVA plans to revise the Telework Program in FY 2012 based on the results of these two pilot studies.

The TVA vanpool program is operated by Fleet Management in the Supply Chain organization and is self-supporting. Since 2001, employees and contractors have been reimbursed for up to \$65 monthly for participation. This reimbursement is a TVA benefit and is charged to the participant's organization. TVA plans to evaluate the car/van pool program and identify methods to increase employee participation during FY 2012, including incentives related to levels of participation.

The technologies in use by TVA to support reduction in employee travel are:

- Video Conference Rooms - TVA has 73 video conference rooms throughout the Tennessee Valley service area. Approximately 1,285 video conferences were held in FY 2010, down from the 1,801 video conferences held in FY 2009.
- 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.

TVA has continually made progress toward the goals that directly impact meeting the sub-target for T&D losses. Going forward TVA will need to review its list of goal subject and excluded buildings that purchase energy from utility providers. Some goal subject buildings may not have been a part of the covered facilities survey plan. In addition, it may not be possible to reduce the energy usage of some excluded buildings energy because they perform a necessary function such as generation, transmission, and control of power.

Comprehensive Greenhouse Gas Inventory

TVA prepared and implemented the GHG Monitoring Plans for subject emission sources and has completed and reported the GHG Emissions Inventories. For combined Scope 1, 2 and 3 categories (Target Subject Emissions), TVA's FY 2008 Baseline was 437,786 MTCO₂e and the FY 2010 GHG emissions were 419,606 MTCO₂e. The inventory was developed in accordance with the Federal GHG Accounting and Reporting Guidance.

g. Return on Investment

TVA is continuing to work on projects and initiatives included in the submission of the previous year's SSPP as budget permits. Progress is expected to continue.

h. Highlights

TVA staff worked diligently to assess and develop the first comprehensive GHG Inventory which was submitted on January 31, 2011. The staff included updated methodologies and new data sources in both the FY 2008 Baseline and FY 2010 GHG Emissions Inventories submitted concurrently.

GOAL 2: Scope 3 Greenhouse Gas Reduction & Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory (Goal-Specific Items)

a. Federal Employee Travel

This target encompasses all employee travel, including employee business travel by air, employee business travel by ground (e.g., vehicle, rail and water), and employee commuter travel. Employee travel emissions are related to future employment levels at TVA, participation in car/van pools, telecommuting programs, and recently enacted national fuel economy standards (CAFÉ standards) for passenger cars and light-duty trucks. TVA has set reduction targets by taking these factors into account in combination with the implementation methods described later in the section. TVA conducted an employee survey in FY 2010 (and will repeat the survey as necessary) to collect information on current employee business travel (non-air) and commuting patterns. The results of this survey was used to benchmark current business travel and commuting practices and evaluate future programs designed to further reduce GHG emissions from these activities. TVA plans to increase employee participation in car/van pool and/or telecommuting and to decrease employee business ground travel through upgraded teleconferencing infrastructure.

b. Contracted Waste Disposal

This target encompasses contracted MSW (trash) and domestic wastewater (sewage) disposal. This target does not include industrial solid waste (e.g., fly ash), industrial wastewater and once through cooling water generated in the course of the normal TVA business of generating electric power (energy). TVA set the reduction targets using the OFEE Scope 3 GHG Emission Reduction Target Tool and User's Manual in combination with projected reductions in solid waste for disposal per Goal 5, Pollution Prevention and Waste Reduction.

c. T&D Losses from Purchased Energy

T&D system losses are the result of electricity consumption as it moves from one point to another in the T&D system. These losses occur in wires, transformers and other electricity system components due to resistance, unmetered paths to ground, and related electrical inefficiencies. The losses that occur on these power deliver systems are dependent on the physical characteristics of the lines and the power that flows through them. In general, electricity is consumed in the electric power sector in three distinct categories: 1) T&D systems used to deliver electricity to retail and wholesale customers; 2) high-voltage bulk power transmission systems; and 3) facilities and buildings.

This section includes T&D losses from purchased energy. Three T&D loss reporting scenarios from purchased energy are possible. 1) If TVA purchases (rather than generates) electricity and transports it through a T&D system that it owns or controls, it reports the emissions associated with T&D losses under Scope 2; 2) If TVA does not own or control the T&D operation where the purchased electricity is consumed, then it does not report the emissions associated with T&D losses under Scope 2; and 3) If TVA does not own or control the T&D operation, it must estimate these emissions as Scope 3. Reduction targets were set using the OFEE Scope 3 GHG Emission Reduction

Target Tool and User's Manual in combination with planned reductions in electricity purchases, replacing purchase power with on-site generation, and energy intensity reductions mandated by EISA 2007.

d. Planned Agency Activity or Policy Implementation

TVA will continue to review policy and procedures to improve data accuracy and overall data collection analysis methods related to Scope 3 GHG emissions.

e. Scope 3 GHG Emissions Surveys and Tools

TVA conducted an in-house developed employee survey (and will repeat the survey as necessary) to collect information on current employee business travel (non-air) and commuting patterns. The results of this survey were used for specific data requirements of the FY 2010 GHG emissions inventory. TVA also utilized the GSA Travel Management Information Service database that utilizes data from TVA's travel agent to calculate and summarize GHG emissions for business air travel and car rental activities for all of TVA.

f. Development of TVA's FY 2010 GHG Inventory

The GHG inventory includes Scope 1, 2 and required 3 emissions for all of TVA. All calculations were based on the FEMP GHG Sustainability Data Report Version 1-6 17Dec2010 (FINAL) and any exception noted on the FEMP spreadsheets. Data was collected throughout TVA utilizing established databases. The only uncertainty in data quality is footnoted in the reporting spreadsheets where data for specific years were not available and was estimated from the existing information. TVA has developed an Inventory Management Plan which was used for quality assurance per Section 6.1 of the GHG Guidance Technical Document. This Plan calls for self-verification of our GHG data for this year's submission.

g. Other, as defined by Agency

TVA currently has no other planned projects relating to targeted Scope 3 GHG emissions reductions. As opportunities to reduce other non-targeted Scope 3 emissions are identified and evaluated, these will be added to the plan in future years as appropriate.

GOAL 3: High-Performance Sustainable Design / Green Buildings & Regional and Local Planning (Basic Performance)

a. Goal Description

High Performance Sustainable Design

The goal to incorporate sustainability into new buildings has been in existence since the passage of the Energy Policy Act of 2005 (EPA05) which required agencies to apply sustainable design principles into the siting and design of all new buildings including water efficiency. The Interagency Sustainable Working Group put together a “Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding” that contained “Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings.” TVA along with 20 other agencies signed this memorandum of understanding in January/February 2006. This was the creation of the SGPs which were later adopted by EO 13423 in January 2007 which required all new buildings to incorporate them plus they required agencies to retrofit 15 percent of their existing buildings with them by FY 2015.

When EO 13514 came out in October 2009 it added additional requirements to show progress towards 100 percent application of the SGPs and limited their application to those buildings and leases that were greater than 5,000 gross square feet in size. The EO also required agencies to only build zero-net-energy buildings by 2030 starting planning and for such buildings in 2020.

Regional and Local Planning

The EO 13514 has directed agencies to incorporate regional and local integrated planning into existing policy and guidance. TVA is already conducting many activities that specifically address several goal-specific items. Activities to address the goal-specific items have been identified within this plan and are described in detail. They can be integrated into TVA’s existing operations as appropriate to streamline the overall goal implementation.

b. Agency Lead for the Goal

High Performance Sustainable Design

Implementation of High-Performance Sustainable Design/Green Buildings will be accomplished by the following key groups and individuals:

- TVA Senior Sustainability Officer
- TVA Manager of Sustainable Design
- TVA Environmental Sustainability Manager
- TVA Energy and Environmental Sustainability Committee.

These groups and individuals will be supported by key areas of the TVA organization including the TVA Environmental Sustainability Program. The High-Performance Sustainable Design/Green Buildings EO 13514 requirements (including zero energy buildings and new and existing building compliance with the Guiding Principles) will be led by the TVA Manager of Sustainable Design, who is a part of the TVA Environmental Sustainability Program headed up by the TVA Environmental Sustainability Manager. The Manager of Sustainable Design will communicate EO and other legislative requirements, and implementation progress to TVA employees through the TVA EESC.

Optimizing performance of the TVA real property portfolio will be led by the TVA Property Acquisition, Management and Leasing in TVA Facilities Projects (FP). Managing existing building systems to reduce energy,

water and materials consumption will be led by regional engineers in TVA FP. This work will also be communicated through the TVA EESC.

Regional and Local Planning

Implementation of Regional and Local Planning will be accomplished by the following key groups and individuals:

- TVA Senior Sustainability Officer
- VP, Land and Shoreline Management
- VP, Environmental Science and Resources
- TVA Environmental Sustainability Manager

Support for consultation and collaborative partnerships with Federal, State, Tribal and Local agencies or programs will need support from the following TVA leadership:

- TVA Senior Sustainability Officer
- VP, Land and Shoreline Management
- VP, Environmental Science and Resources
- TVA Environmental Sustainability Manager
- Senior Manager, Federal Determinations
- Senior Regional Watershed Managers
- Senior Manager, Commercial and Dispersed Recreation
- Senior Manager, Reservoir Land Use and Permitting
- Senior Manager, Business Support and Project Management.

Implementation will be lead by the following TVA Business Units:

- Regional Watershed Staff,
- Growth Readiness Program Staff
- Recreation Staff
- Natural Resource Management Staff
- Heritage and Cultural Staff
- NEPA Staff
- TVA's Valley Relations and Environment and Technology (E&T) are responsible for reviewing and commenting on draft transportation plans prepared by municipal or rural planning organizations in TVA's service area.
- The Director of Environmental Policy, Clean and Renewable Energy (who reports to the Senior Vice President of E&T) will be responsible for overseeing the implementation of the TVA renewable energy portfolio.
- The Environmental Policy, Clean and Renewable Energy; Customer Relations; and Energy Efficiency and Demand Response organizations will be responsible for regional energy planning.

- Power System Operations (PSO) and FP will lead activities to support the sub-target goals of planning new federal facilities in locations near existing cities and existing or planned town centers as well as in pedestrian-friendly locations accessible by public transit.
- E&T, which is responsible for environmental permits and compliance, will identify and analyze energy impacts and alternative energy sources as a result of compliance activities associated with NEPA EIS and EA compliance activities for new facilities.

c. Implementation Methods

High Performance Sustainable Design

High performance sustainable design goal requirements for new buildings will be identified through communication from FP project managers and architects who will inform the Manager of Sustainable Design that there is a need for a new building or major renovation of an existing building. In addition to direct communication, when an environmental review is being done under the NEPA process the reviewer will be asked to check a box if the environmental review involves building construction and renovation. This check will generate an email that will inform the Manager of Sustainable Design that planning has begun on a new building or major renovation. The NEPA review process is part of TVA's EMS.

To meet the retrofit of 15 percent of TVA's existing buildings with the SGPs, work has been ongoing in TVA's two largest buildings, the COC and the KOC, which together represent 21 percent of the buildings subject to these requirements. Due to the size of these buildings it will take many years to completely implement all of the guiding principles resulting in red on the OMB Scorecard since there is currently no way to show incremental progress through the FRPP. To correct this and also work toward the requirement of 100 percent application of the SGPs, TVA hired an outside consultant in November 2010 to start sustainable evaluations on 49 smaller buildings with the goal of prioritizing them based on least cost and quickness of application. This Phase I evaluation was complete on March 8, 2011, and work has now started on detailed evaluations (Phase II) which will be completed on September 16, 2011. TVA has set a milestone to have ten of these detailed building evaluations completed by the July 2011 Scorecard due date. Preliminary funding has already been requested to start design and implementation with the start of FY 2012, and the completed Phase II detailed evaluations will provide final dollar amounts. TVA plans on implementing the SGPs in those buildings that are least costly to do so and the easiest and quickest in an attempt to catch up with reporting through the FRPP.

TVA's sustainable architecture program is centralized and managed by the Manager of Sustainable Design in the Environmental Sustainability Group. The implementation of the SGPs at remote building locations will depend on project management support from FP and coordination of site personnel for those buildings located at TVA power plants.

Whenever the need for new space is identified or renovation of an existing space is needed, the TVA Standard Process and Procedure SPP 5.20 - Internal Energy Efficiency Process (Including Potable Water and Sustainability as Related to Energy) and SPP 5.21 - Resource Efficient Building Design Process shall be followed. Both of these processes make up the TVA Sustainable Buildings Implementation Plan. These processes were updated in October 2010 to incorporate the latest EO 13514 requirements. These processes make up TVA Sustainable Buildings Implementation Plan and will be used as a guide to applying sustainability/ energy/water efficiency to new and existing TVA buildings.

Regional and Local Planning

TVA's policies and guidance are in alignment with the regional and local planning goals in EO 13514. Additionally under NEPA, TVA coordinates and/or consults with Federal, state and local agencies and tribes for actions that potentially affect their trust resources. Agencies frequently involved in these efforts include State Historic Preservation Officers, U.S. Fish and Wildlife Service, state environmental regulators, local development districts, and Native American tribes.

TVA's IRP and NRP and associated EISs are consistent with TVA's Environmental Policy and integrate methods and practices that support the goal-specific items in the EO. These plans will allow TVA to proactively manage these resources of the Tennessee Valley and support the renewed vision to become one of the nation's leading providers of low-cost and cleaner energy.

To increase the effectiveness of regional and local measures that enhance the integrity of local ecosystems and watersheds, TVA will continue to:

- Improve reservoir and stream water quality and leverage alliances with local and regional stakeholders to promote the use of best practices in water conservation and community planning techniques through Growth Readiness and other programs. The goal is to increase TVA hosting and/or participation in collaborative efforts focused on water quality, water quantity and community development practices.
- Include coordination with Federal, State, Tribal and Local stakeholders, as appropriate, in planning future use and management of TVA-managed public lands. Coordination with these stakeholders will occur at each planning opportunity and will be measured by the number of letters and emailed comments received and the number of meetings held with stakeholders.
- Promote collaboration of Federal, State, Tribal and Local stakeholders in natural resource management initiatives on TVA-managed public lands and will increase participation in collaborative opportunities (meetings, projects and partner agency plan reviews).

The lead for implementing the three actions above is the VP of Land and Shoreline Management.

The TVA Generation Partners program will continue to work with communities and other groups to ensure that proper planning is performed to assist in building the renewable generation portfolio for the Tennessee Valley.

TVA will continue to work with participating local public power companies and the environmental community to increase the sale of GPS each year to produce electricity from renewable sources and to add to the Tennessee Valley power mix.

d. Positions

High Performance Sustainable Design

TVA currently has one manager responsible for zero-net energy buildings and for ensuring that existing buildings as well as new construction meets the SGPs. The manager will be supported by a LEED-accredited architect in the TVA FP group. Other FP architects responsible for new building projects and supporting contracted A/E services will provide additional support.

TVA currently has two managers responsible for pursuing innovative cost-effective building strategies. Their efforts will be supported by additional Environmental Sustainability staff and interns and TVA FP architects and project managers responsible for building renovation projects.

TVA PSO has site O&M managers and project managers that support building systems renovations and new construction. These managers, with guidance and assistance from TVA Environmental and Energy managers and staff, are tasked with supporting projects that meet EO requirements. TVA Facilities Projects Strategy Group has been successfully consolidating space over the last couple of years and currently has adequate staff to continue these efforts.

TVA still needs to hire one-and-a-half FTE for Preservation Planning and employ one-half FTE in Information Services for database structure as well as hire consulting services to develop a database of historic buildings and structures. Note that these needs are carried over from TVA's June 2010 plan.

Regional and Local Planning

TVA will need 0.4 additional positions, described in more detail below, in addition to the leveraged resources already in place, to support implementation of Goal 3:

- 0.4 FTE to expand existing review of transportation plans prepared by municipal or rural planning organizations in TVA-served states other than Tennessee and North Carolina.

e. Planning Table

Table 7: High-Performance Sustainable Design Buildings & Regional and Local Planning Table

	GOAL 3 Targets	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
High-Performance Buildings	Owned Buildings	%	0	0	5	10	13	15	...	21
High-Performance Buildings	FRPP-Reported Leased Buildings	%	0	0	0	0	0	0	...	0
High-Performance Buildings	Total Buildings	%	0	0	5	10	13	15	...	15
High-Performance Buildings	Other, as defined by agency		none	none	none	none	none	none	...	none
Regional & Local Planning	Sum Total of Leveraged and Incremental Investments	\$ M	4.20	2.85	2.26	TBD	TBD	TBD	...	TBD

f. Agency Status

High Performance Sustainable Design

TVA has only built new buildings at TVA plant sites in recent years as opposed to larger corporate buildings. Most of these buildings are prefabricated metal buildings that are used as shops and warehouses and are less than 5,000 square feet. Though not required under EO 13514, TVA did incorporate the SGPs to the extent applicable in these buildings per EO 13423 by incorporating strategies such as daylighting; passive solar heating with fixed overhangs for summer shading; increased insulation; and efficient lighting controlled by photocells and occupancy sensors.

In FY 2011 TVA completed construction on the first floor of a 65,000-square foot training center to support power plant operations near its Bellefonte Nuclear Plant. The TVA Manager of Sustainable Design worked closely with the FP architect and contracted A/E services to incorporate the Sustainable Principles and to ensure that the building will perform 30 percent better than the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1 energy code. The first floor is now complete and occupied and construction on the second floor will soon begin. The goal of the project team is to seek LEED Silver certification for this building.

During the past year, TVA also has worked to incorporate many of the requirements of the SGPs in the COC and KOC. These include:

- I. INTEGRATED ASSESSMENT, OPERATION, AND MANAGEMENT - Making use of an integrated team to assess, develop and implement policy (COC & KOC);

- I. INTEGRATED ASSESSMENT, OPERATION, AND MANAGEMENT - Assess existing condition and operational procedures of the building and major building systems identify areas for improvement (COC & KOC);
- II. OPTIMIZE ENERGY PERFORMANCE - Energy Star certification (KOC) and recertification (COC);
- II. OPTIMIZE ENERGY PERFORMANCE - Using Energy Star and FEMP - designated energy efficient products where available (COC & KOC);
- IV. ENHANCE INDOOR ENVIRONMENTAL QUALITY - Low-emitting materials - Use low emitting materials for building modification, maintenance and cleaning (COC & KOC); and
- V. REDUCE ENVIRONMENTAL IMPACT OF MATERIALS - Waste and Materials Management - Provide reuse and recycling services for building occupants where markets or on-site recycling exist (COC & KOC).

During the upcoming year, TVA plans on completing a moisture control policy for both the COC and KOC, benchmarking for the COC, making use of integrated pest management in both the COC and KOC and making use of environmentally preferable products for both the COC & KOC. TVA also plans to complete sustainable evaluations on 36 smaller buildings and pursue funding to start implementation of the SGPs in these buildings in FY 2012.

A detailed computer energy model is currently being created for the COC including the adjacent Monteagle Place building that houses one of TVA's data centers. This model will be used to evaluate strategies to enhance the daylighting, look at more efficient lighting systems and controls and evaluate potential HVAC upgrades and controls, etc. The study will provide an assessment of the current system and will provide options, costs and potential savings. Funding to implement the projects has been requested for FY 13, FY 14 and FY 15. The goal is to come up with a combination of upgrades to substantially reduce energy and water use from an efficient holistic perspective.

TVA has successfully updated its green procurement process (TVA-SPP-05.22). This update includes the new requirements of EO 13514. Currently the plan states that "The Energy Policy Act of 2005 and EOs 13123/13514 requires Federal agencies purchasing energy consuming equipment to purchase Energy Star products or energy-efficient products designated by the Department of Energy's Federal Energy Management Program (FEMP). Vendors who supply equipment to TVA must in turn comply with these guidelines. Equipment supplied on this contract has been identified by TVA to be subject to these energy efficiency requirements." This process will continue to be the guide for purchasing green and energy efficient products for TVA including sustainable building efforts.

Other related sustainable building efforts deal with energy and water surveys. Since TVA started the EISA surveys in FY 2009, \$24.6 million of energy and water improvements have been identified with a potential savings of \$3.4 million per year. This results in a simple payback of 7.1 years. These cost-effective projects include energy efficient lighting and HVAC upgrades, occupancy sensors to control plug loads, HVAC and lighting controls, insulation and window upgrades and plumbing fixture retrofits. TVA will continue the EISA surveys and is currently in the process of implementing many of these projects to help reduce agency energy and water use to meet EO goals and reduce operational costs.

TVA is addressing the reuse of historic Federal properties by the establishment of its Challenged Properties Program – a Valley-wide effort to address Federal property reuse. As part of the Standard Programs and Process guidance for this program, historic properties will be identified by the agencies Historic and Archeological Compliance Staff. TVA is currently preparing a comprehensive assessment of historic buildings and structures as part of the disposal and potential redevelopment of an approximately 1,400-acre brownfield parcel in Muscle Shoals, Ala., including 1.4 million square feet of corporate, warehouse and abandoned industrial space. This was a collaborative effort between TVA and the local governmental agencies that have jurisdiction in the four municipalities surrounding the parcel. TVA evaluated the importance and condition of buildings eligible for listing in the National Register of Historic Places on the Muscle Shoals Reservation through the Adaptive Re-Use Study. This study will help TVA in its work with the Shoals community and local governments as well as during consultations with the Alabama State Historic

Preservation Officer, the Advisory Council on Historic Preservation, federally recognized Native American tribes and other consulting parties on this undertaking, which has the potential to affect historic properties.

TVA maintains strategic regional plans for major operations centers and is annually monitoring costs for operations and maintenance and suitability for workplace alignment, as well as local real estate market information.

Going forward, TVA will focus on workplace strategies to maximize the square footage utilization and continue to align with the enterprise strategic business planning while exploring opportunities to reduce square footage, collaborate with business units, support organizations and create opportunities for economic development in the Tennessee Valley.

TVA states in the 2010 Environmental Policy the commitment to “demonstrate leadership through the ecologically sound management of natural resources and the protection of cultural and heritage resources.” To this end, TVA has a policy requiring that projects be reviewed and address NEPA and NHPA requirements which include the review of potential impacts on natural and cultural resources, including historic structures.

A comprehensive assessment is needed for all remaining TVA historic buildings and structures across the Tennessee Valley.

Regional and Local Planning

TVA currently integrates sustainability methods and practices into its policies and procedures. TVA’s Environmental Policy establishes a framework to guide decision-making and future strategic development and is reviewed every other year by the TVA Board of Directors.

After more than two years of development, the TVA has completed its IRP, entitled “TVA’s Energy and Environmental Future.” Many electric utilities use the integrated resource planning process as a decision tool to help define both near- and long-term challenges. For TVA, the process was expanded to consider impacts on the environment and the economy. The IRP provides guidance in choosing the best resource options to meet future energy demand by considering future uncertainties, power reliability, financial, economic and environmental impacts associated with those options.

The NRP is in process of being completed and is scheduled to be approved by the TVA Board of Directors in FY 2011. The NRP will evaluate the implementation of the TVA reservoir lands planning, natural resource management, water resources management, and recreation processes and strategies. The NRP presents an opportunity to evaluate the current planning process and land use allocation categories from a Tennessee Valley-wide perspective. The objective of the TVA natural resource management plan is to implement sustainable practices to balance protection of natural and cultural resources while providing dispersed recreation opportunities. The NRP will evaluate a variety of activities associated with the implementation of these activities. In May 1997, TVA issued an EA and Finding of No Significant Impact for activities associated with the clean water initiative, now called water resource activities. The NRP would include any changes to the types of activities and techniques evaluated in the previous EA, updates to NEPA documentation required for site-specific activities and an evaluation of TVA ability’s to issue grants for certain water resource activities.

Currently, TVA reviews and comments on draft transportation plans prepared by municipal or rural planning organizations in Tennessee (as agreed to with the Tennessee Environmental Streamlining Agreement of 2008). TVA also reviews individual transportation projects as a participating or cooperating agency as defined by NEPA. TVA has a similar agreement with North Carolina. TVA is not involved in comparable transportation planning efforts in the other TVA states. Currently, less than 0.1 FTE per year is required to conduct these reviews.

TVA will determine the regional and metropolitan planning organizations in the region that may be suitable for TVA participation. Once identified, TVA will review and provide input, as appropriate, during the organization planning cycles.

The TVA Environmental Policy adopted an objective to stop the growth in volume and reduce the rate of carbon emissions by 2020 by supporting reliable, affordable, lower-carbon dioxide (CO2) energy opportunities. The Generation Partners and GPS programs will allow TVA to help meet the challenge of reducing carbon emissions.

TVA presently has a renewable power generation program known as Generation Partners where residential, commercial, or industrial power customers served by a participating power company of TVA are able to generate eligible renewable resources that include solar, wind, low impact hydroelectric and biomass. TVA purchases all 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 rate and any fuel cost adjustments. All new Generation Partners participants receive a \$1,000 incentive to help offset start-up costs. The customer is guaranteed payments for 10 years from the start of the agreement with the local power company. Generation Partners support the environment by using renewable energy sources, and they reduce their monthly energy bills through the revenue they receive from the sale of the green power.

Generation Partners has a diverse portfolio of renewable generation products which includes biomass, landfill gas-to-energy, large solar, micro-hydro, residential solar, wastewater and wind generation. In FY 2009, Generation Partners added 234 kW of renewable generation to the TVA portfolio with an expected goal of 80 MW of summer peak generation and 594 GWh of energy in FY2020. In FY 2010, Generation Partners added 2.16 MW. In FY 2009, the GPS program sold 87,306 MWhs of renewable energy to participating customers in the Tennessee Valley. In FY 2010, TVA sold 93,483 MWhs and has a goal to sell 100,000 MWhs for FY 2011.

Table 8: TVA Portfolio - Expected Goal of Summer Peak Generation in FY 2020

Year	MW	GWh
2010	0	0
2011	0	0
2012	10	69
2013	21	152
2014	33	236
2015	45	320
2016	56	397
2017	64	460
2018	71	514
2019	76	558
2020	80	594

TVA is preparing to routinely address impacts associated with energy usage and alternative energy sources in EA and EIS assessments for new and expanded non-power facilities. TVA has revised the TVA NEPA guidance to provide instructions for addressing energy usage and alternative energy sources and to address these issues in EA and EIS assessments for new and expanded non-power facilities. TVA also added a statement to the NEPA document review checklist addressing compliance with this goal.

g. Return on Investment

High Performance Sustainable Design

Currently, no significant project or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI.

Regional and Local Planning

Currently, no significant projects or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI. Likewise, no specific projects or initiatives have been expanded due to higher than expected ROI.

h. Highlights

High Performance Sustainable Design

Personnel Workstation Occupancy Sensors - One of the more innovative options to reduce energy use in TVA office buildings has been the use of personnel workstation occupancy sensors. This project started out as a pilot project to evaluate the performance of these sensors. The sensors consist of a power strip that has outlets controlled by a sensor that detects occupancy and automatically switches on and off equipment such as task lights, computer monitor, printers, fans radios and other equipment that can be turned off (see Figure 2). Measured data using plug in power meters showed that the sensors were capable of cutting workstation energy use 50 percent. The payback from energy savings was found to be about two years.

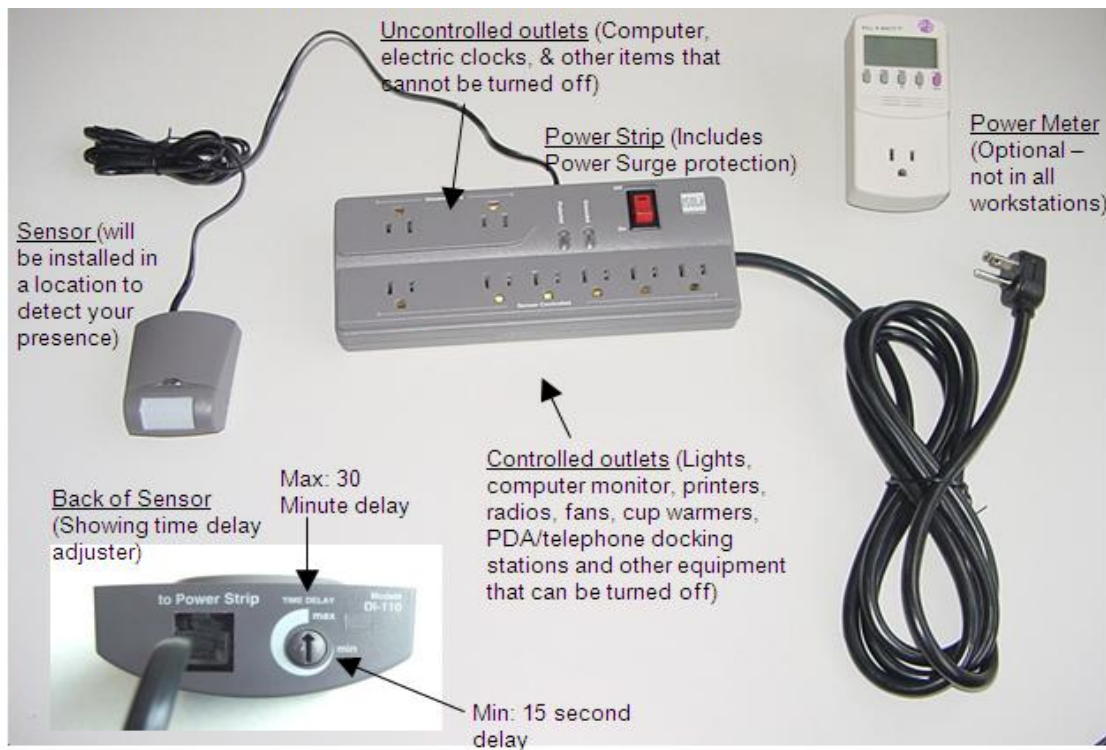


Figure 2 - Personnel Workstation Occupancy Sensor

Starting in FY 2010 these sensors were installed in all workstations and offices in the 1.2-million-square-foot COC. Sensors were also installed in TVA's 92,000-square-foot Edney office building in Chattanooga. Sensor installation is now planned for other TVA locations.

Regional and Local Planning

TVA's Chattanooga Office Complex -The Chattanooga Workplace Decision Project focused on achieving the best value for TVA's long-term office space needs in Chattanooga. The COC is TVA's largest office building and includes four 6-story buildings with approximately 1.05 million rentable square feet of office space. The objective

of the project was to generate substantial savings to support TVA's agency-wide goal of reducing non-fuel Operations and Maintenance (O&M) expenses.

The best business decisions for TVA were identified--either purchase a developer constructed build-to-suit facility on TVA-owned land outside the CBD or purchase the COC and remain in the downtown location. After extensive review and analysis, TVA agreed to purchase the COC and remain in the downtown Chattanooga location adjacent to transportation nodes, and within walking distance of restaurants and other amenities found in an urban location.

GOAL 3: High-Performance Sustainable Design / Green Buildings & Regional and Local Planning (Goal-Specific Items)

High Performance Sustainable Design

EO 13514 and guidance from OFEE and OMB have established sub-target areas for High-Performance Sustainable Design/Green Buildings. TVA has developed and presented in the implementation section a number of strategies and methods to meet the following eight sub-target areas:

a. Beginning in FY 2020, all new Federal buildings are designed to achieve zero-net energy by FY 2030

For every new building that is built, TVA will strive to produce a design that uses 40,000 Btu/sf/yr or less. To approach zero net energy, TVA will evaluate the use of passive solar heating, active solar hot water heating, day-lighting, shading, natural ventilation and the use of on-site photovoltaic systems for every new building design. Those strategies that prove to be cost effective will be incorporated into the design. TVA recognizes that as time goes by the price of photovoltaic and other renewables will likely decrease, making it possible to meet this goal by 2030.

In past years, the TVA Manager of Sustainable Design working with an FP architect has proven that it is possible to design new buildings that approach net-zero energy use. For example, TVA developed a new design for the Johnson City Customer Service center that incorporated a wide range of cost-effective energy and sustainable features such as decentralized geothermal heat pump HVAC, north facing clerestory windows, perimeter windows and light tube skylights for day-lighting, light-colored roof, task/ambient lighting system, membrane heat exchange system, permeable paving, rain water collection and reuse for irrigation and vehicle washing, waterless urinals, high efficiency hand dryers, and sustainable materials and finishes. Even though this building was not built, whole building energy analyses calculated that the design would use only 20,107 Btu/sf/yr. This value is significantly below the TVA typical office energy use of 60,000 Btu/sf/yr. This low energy use would make it possible to apply photovoltaic solar panels to provide the remaining energy requirement and achieve net-zero energy use.

b. All new construction, major renovation or repair and alteration of federal buildings complies with, "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)"

The TVA goals for High-Performance Sustainable Design/Green Buildings align closely with those outlined in EO 13423/13514, EPLAct05 and EISA 2007. Although TVA builds few new buildings each year, those that have been built have incorporated the required Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles) and have been designed to perform 30 percent better than the ASHRAE 90.1 code or the International Energy Conservation Code. TVA will continue to meet these requirements for new buildings.

To ensure that no new construction or major renovation takes place without accounting for these requirements, a new construction/major renovation check box has been added to the NEPA review that is performed for every TVA action dealing with the environment. This box simply asks the question: "Does this action involve the construction of a building or major renovation to an existing building?" If checked when the review is submitted electronically, this will generate an email sent to a special mailbox that has already been set up for Environmental Sustainability Group staff to check periodically. Staff can then follow up with the appropriate people to ensure that they are aware of the SGPs and can apply them to the building.

Whenever the need for new space is identified or renovation of an existing space is needed, the TVA Standard Process and Procedure SPP 5.20 - Internal Energy Efficiency Process (Including Potable Water and Sustainability as Related to Energy) and SPP 5.21 - Resource Efficient Building Design Process shall be followed. Both of these processes make up the TVA Sustainable Buildings Implementation Plan.

All new RFPs for contracted building design services shall include the SGPs including the need for documentation that verifies compliance. Additional funding to meet these requirements will be provided as part of the overall project cost by the TVA group requesting new building space. The Environmental Sustainability staff will work closely with the major TVA groups to ensure that this language is included. Communications on this requirement as well as other EO requirements will be done through the TVA EESC.

- c. Assess and demonstrate that at least 15% of agency's existing government-owned buildings, agency direct-leased buildings, delegated authority leased buildings, and FRPP-reported leased buildings meet Guiding Principles by FY 2015 [5,000 GSF threshold for existing buildings and building leases].**

TVA is working toward meeting the retrofit of 15 percent of its existing buildings using The SGPs. TVA's original strategy was to retrofit its two largest major buildings--the COC and the KOC. These two buildings represent 21 percent of TVA goal subject buildings as defined by EPAAct05. Following current EO 13514 directives to exclude buildings that are 5,000 square feet or less, the COC and KOC would represent 25 percent of TVA square footage subject to this requirement. However, with the OMB's recent policy to count square footage reporting less than numbers of buildings through the FRPP database, TVA is adjusting this strategy.

TVA is not subject to the FRPP Executive Order but has voluntarily supplied a complete inventory of buildings to the database that can be used to count progress toward the 15 percent requirement and beyond. This first comprehensive inventory was submitted by the December 2010 due date. TVA will continue to concentrate on applying the SGPs to the COC and KOC since this approach will have the greatest impact on reducing agency energy use and environmental impact as opposed to doing a greater number of smaller buildings. TVA is working with OMB to allow TVA to show incremental progress (implementing individual requirements of the SGPs) as counting toward progress in meeting the 15 percent requirement on the OMB Scorecard.

- d. Demonstrate annual progress toward 100% conformance with Guiding Principles for entire building inventory by 2015 and thereafter.**

TVA has already started to expand beyond the COC and KOC and will start applying the SGPs to many of its smaller buildings. This will not only help with quantity accounting through the FRPP but will help demonstrate annual progress toward 100 percent conformance.

- e. Incorporate sustainable practices into agency policy and planning for new Federal facilities and leases, and into lease renewal strategies.**

TVA has two agency level process that deal with energy/water efficiency and sustainable design that have been in effect since January 2007. The first process is TVA-SPP-05.20 - "Internal Environmental and Energy Sustainability Process." The purpose of this process is to incorporate environmental sustainability and energy efficiencies into the operation of TVA. Doing so will help TVA, as an agency of the federal government, meet the applicable statutory requirements of the National Energy Conservation Policy Act (NECPA), Energy Policy Act of 1992 (EP Act 92), Energy Policy Act of 2005 (EP Act 05), Energy Independence and Security Act of 2007 (EISA 2007) and 10 Code of Regulations (CFR) Parts 433/434/435. This process incorporates sustainability and efficiency into TVA-wide internal management of energy, greenhouse gas, waste and water.

The second process is TVA-SPP-05.21 - "Resource Efficient Building Design Process." This process provides a method for Business Units (BUs) to comply with federal laws and regulations, including the National Energy Conservation Policy Act (NECPA), Energy Policy Act of 2005 (EPAAct05), Energy Independence and Security Act of 2007 (EISA 2007), and Presidential Executive Orders 13423 and 13514 through the incorporation of energy efficient, water efficient, and sustainable retrofits to existing space and the design of new spaces and buildings within TVA. It also provides a method to reduce energy and potable water usage to a minimum and promote

sustainable building design. This procedure applies to all TVA owned or leased buildings in whole or in part that use energy, potable water, and/or building material resources and to the activities of TVA or contract employees involved in the design, procurement, construction, operations or maintenance of those buildings. This procedure does not apply to those TVA buildings, old or new, where the energy use is included in the lease and/or the buildings are used to generate or transmit electricity.

Both of these processes were updated in October 2010 to incorporate the latest EO requirements and guidance.

f. Demonstrate use of cost-effective, innovative building and sustainable landscape strategies to minimize energy, water and materials consumption.

TVA started its Sustainable Architecture Program in 1993. The program's purpose was to consider recycling of used building materials and purchase of more environmental building materials. This early pioneering sustainable building work by TVA resulted in a White House Closing the Circle award. The Federal Environmental Executive presented this award to the TVA in a ceremony held on the TVA KOC plaza. TVA has continued to build upon these early efforts and has been an active participant in the Interagency Sustainable Working Group since it was founded in 2001. TVA also assisted in the writing of the original Sustainable MOU which was the start of the "Sustainable Guiding Principles."

These early innovative efforts set the stage for continuing sustainable efforts in TVA buildings. Cost effective materials such as movable reusable wall systems, recycled content/recyclable carpet tiles, durable biobased hogs hair carpet in lobbies and elevators, and low VOC/no VOC paints and finishes have become standards used in TVA buildings.

The TVA COC built in 1985, was a showcase of early innovative ideas, such as daylighting, task/ambient lighting, efficient HVAC systems, and an early example of a landscaped green roof over its below ground auditorium. Since then TVA has explored the use of modular green roof systems, personal workstation lighting (an individual controlled light suspended above each work station), and personal workstation occupancy sensors to automatically turn on/off task lights, monitors, printers and other equipment that does not have to be on constantly. Three thousand of these sensors were installed in TVA workstations in FY 2010.

TVA also has been installing water saving devices such as low flow aerators, low flow urinals, waterless urinals and low flow toilets in many of its buildings to reduce water use.

In its campgrounds TVA has been making use of recycled content landscape timbers and specifying reclaimed coal combustion products as admixtures to concrete, pavers and even shingles. In FY 2011 TVA completed work on a showcase recreational area at its Melton Hill Dam that shows the public technologies such as photovoltaic panels, wind turbines, LED lighting, efficient HVAC and water-saving systems. TVA has also done pilot projects looking at the performance of permeable pavement, native plants and rainwater collection and reuse.

g. Operate and maintain, and conduct all minor repairs and alterations for existing building systems to reduce energy, water and materials consumption in a manner that achieves a net reduction in agency deferred maintenance costs.

TVA's existing building systems will be operated and maintained to optimize the asset's value to TVA. This shall include operational activities for efficient, safe, and reliable operations while maximizing the life of the building systems. This will be accomplished using the most cost-effective and practical solutions ranging from control through building automation systems to manual operations. Paramount to this strategy is the safety, comfort and productivity of building occupants.

In conjunction with optimized operations will be an optimized maintenance program to ensure that the assets continue to perform as originally designed and intended without diminished quality, reliability, efficiency or life. Appropriate frequencies and levels of maintenance will be determined based on evaluations of the value of the asset, cost of the maintenance, regulatory/safety code requirements, productivity of occupants or users, manufacturers'

recommendations and the importance of the asset to TVA. These maintenance activities will be scheduled using the TVA work management system. A key facet of the maintenance program will always be safety.

TVA's existing funding activities currently have weighting for regulatory requirements and commitments. These funding mechanisms look at all important project aspects including safety, regulatory requirements, economics, asset preservation and commitments, and prioritize funding based upon these. By using these existing systems and processes, and with an increased emphasis on sustainability in the agency, TVA will implement high priority sustainability projects as well as consider the sustainability aspects in all projects.

h. Optimize performance of the agency's real property portfolio – dispose and consolidate excess and underutilized property, co-locate field offices, consolidate across metropolitan and regional locations.

The TVA-managed Corporate Real Estate (CRE) Portfolio consists of approximately 2.5 million square feet supporting a population of knowledge workers totaling approximately 5,000. TVA uses a model developed in 2002 to determine "core" buildings versus "non-core" buildings for the purpose of collaboration with the Asset Preservation program which allocates dollars for capital improvements for building envelopes and systems for our core properties. The non-core properties are then put in a program for further evaluation regarding disposal and "mothballing."

The model and methodology was developed in 2001 as a response to a declining workforce and a stable portfolio of space that needed to be reduced. Known as the TVA Facilities Strategic Plan, the plan was approved by the TVA Board of Directors in 2001 and received an achievement award in the "Asset Management" category for "Real Property Innovation" in 2003 from the General Services Administration.

Results of the plan include a reduction from 3.5 million square feet to the current level of 2.5 million square feet, removal of approximately 100 buildings from TVA corporate portfolio, elimination of non-essential spending on non-core properties, and more strategic alignment of the knowledge workforce with the TVA business planning due to the resultant consolidations.

TVA continually updates this plan for a three- to five- year scenario planning outlook and continues to take steps to maximize the CRE Portfolio, providing the right amount of space in the right locations to enable TVA employees to do their jobs effectively.

i. Reduce need for new building and field office space by utilizing technologies to increase telework opportunities and expand delivery of services (over the internet or electronically).

TVA like most agencies and business has become highly dependent upon electronic communications and the use of the internet. Most business is conducted via email, teleconference and face to face meetings. Most face to face meetings provide for teleconferencing options to minimize travel. TVA has had a system in effect for many years to electronically schedule teleconference meetings and remotely share computer desktops with remotely located participants. TVA also has audiovisual teleconference rooms at all of its major locations so that remote face to face meetings can be held. TVA has also been making use of live streaming of important meetings that impact all TVA employees such as the TVA board meetings and CEO employee update meetings.

Many TVA employees have opted for laptops in place of desktop computers so that they can work offsite as needed. TVA has done some pilot studies on telework and managers have been given the flexibility to implement it on a case by case basis, but no official TVA process or procedure has been written on telework to date. TVA will continue to explore this possibility, as it will be a key methodology to meet GHG targets.

j. Conserve, rehabilitate, and reuse historic Federal properties, using current best practices and technology.

TVA currently has an inventory of over 100 federally owned historic buildings comprising a very small portion of TVA's total real estate portfolio. TVA must consider the effect of its actions on eligible buildings and structures

throughout the Tennessee Valley as projects are developed. Historic buildings include corporate office buildings, warehouses, and laboratories. While TVA's dams and hydroelectric plants are not covered under EO 13514, these structures must comply with the renovation, maintenance, and rehabilitation requirements of the National Historic Preservation Act (NHPA).

The TVA Historic and Archeological Compliance Staff work to ensure that TVA complies with Federal regulations and EOs governing historic preservation of federal properties, including:

- NHPA of 1966, Sections 106 and 110
- Archaeological Resource Protection Act (ARPA)
- Native American Graves Protection and Repatriation Act (NAGPRA)
- EO 13514: Federal Leadership in Environmental, Energy and Economic Performance
- EO 13287: Preserve America

TVA reviews each project for compliance with regulations and, as appropriate, consults with State Historic Preservation Officers (SHPO), federally recognized tribes, and other consulting parties. Copies of Section 106 Consultation letters are entered into the Electronic Document Management System (EDMS) for record-keeping. TVA also tracks compliance with NEPA using the Environmental Information Center or the EDMS.

k. Align agency space actions (new leases, new construction, consolidation) with agency Scope 1&2 and Scope 3 GHG reduction targets.

The TVA GHG Scope 1 and 2 targets are currently based solely on building energy reduction. Likewise, Scope 3 GHG transmission and distribution losses are also tied to building energy use. TVA as an organization has been reducing its employee count resulting in consolidation of employees into less space. As stated in sub-target h above TVA has reduced its corporate space needs by about 1 million square foot.

Regional and Local Planning

a. Incorporate consultation with local and metropolitan planning organizations regarding the impact, or potential impact of Federal actions on local transportation infrastructure and local development plans into existing policy and guidance.

TVA reviews individual transportation projects as a participating or cooperating agency as defined by NEPA. TVA will increase involvement with Regional Transportation Organizations (RTO) and/or Metropolitan Planning Organizations (MPO) in states for which TVA has operational interests. TVA will expand the review function to other TVA states, where appropriate, based on the amount of operational interests/facilities present. Given the varied planning cycles in the states (updates every four to five years), a range of "25 to 50 percent of plans reviewed" will be used to monitor progress for this goal. A more specific sub-target can be set for each particular year.

b. Align agency policy to increase the effectiveness of local planning efforts regarding transportation, energy resource and the environment.

In FY 2010, TVA FP, under the agency lead of Power Systems Operations, implemented a site selection criteria matrix into our RFP process for new owned or leased space that considers location advantages for center city or town center locations where adjacencies to public transit and other alternative transportation methods are readily available. This matrix is part of our site selection process along with price, schedule and operational location criteria. The matrix also includes and weighs selection components such as adjacency to bicycle trails, greenways and alternative transportation corridors.

TVA and participating local public power companies, with input from the environmental community, created the GPS program. Under the program, electricity is produced from renewable sources and added to the Tennessee Valley power mix. GPS is sold to residential consumers in 150-kilowatt-hour blocks (about 12 percent of a typical household's monthly energy use). Each block adds \$4 to the customer's monthly power bills. Consumers may buy an unlimited number of blocks. In other parts of the country, residential consumers who participate in green power programs pay an extra \$2 to \$10 per month for green power. GPS is also marketed to commercial and industrial consumers, who are requested to buy blocks based on the amount of energy consumed.

The TVA Generation Partners program will continue to work with communities and other groups to ensure that proper planning is performed to assist in building the renewable generation portfolio for the Tennessee Valley. Currently, TVA is working with Solar America Cities across the Tennessee Valley to make solar energy a more viable option for these communities. Solar America Cities uses innovative approaches to remove market barriers to solar energy and to encourage adoption of solar energy technologies at the local level. In addition, TVA also has a MOA with the Kentucky Energy and Environment Cabinet to assist in the development of clean and renewable energy initiatives. TVA will actively participate in regional and local planning meetings to help facilitate the use of renewable generation.

TVA will continue to work with participating local public power companies and the environmental community to increase the sale of GPS each year to produce electricity from renewable sources and to add to the Tennessee Valley power mix. The GPS is a program in which residential and commercial business customers can sign up and choose the number of green power blocks they wish to purchase each month through the local power distributors. TVA will also actively provide guidance to communities and other stakeholders about the development of renewable generation.

c. Increase effectiveness of regional measures that enhance integrity of local ecosystems and watersheds

TVA will identify Federal, State, Tribal, and Local stakeholders and/or programs that share common goals with the TVA regional and local planning and stewardship efforts. TVA will also include partnership/coalition development into employee performance review and development plans. TVA will allocate funds and employee time as TVA contributes toward collaborative stewardship efforts (i.e., grant match, employee time as in-kind match, or supplemental materials and supplies).

TVA will implement the NRP that was developed with input from Federal, State, Tribal, and Local stakeholders that will provide agency guidance on our stewardship work including: water quality/quantity, land management, recreation, and natural resources. The lead for ensuring that stakeholder input is received and incorporated is the SSO.

TVA recognizes the impact that operations have on the environment and is working to maintain quality of life and a sustainable environment for the region. The TVA Environmental Policy directs TVA to collaborate with stakeholders (Federal, State, Local, Tribal and NGOs). TVA will implement the policy within its business operations: Water Resource Protection and Improvement; Sustainable Land Use; and Natural Resource Management. Each of these policy areas has initiatives, such as the Growth Readiness Program and other programs that support stewardship of water and natural resources and that engage collaboration among a variety of partners to support TVA's Environmental Policy.

The following are current policy and programs that support the Environmental Policy:

i. The TVA Land Policy was approved by the TVA Board of Directors on November 30, 2006. The Land Policy defines how TVA manages reservoir, power, and commercial properties under its stewardship. This Policy governs how land is planned, including whether it is disposed of or retained. When the Board approved the new policy, they also directed staff to review TVA-managed land designated for recreation and economic development purposes to verify the suitability of the properties for this use.

ii. Programs/efforts underway in regards to the Land Policy:

- Reservoir Land Management Plans
- Economic Development Program
- Commercial and Public Recreation (leases or easements)
- Power and Commercial Properties (non reservoir property and mineral holdings)

iii. On May 19, 2008, the TVA Board of Directors approved the TVA Environmental Policy. This policy was reviewed in 2010 by the TVA Board of Directors. The results of the biennial review indicated that TVA's Environmental Policy remained consistent with the stated Board strategy and policy and did not require a revision at that time. This Policy will inform TVA business decisions as we continue to provide clean, reliable, and still-affordable energy, sustainable economic development and proactive environmental stewardship.

iv. Programs/efforts underway in regards to the Environmental Policy:

- Climate Change Mitigation and Adaptation
- Air Quality Improvement
- Water Resource Protection and Improvement
- Waste Minimization
- Sustainable Land Use
- Natural Resource Management

d. Update agency policy and guidance to ensure that all Environmental Impact Statements and Environmental Assessments required under the National Environmental Policy Act for proposed or expanded Federal facilities, and as appropriate, identify and analyze impacts associated with energy (including alternative energy sources) and climate change.

In FY 2011, TVA revised the TVA NEPA guidance to provide instructions to NEPA document preparers for addressing energy usage and alternative energy sources and to address these issues in EA and EIS assessments for new and expanded non-power facilities. TVA also added a statement to the NEPA document review checklist addressing compliance with this goal. TVA will address the issue of energy impacts and explore alternative energy sources in relevant EA and EIS reports.

e. Integrate methods and practices necessary to achieve the goals of this plan into agency master planning documents (i.e., high-performance, sustainable building goals, pollution prevention and waste reduction goals, water use reduction goals, sustainable acquisition goals, electronic stewardship and data center consolidation, etc.

Environmental responsibility is a corporate TVA goal. The 2007 Strategic Plan stated "TVA will be proactive in addressing environmental concerns, including those related to global climate change." The Environmental Policy provides board-level guiding principles to successfully lead TVA to reduce its environmental impact while continuing to provide reliable and competitively priced power to the Valley. There is a growing recognition of the environmental and economic need for an increased emphasis on actions that support sustainable initiatives to most effectively meet the three dimensions of the TVA mission. In the Strategic Plan, about half of the identified strategic objectives and critical success factors relate directly to TVA's environmental-related activities and policy-making. Following the release of the Strategic Plan, the board asked for the development of an integrated environmental policy to outline objectives and critical success factors across the multiple areas of TVA's activities. The policy also addresses TVA's response to the uncertain future of legislation on GHGs, including carbon and the scarcity of available mitigating technologies in a carbon-constrained future.

TVA's IRP and NRP and associated EISs are consistent with TVA's Environmental Policy and support the renewed vision to become one of the nation's leading providers of low-cost and cleaner energy by 2020.

TVA's IRP has been developed to support TVA's mission for meeting the electric power needs of the Tennessee Valley region in a sustainable manner. The 20-year strategy recommended by the IRP provides direction for decisions that require a long lead time. The renewed vision and this IRP will better equip TVA to meet the substantial challenges facing the electric utility industry for the benefit of TVA stakeholders. Similarly, the Natural Resource Plan is a comprehensive study for managing TVA's reservoir lands planning, biological and cultural resources management, water resources management and recreation programs. The purpose of this study is to develop a plan that will allow TVA to proactively manage these resources of the Tennessee Valley over the next 20 years.

f. Update agency policy and guidance to ensure coordination and (where appropriate) consultation with Federal, State, Tribal and local management authorities regarding impacts to local ecosystems, watersheds and environmental management associated with proposed new or expanded Federal facilities.

Under NEPA, TVA currently coordinates and/or consults with Federal, state, and local agencies. These efforts include State Historic Preservation Officers, U.S. Fish and Wildlife Service, state environmental regulators, local development districts and Native American tribes.

g. Discuss agency participation in critical local and regional efforts and initiatives (i.e., Executive Order on Chesapeake Bay Protection and Restoration, Executive Order on Stewardship of the Ocean, Our Coasts, and the Great Lakes, etc.).

Upon TVA's creation in 1933, the agency has been actively involved with water resources and river system integration. Programs to study and manage suspended sediment; limnology; water quality in reservoirs, rivers, and tailwaters; reservoir fisheries; stream biology; and the hydrology and water quality impacts of different land uses all were begun by 1940. Much of this work was associated with construction of new dams and reservoirs and the broader stewardship mission of TVA.

Several stewardship programs took shape in the 1990s. These programs can be grouped by the ultimate outcomes for which the programs are designed. The goal of the first group, referred to as public outreach programs, is to encourage and demonstrate good stewardship of water resources. Current programs in this group include the Quality Growth Program and the Tennessee Valley Clean Marina Initiative. The programs in the second group, water resources improvement group, are designed to create measurable water quality improvement in Valley watersheds. Targeted Watershed Initiatives (TWI) is the current program in this group. The last group consists of programs that collect, maintain, and distribute information about water resource conditions. The Stream and Tailwater Monitoring (STM) Program started in 1986, with the first TVA application of the Index of Biotic Integrity (IBI) (Saylor and Scott 1987) to measure the condition of stream fish communities. STM grew into the primary data source for the TWI Program, providing data to target projects, track project progress, and define the outcome for watershed work. TWI also uses data from the Vital Signs Monitoring Program for targeting, tracking, and outcome measures.

Through these efforts, TVA works in concert with federal and state agencies to protect and improve water quality while maintaining an in-depth knowledge of changing conditions in the river system. To facilitate coordinated water resource stewardship, TVA brings together various entities with interests in and responsibilities for the river, both inside and outside the watershed boundaries.

Because of its stewardship of one of the nation's largest watersheds, TVA has not only a unique role to fill in this region, but also a national role as a test case for the development of tools for other agencies working to maintain water quality in other watersheds. Studies of management approaches in the Tennessee River watershed could be applied to help implement national initiatives (e.g., the northern Gulf of Mexico hypoxia and climate change adaptations).

TVA routinely coordinates with municipal "Offices of Sustainability" on matters of mutual interest.

GOAL 4: Water Use Efficiency and Management (Basic Performance)

a. Goal Description

This goal is a directive under the EO 13423/13514 to advance water use efficiency and management. TVA is required to reduce potable water use intensity by 2 percent per year or at least 26 percent by FY 2020, reduce industrial, landscaping, and agricultural water use by 2 percent per year or at least 20 percent by FY 2020, identify and implement water reuse strategies, achieve objectives established by EPA in Stormwater Guidance for Federal Facilities and incorporate appropriate reduction strategies for non-potable water use into agency policy and planning.

b. Agency Lead for Goal

Water use efficiency and management will be jointly led by a project manager in the TVA Environmental Sustainability group and a water manager in the TVA Fossil Group. Water use efficiency will be communicated through the TVA Energy and Environmental Sustainability Committee. In addition, implementation of Water Use Efficiency Sustainability goal for TVA will be accomplished by the following key staff:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Lead, High Performance Facilities Working Subcommittee

These individuals will be supported by key areas of the TVA organization which are:

- TVA Environmental and Energy Sustainability Committee
- Operation Business Units

c. Implementation Methods

TVA is committed to better management and use of potable and non-potable water resources. This issue is central to TVA's core responsibility of maintaining the Tennessee Valley reservoirs and river system. Water is essential to all stakeholders. TVA recognizes that using less water is not only better for the environment but also reduces cost. TVA plans to implement several projects in the future to further reduce its water usage and become a leading example to the community on water use efficiency and management.

For potable water TVA plans to continue using EISA 2007 surveys and high performance sustainable building surveys to uncover potential water-saving opportunities. For non-potable water, TVA plans to reduce its industrial water use by switching from wet ash handling and storage to dry ash handling and storage. Once this is accomplished the resulting non-potable water savings will well exceed the goal.

TVA has fallen slightly behind in meeting the potable water goal this past January 2011 OMB Scorecard period, scoring yellow for potable water reduction. This has been due to a number of factors including utility bill data entry errors, database corruption of some of the data, and incomplete accounting of water use at its Muscle Shoals water plant. TVA plans on correcting this by moving water data to a new database to better account for water-saving efforts and has already come to an understanding of the water situation in Muscle Shoals. Once data is migrated and checked in the database TVA anticipates having to reset its base year and plans to once again be on track to meeting the potable water reduction goal.

For non-potable water, TVA has already started work to eliminate wet ash handling and storage and anticipates cutting non-potable water use 7 percent in FY 2011 and 13 percent by FY 2012.

d. Positions

TVA currently has two FTEs spending approximately 50 percent of their time dedicated to entering utility bill information into the TVA Internal Energy Management Program database, which tracks energy and water usage at TVA facilities. There will also be two FTEs spending approximately 25 percent of their time dedicated to tracking progress and reporting.

TVA Electric System Projects/Facilities Projects has site-engineering managers with staff that supports building systems renovations and new construction. These managers with guidance and assistance from TVA Environmental and energy managers and staff are tasked with supporting water reuse projects.

e. Planning Table

Table 9: Water Use Efficiency and Management Planning Table

Water Use Efficiency & MGMT	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Potable Water Reduction Targets (gal/SF reduced from FY07 base year)	%	6	8	10	12	14	16	...	26
Planned Potable Water Reduction (gal/SF reduced from FY07 base year)	%	4.6	8	10	12	14	16	...	26
Industrial, Landscaping, and Agricultural Water Reduction Targets (gal reduced from FY10 base year)	%	-	2	4	6	8	10	...	20
Planned Industrial, Landscaping, and Agricultural Water Reduction (gal reduced from FY10 base year)	%	0	7	13	13	17	18	...	25
Other, as defined by agency		none	none	none	none	none	none	...	none

f. Agency Status

During FY 2010, energy surveys including water were conducted at multiple TVA sites covering 5.6 million square feet. TVA consumed 712.8 million gallons of potable water in FY 2010 at an estimated cost of \$3.4 million. These numbers include water consumption from excluded buildings. To date, and as required by EISA, TVA has identified projects with a potential water savings of 11.8 million gallons. TVA will continue its EISA surveys to identify water-saving projects. TVA considers water management plans as part of its operation and maintenance activities.

TVA jointly funds and manages projects with external research partners to reduce water resource impacts by identifying technologies that increase water use efficiency and water conservation (EPRI); and to develop alternative water supply and use opportunities (e.g., using POTW grey water).

TVA currently has multiple water-savings projects underway at several office buildings. These projects include installing low-flow water closets, urinals, showerheads, and low-flow aerators for lavatories and sinks throughout these buildings. In addition, TVA has plans to look at water reuse through a rooftop rainwater collection systems being considered for the COC. This water would be collected and stored for use in flushing toilets and urinals.

The primary current uses for industrial non-potable water within TVA are in the coal and nuclear power generation facilities. At present the industrial consumptive use is approximately 340.2 million gallons a year (MGY). This is based on historical averages reported in wastewater discharge permits for the steam electric generation facilities. Non-industrial uses also include fire protection system flushes/leakage; road/landfill dust control applications,

vehicle and equipment wash racks, and HVAC once-through cooling water. These latter uses are an insignificant portion of the total non-potable water use.

TVA has developed plans to eliminate all wet ash and gypsum storage in the system and convert its 11 operating coal-fired power plants to dry storage. The movement away from wet fly ash systems will significantly reduce the overall use of water in the TVA power generation facilities and help to meet sustainability goals in EO 13514. The facility specific conversion plans have been developed and capital costs have been estimated. The conversion to dry fly ash will eliminate ash sluice wastewater generation and thereby reduce industrial water usage. In addition, plans include the installation of 11 bottom ash dewatering systems as well as four gypsum dewatering processes. The goals are to install state-of-the-art equipment to reuse and recycle process water and minimize associated water consumption. The planned upgrades are designed to ensure safety, exceed regulatory requirements, and improve the TVA sustainability posture. These projects will position TVA as an industry leader in the management of coal combustion residuals. TVA expects the overall program to cost \$1.5 to \$2 billion dollars. Additional projects to contribute to further reductions may be identified and funded as necessary to further reduce non-potable water usage throughout TVA.

TVA will develop a system for data tracking and collection in order to confirm the usage baseline and to track progress toward the goal. This will be compiled and reported annually. The Environmental Sustainability Group will monitor progress and maintain reporting responsibility for this goal.

g. Return on Investment

Projects for TVA 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 uses the Utility Energy Savings Contract (UESC) when working with our federally directly Served customers. TVA facilities are currently supplied energy and water either through its own generation or electric, gas and water distributors. TVA is continuing to evaluate the feasibility of using the UESC or Energy Savings Performance Contract (ESPC) to meet these targets.

h. Highlights

TVA currently does not have any water-saving projects at this time that it would like to highlight.

GOAL 4: Water Use Efficiency and Management (Goal-Specific Items)

a. Reduce potable water by 2 percent per year from FY 2008 through FY 2020 (total 26% reduction) with base starting year of FY 2007.

EISA requires completing comprehensive energy and water evaluations on 25 percent of covered facilities each year. TVA will use these evaluations to identify potable water reduction projects and strategies necessary to meet the water intensity reduction target. TVA will fund and implement these projects through existing project justification processes and any new sustainability funding initiatives developed within TVA. Water use reduction may provide energy and GHG savings associated with reduced pumping and heating of domestic water, which will help meet Goals 1, 2, 3 and 6.

b. Reduce by 20% the total of non-potable water usage at TVA facilities with a focus on industrial processes by FY 2020 based upon a starting year of FY 2010.

TVA will focus on the industrial water consumption in the power production processes as the metric for this goal. The non-power production uses including landscaping and agricultural activities are insignificant relative to current industrial usage for TVA. Industrial water consumption means water used in the transport and storage of coal combustion byproducts such as ash and gypsum. Consistent with EO 13514, TVA is excluding from this goal water used for the production of power or steam for sale to others.

TVA has established a baseline based upon historical records for industrial water consumption at its coal and nuclear plant sites. In FY10, TVA confirmed the baseline numbers and projected reductions for individual facilities. A number of non-potable reduction capital projects have been identified and incorporated into the Long Range Financial Plans. TVA will ensure that identified reduction projects are scheduled within the business planning process and provide for management commitments of the necessary resources to achieve the goal. The Environmental Sustainability Manager will review progress against identified goals and the plan.

c. Identify and implement water reuse strategies

TVA will identify, promote, and implement water reuse strategies that reduce potable water consumption. EISA requires completing comprehensive energy and water evaluations on 25 percent of covered facilities each year. TVA will use these evaluations to identify water reuse projects and strategies. TVA will fund and implement these projects through the existing TVA project justification processes and any new sustainability funding initiatives developed within TVA.

d. Achieve objectives established by EPA in Stormwater Guidance for Federal Facilities

The EPA Technical Guidance (EPA 841-B-09-001, December 2009) requires federal agencies to maintain or restore to the maximum extent technically feasible (METF) the pre-development hydrology of a property with regard to temperature, rate, volume and duration of flow.

TVA currently meets Federal, State, and local requirements for use of Best Management Practices in stormwater design and construction. TVA also incorporates a NEPA compliance review in development of properties, and maintains National Pollutant Discharge Elimination System (NPDES) permits for many sites. TVA plans to identify appropriate departments that will be responsible for leading improvement of existing stormwater design processes across the organization. The TVA departments will assess current design and construction review processes to identify appropriate compliance check-points. In addition, the TVA departments will educate project management staff in all design and construction groups about the new requirement. TVA will also add a new requirement to standard contract language for engineering, architecture, and construction services, and to work with cross-functional teams and Supply Chain to accomplish this task. TVA will also add a checklist item to the existing NEPA checklist and integrate additional requirements with existing compliance record-keeping and reporting system.

e. Incorporate appropriate reduction strategies for non-potable water use into agency policy and planning

TVA decision to switch from wet ash handling and storage to dry ash handling and storage at its coal fired power plants is a top level decision which has been incorporated into the agencies long term power generation policy and planning.

GOAL 5: Pollution Prevention and Waste Reduction (Basic Performance)

a. Goal Description

Ninety-nine percent of the consumer products on the market today are consumed within six months of purchase. The first step to preventing and eliminating waste is reducing the amount of material in use. The next step is to reuse materials until they reach the end of their lives, and then to recycle materials that cannot be eliminated.

TVA has a strong program in place to prevent pollution by reducing chemical usage and using acceptable alternatives. TVA's recycling and reuse programs are also well established, although there is room for improvement in all of the TVA pollution prevention and waste reduction programs.

b. Agency Lead for Goal

Implementation of Goal 5 reductions will be accomplished by the following key groups and individuals:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Environmental and Energy Sustainability Committee

These individuals will be supported by key areas of the TVA organization which are:

- TVA's Pollution Prevention and Waste Reduction Working Subcommittee
- Operation Business Units

The TVA Senior Sustainability Officer is responsible for reporting compliance metrics from the various environmental units. The responsible managers ensure that goals are set during the business planning process. They hold site management responsible for committing the necessary resources to achieve each sub-target and for reporting progress during business plan review meetings. The Environmental Sustainability Manager will review progress against these goals and the SSPP.

The following organizations will support them:

- TVA Pollution Prevention and Waste Reduction Working Subcommittee - Currently the Subcommittee is co-led by the Environmental Policy, Clean and Renewable Energy and the Environment and Technology Business Operations Support groups. The Subcommittee includes members from Supply Chain - Governance and Knowledge, Environmental Permitting and Compliance, and Environmental Science and Resources.
- Operation Business Units - Operation Business Units and their executive's support with needed resources, personnel, and training is crucial to reaching TVA goals. The Supply Chain organizations' support is crucial to reducing the purchase of certain materials, and to increasing the purchase of more sustainable products.
- All Employees - Meeting the Pollution Prevention and Waste Reduction goals will require an integrated effort by TVA employees at all levels and in all functional areas, particularly in regards to properly reusing, recycling, and diverting materials from the waste stream. Creating a culture around sustainability, including awareness around waste reduction, pollution prevention, recycling, and composting will be crucial as TVA continues to educate employees about their role in participating in these programs.

c. Implementation Methods

TVA will focus on the diversion of the MSW generated at all sites. In order to improve on the diversion of MSW, TVA recently rebid its MSW disposal contract. The new contract includes language that evaluates the contractor's performance in assisting TVA efforts to meet the Sustainability Goals. Recently the contractor has assigned a

National Accounts Manager who specializes in Recycling to the TVA contract. Improving participation in recycling programs will involve ongoing staff training and education and possibly other methods to maintain performance gains.

TVA issued an agency level procedure “Hazardous Materials Management”, TVA-SPP-05.62, on September 3, 2010 that establishes the requirements to control chemicals, expendable products and hazardous materials used at TVA Operations. While the procedure is in effect it is not fully implemented until all of the various sites have completed their change management plans. The procedure did not establish any database requirements nor incorporate any directives to implement a usage reduction for the chemicals that contribute to the Greenhouse Gas Emissions. The PP&WR team will work with the procedure owner to see if these can be incorporated into the next revision.

d. Positions

Summary

TVA will need to add a total of 22 FTEs by 2013 to implement the Pollution Prevention and Waste Reduction projects. First, TVA will need to add six FTEs to implement a CTC program that is database driven on a TVA wide basis. In addition, four FTEs will be needed to implement the Regional Wood Waste Collection and Grinding Program. Five FTEs will be necessary to improve recycling at non-corporate locations as well as two FTEs to administer tracking and trending of non-hazardous solid waste, and increase recycling at corporate locations. One FTE will be added to create a baseline and identify and develop new programs to divert C&D waste. And, finally, approximately four FTEs will be needed to make up for the loss of available FTEs.

e. Planning Table

Table 10: Pollution Prevention and Waste Reduction Planning Table

Pollution Prevention & Waste Reduction	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Non-Hazardous Solid Waste Diversion Targets (Non-C&D)	%	3	5	16	27	38	50	...	TBD
C&D Material & Debris Diversion Targets	%	NA	TBD	10	25	40	50	...	TBD
If agency uses on-site or off-site waste-to-energy, estimated total weight of materials managed through waste-to-energy	Tons or pounds	0	TBD	TBD	TBD	TBD	TBD	...	TBD
Number of sites or facilities with on-site composting programs	#	0	hold	hold	hold	hold	hold	...	hold
Number of sites or facilities recycling through off-site composting programs	#	0	hold	hold	hold	hold	hold	...	hold
If agency has on-site or off-site composting programs, estimated total weight of materials diverted to composting	Tons or pounds	NA	NA	NA	NA	NA	NA	...	NA
% of agency-operated offices/sites with a recycling program	%	4.51	10	20	30	40	50	...	TBD
If agency offices located in multi-tenant buildings, % of those buildings with a recycling program	%	NA	NA	NA	NA	NA	NA	...	NA
% of agency-operated residential housing with recycling programs	%	NA	NA	NA	NA	NA	NA	...	NA

Pollution Prevention & Waste Reduction	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Other, as defined by agency	?	NA	NA	NA	NA	NA	NA	...	NA

f. Agency Status

TVA currently has a recycling program for various types of materials. A summary of waste generation and recycling programs is provided in Table 11 below.

Table 11: Summary of TVA Waste Generation and Recycling Rates, by Material

Waste Stream	Subject to this goal?	Amounts Generated (Tons)		% Diversion	
		FY09	FY10	FY09	FY10
Coal Combustion Products¹	No	5,293,199 ¹	5,316,404 ¹	29.12	39.34
Municipal Solid Waste	Yes	22,542	20,876	3.14	3.00
Scrap Metal	No	7154	7984	100	100

¹ CCPs are monitored on a calendar year basis.

TVA has always tried to reuse, where possible, or recycle materials of economic value from the waste stream rather than simply dispose. As evident from Table 11 above, TVA has an active recycling program that is outside the normal range for businesses located in such remote areas as TVA. Additionally, recycling at TVA varies by material and by location. These variations occur for numerous reasons. In some cases, markets are not available for recyclable materials, and waste removal vendors do not provide recycling services in many TVA remote sites. Some recycling programs at TVA need strengthening to increase diversion rates.

TVA tracks the amount of its municipal solid waste. The remote nature of many of TVA sites limits reuse and recycling possibilities. Diversion for recycling is not economically feasible and sometimes it is logistically impossible. As a result, 275 sites do not have an office waste recycling program. However, most of these sites recycle scrap metal and/or universal waste (batteries). Currently TVA has a 2.96 percent diversion rate with 4.51 percent of the potentially available sites participating.

g. Return on Investment

Currently, no significant projects or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI. Likewise, no specific projects or initiatives have been expanded due to higher than expected ROI.

h. Highlights

Projects are proceeding at a slower pace than anticipated but should accelerate since the leveraged waste disposal contract has been issued. TVA will add additional information to this section as projects progress further or are completed.

GOAL 5: Pollution Prevention and Waste Reduction (Goal-Specific Items)

TVA goals are in alignment with the goals in EO 13514 and TVA has adopted each of the following eleven goal-specific items:

a. Increase source reduction of pollutants and waste.

TVA does not have a “formal” waste reduction program. Rather, TVA has implemented waste reduction primarily through source reduction. The original TVA focus was on the hazardous waste generated at facilities. A result of this decentralized program is that a large portion of the TVA sites are Conditionally Exempt Small Quantity Generators (CESQGs).

TVA’s Sequoyah and Browns Ferry Nuclear Plants are incorporating a standardized CTC System database. Information Services has developed and will maintain the database for both of these sites. By adopting this system at each site, TVA could have a standardized agency-wide program.

TVA does not have agency-wide CTC tracking. NPG has a formalized CTC tracking program that is driven by procedures. The health of the program is measured by the quarterly CTC inventories that are performed.

b. Divert at least 50 percent of non-hazardous solid waste, excluding construction and demolition debris, by the end of FY2015.

TVA will increase awareness and improve on recycling programs at the remote, non-corporate sites. The remaining amount of waste to be diverted will have to be generated through some rather new and challenging programs such as compost bins for food waste generated in office areas. Challenges include space constraints and health concerns.

Also, TVA is considering the development of a “project box” available to each site management team that would creatively help with their waste reduction/reuse program. The project box would include an outline of how the program would work; a general idea of upfront and maintenance costs; labor involved; potential waste reduction/elimination amounts; a set of “defined needs;” and methods for obtaining funding. Outreach to site managers would encourage them to implement ideas in the “project box.” A tracking mechanism would measure each site’s progress. Example ideas for the “project box” could include composting, pallet reuse, a recycling program and reuse of structural items. The existing Corporate Recycling Team would be “re-chartered” to increase the diversion rates at the corporate locations as well as assist the site operations in establishing/revamping recycling programs.

c. Discuss agency strategies to reduce municipal solid waste sent to landfills and how implementation will assist the agency in achieving FY 2020 GHG reduction targets.

As previously stated, TVA is implementing a new valley wide leveraged contract for waste disposal that should help us achieve a 50 percent diversion rate. Since our MSW is all currently slated for offsite landfill disposal any reduction in this amount will help achieve our 2020 GHG reduction targets. TVA will be implementing a strategy, based on a market analysis of recycling, to proceed at an accelerated rate.

d. Divert at least 50 percent of construction and demolition materials and debris by the end of FY 2015, and discuss methods used to monitor and track progress.

Currently, TVA has a system to track all its solid waste; however this system does not accurately divide solid waste into different waste streams. TVA is working with its new leveraged contract waste disposal provider to put a mechanism in place to track by waste type and disposal method all solid wastes managed through the contract.

The Pollution Prevention and Waste Reduction Working Subcommittee will work closely with the Manager of Sustainability Design and Facilities Management architects and project managers to better quantify waste generated from construction. Construction waste management is part of sustainable design. Once tracking has been initiated, TVA will establish a baseline from which the 50 percent diversion will be achieved. In parallel with the baseline tracking, TVA will identify the types of waste streams and determine appropriate diversion strategies.

To accomplish this, TVA will need to: 1) Establish a program for formally tracking the construction and demolition waste generated at TVA sites. 2) Determine which organization will track the waste and train them on the

appropriate system for tracking and reporting this waste. 3) Establish a baseline for construction and demolition waste generated against which the 50 percent diversion goal would be measured. 4) Identify other types of waste streams and determine which ones could be diverted and put a plan in place to start the diversion. 5) Place yearly goals on percent diversion to ensure TVA can reach 50 percent diversion by 2015.

TVA currently does not have a formal tracking mechanism for construction and demolition materials and debris. Examples of the types of construction and demolition material and debris that TVA generates currently are: transmission poles from right of way maintenance and concrete and wood from building demolitions. TVA currently diverts some of this material through giveaway programs but does not formally track results from these programs.

Wood waste is believed to make up a large percentage of construction, demolition and nonhazardous solid waste at TVA. TVA will develop a program to collect used pallets from all sites and bring them to a central location. At the central location, pallets will be cleaned of non-wood waste debris and then ground into mulch. Mulch will then be reused at TVA sites, provided to employees or donated to local groups.

Currently, pallets are reused and recycled when possible but some are also discarded in open-top “roll off” containers with other types of waste. Typically, TVA generates industrial wood wastes such as: pallets, lumber, cable reels, crates; whole trees from electrical line construction; maintenance activities that generate pruned branches, stumps; and other wood debris from construction and demolition clearing and grubbing activities. TVA handles this waste stream on a site-by-site, state-by-state basis. Each state, city or county within the seven-state Tennessee Valley has different restrictions on “green” or natural wood waste. This could include burning bans, landfill restrictions or other disposal concerns.

e. Reduce printing paper use.

TVA will reduce printing paper use by providing printers that are able to print double-sided documents. Many new printers in use at TVA have double-sided capacity. The agency strongly discourages the use of personal printers and encourages the use of shared, networked printers, which reduces some paper usage. Additionally, TVA will encourage staff to use electronic instead of printed documents for review.

TVA will inventory all printers, including both networked printers and personal printers (used by only one person or a very small group of employees). During the inventory, TVA staff will note whether the printer has double-sided capacity or not. If not, the printer will be scheduled for replacement. All new printers will have double-sided capacity.

f. Increase use of uncoated printing and writing paper containing at least 30 percent postconsumer waste (PCW) fiber.

TVA will acquire uncoated writing and printing paper with 30 percent postconsumer fiber by implementing control systems in the Supply Chain system. To achieve this goal, TVA will need to educate all buyers (including staff that uses TVA credit cards to purchase supplies) on this requirement. To track progress, TVA will need to implement mechanisms in the Maximo system to track paper purchasing, including tracking the dollar value and amount of the uncoated 30 percent postconsumer fiber paper purchased, as well as the dollar value and amount of other papers purchased.

TVA currently has a system in place that automatically causes purchasers to purchase printing paper with 30 percent postconsumer fiber, even if the purchaser chooses a cheaper alternative, when the paper is purchased through the online procurement system.

TVA currently tracks paper by dollars spent total and dollars spent where the paper had recycled content. TVA contracts allow the purchase of three amounts of recycled content – 30 percent, 50 percent and 100 percent. The contract offers 20 types of paper, 17 with at least 30 percent recycled content. TVA does not track spending by amount of recycled content.

New systems need to be put in place to track progress towards these goals.

g. Reduce and minimize the acquisition, use, and disposal of hazardous chemicals and materials, and discuss how implementation will assist the agency in achieving FY2020 GHG reduction targets.

For this goal in FY10, TVA will establish agency-wide and facility-specific chemical usage baselines, based on age, condition, and criticality of equipment. Funding will be managed by those responsible for providing O&M budgets, building system enhancements, and/or capital funding of the larger equipment as they fail. The goal is to prohibit/restrict new purchase of R22 equipment unless approved gas manufactured equipment is unavailable and an approval process is followed.

TVA will implement this program through its work order system. Those completing work orders will enter data about refrigerant purchases or replacements by type, pounds, and tons of refrigerants on all equipment regardless of weight. In the current system, only amounts of 50 pounds or more are tracked. Inventories could be managed by asset, condition and replacement of each facility and appropriate management.

No new positions are proposed to reach this sub-target as of this time.

TVA has managed and/or reduced refrigerants and halon fire suppressant systems located in the office complex buildings located in Knoxville, Chattanooga and Muscle Shoals. This was accomplished by conversion of approved gas, removal, and then storage of the gas in a refrigerant bank located in Muscle Shoals. In some cases, the gas was sent to other government agencies per the direction of a previous EO. A total of 19,370 pounds of various GHGs were removed from TVA facilities. Gases removed were stored in the refrigerant bank and available for any TVA organization with equipment using the above gases. These accomplishments were done in the FY93–FY01 timeframe.

Table 12: FY 1992 - FY 2001 Decrease in Use of Chemicals that Increase GHG Emissions

Building	Gas	Pounds
Chattanooga Office Complex	R11	5070
Muscle Shoals	R11	1200
Muscle Shoals	R13	600
Knoxville Office Complex	R12	9200
Knoxville Office Complex	Halon 1301	300
Summer Place Building	R11	3600

h. Increase the diversion of compostable and organic material from the waste stream.

This project was postponed for FY10 but will be considered for FY12. The project will enable TVA to establish agency-wide and facility-specific baselines for this project. The strategy includes adding two cafeterias to the composting program each fiscal year so that all four TVA cafeterias will be diverting the compostable waste by the end of FY 2014. The achievements and quantities of compost and organic material diverted will be tracked as well as the progress toward the goal of expanding the number of cafeterias involved in each fiscal year.

As part of the business planning process, TVA will evaluate the feasibility of diverting compostable and organic material from its cafeterias in Chattanooga and Knoxville.

The Pollution Prevention and Waste Reduction Working Subcommittee will work with the TVA Facilities Management Program Manager of the Randolph-Sheppard Act to oversee the adaptation of possible compost diversion programs.

TVA has not had a “formal” compost recycling program from the corporate facility cafeterias. These cafeterias are privately owned businesses and operated under the Federal “Randolph-Sheppard Act 20 U.S.C. § 107 et seq.” This Act gives priority to blind persons who want to operate the vending facilities on Federal property.

The State of Tennessee has a program for recycling waste oil into the production of biodiesel fuel. TVA currently recycles the waste oil from the cooking operations at these cafes. The oil is placed in a tote which is then transported to a facility for processing.

TVA has two cafeterias in Chattanooga and one cafeteria in Knoxville. TVA power generation sites are typically remotely located and have vending machines rather than onsite cafeterias making composting impractical and unfeasible economically.

Since this is a new endeavor for TVA, no baseline data exists for the amount of compostable material that would be generated.

i. Implement integrated pest management and landscape management practices to reduce and eliminate the use of toxic and hazardous chemicals and materials.

TVA will continue to implement and refine methods that reduce the use of chemicals for pest management and weed control.

The TVA leveraged contract for pest control did not go out for rebid as previously anticipated. This area will be reassessed for implementation possibilities.

TVA has two main programs that use pesticides and herbicides. The first eliminates the typical “pest” such as spiders, mice, ants, and bees, along with animals that are causing damage.

The second is the herbicide application program associated with the maintenance of the Right-of-Ways (ROWs). The ROWs must be maintained to ensure emergency and routine access to structures, switches, conductors, and communications equipment. In addition, adequate clearance, as specified by the National Electrical Safety Code and Federal Energy Regulatory Commission (FERC) must be maintained. While this program focuses on herbicide use, it includes an integrated vegetative management approach. These areas are maintained in the following priority manner:

- Low growing crops in farming
- Wildlife food and cover for property owner
- Mechanical mowing on dissected terrain with rolling hills and interspersed woodlands
- Species-specific herbicides
- Hand clearing methods (alternately considering low volume herbicide applications, single tree injections, and tree growth regulators in place of the hand clearing)

For areas where herbicides must be used, there are three subsets of chemicals: The first set is used on TVA ROWs; the second are pre-emergent herbicides used on bare ground; and the third set is TGRs that may be used on tall trees under specific growing conditions (e.g., fast growing species, difficult to prune, difficult to access).

Certified applicators use and apply herbicides in accordance with requirements from the label. Buffer zones protect wetlands and streams.

j. Increase TVA use of acceptable alternative chemicals and processes in keeping with the agency’s procurement policies.

The strategy and formal process for accomplishing the minimization and reduction of chemical waste will be the TVA Chemical Traffic Control (CTC) program. More specifically, the CTC program will be standardized across TVA. This program will incorporate quarterly checks of chemicals in use and stored at each site/location.

Information Services has developed a CTC Database for TVA’s Sequoyah and Browns Ferry nuclear plants. These systems could be used at all TVA sites. To support the system, site coordinators will be needed on site. Next, CTC

training would ensure that all personnel at the sites and purchasing card holders follow the approved CTC process. Additionally, TVA would base load each site's CTC database.

k. Report in accordance with the requirements of sections 301 through 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

TVA is currently achieving this sub-target by reporting in accordance with the requirements of sections 301 through 313 of EPCRA (42 U.S.C. 11001 *et seq.*).

GOAL 6: Sustainable Acquisition (Basic Performance)

In 2010, TVA purchased \$3.3 billion of materials and services, excluding fuel; approximately \$60 million of goods and services via over 900 TVA-issued credit cards; and issued 90,680 Purchase Orders for approximately 150,000 individual line items. These statistics illustrate that TVA has the opportunity and obligation to be environmentally and energy conscious in its selection and use of materials and services.

Sustainable Acquisition is the purchase of environmentally preferable materials and services in accordance with EOs, statutory requirements and agency goals. Proper attention to Sustainable Acquisition will:

- Demonstrate TVA commitment to environmental stewardship
- Contribute to sound management of TVA financial resources and energy use
- Reduce safety risks posed by the use of hazardous materials
- Support market development of green products and services

a. Goal Description

TVA will implement a Sustainable Acquisition program that will require all appropriate contractual actions to evaluate the use/purchase of items and services, which when evaluated against TVA performance requirements, will meet or exceed at least one of the following criteria:

- Energy Efficient (Energy Star, FEMP-designated, and low standby power devices)
- Water Efficient
- Bio-based
- Recycled-content
- Environmentally Preferable Products/Services(excluding EPEAT), and SNAP/non-ozone depleting substances
- SNAP/non-ozone depleting substances
- EO 13514 sets a goal that 95 percent of all new contract actions will meet these criteria. In addition, EO 13514 establishes a goal that TVA will update its affirmative procurement plans, policies and programs to ensure that all Federally-mandated designated products and services are included in all relevant acquisitions. Although EO 13514 is limited to procurements funded with appropriated funds and TVA's acquisitions are made with non-appropriated funds, TVA intends to implement the sustainable acquisition provisions of EO 13514 to the extent TVA deems practicable.

b. Agency Lead

The following individuals will serve as agency leads for implementing Sustainable Acquisition:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Environmental and Energy Sustainability Committee
- TVA Sustainable Acquisition Working Subcommittee Lead

These individuals will be supported by:

- The Sustainable Acquisition Working Subcommittee, which is described in greater detail under Implementation Methods.
- All TVA employees have a role to play in the successful implementation of Sustainable Acquisition. Sustainable Acquisition is not merely a “Supply Chain Issue.” Incorporating Sustainable Acquisition into TVA processes will require early integration in planning and design efforts well before Supply Chain becomes involved, or sometimes even aware of, acquisition efforts.

c. Implementation Methods

Successful implementation of Sustainable Acquisition at TVA will depend on the support of the entire agency in four key areas: leadership; communication; training and awareness; and data management/tracking/reporting. The following methods will be used to implement Sustainable Acquisition at TVA, which is defined as follows:

Ensure that 95 percent of new contract actions that are amenable to Sustainable Acquisition standards, including task and delivery orders under new contracts and existing contracts, require the supply or use of products and services that are energy efficient (Energy Star or FEMP-designated), water efficient, bio-based, environmentally preferable (excluding EPEAT-registered products), non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives.

Leadership: Sustainable Acquisition leadership will be established and publicized for the following areas:

- Executive Management support. Management commitment of resources (staff and materials) will be paramount to the success of Sustainable Acquisition and will provide concrete evidence of management support.
- A re-formed Sustainable Acquisition (Green Purchasing) Working Subcommittee to include cross-organizational staff will be established. The Subcommittee will have a dedicated manager and the cross-functional team members to oversee promotion and training efforts, trouble-shoot and correct problems within the program, revamp the Green Product Matrix, and monitor and track program implementation.

Communication: To communicate both the importance and the requirements of Sustainable Acquisition, TVA will:

- Incorporate “Sustainable Acquisition” into the Agency Integrated Performance Management System to ensure emphasis at all levels in the agency.
- Promote the program to TVA employees and the public to promote interest and knowledge. Internal program communications will extend into the Personal Sustainability arena as well, as described in Goal 8 Innovations, by promoting the use of green/environmentally friendly products in the employee’s personal life.

Training and Awareness: To train key members of the agency population on the requirements of Sustainable Acquisition and to increase awareness of the program for all agency staff and the supply chain, TVA will:

- Update its Green Product Matrix, which is a listing of routine products that TVA procures with corresponding green procurement criteria organized by TVA-friendly nomenclature. The revamping will make the Matrix more user-friendly, identify new products and incorporate life cycle costs analyses.
- Enhance its training program to emphasize program requirements, sustainability basics, proper green procurement coding and to provide success stories and examples to illustrate long-term benefits and simple life-cycle cost examples. Training will be provided routinely. TVA staff involved in the procurement process will be identified and required to complete the training course. At a minimum the target audience for training will include those who write equipment/material specifications, Technical Contract Stewards (TCSs), purchasing managers/agents, material analysts, work management personnel, purchasing card users and project managers.

- Where appropriate, incorporate Sustainable Acquisition contract language into the Terms and Conditions of new TVA contracts by the end of FY 2011.
- Work with suppliers to solicit recommendations for green substitutes in existing contracts and for automated purchase items.
- Where appropriate, incorporate green criteria into contract selection metrics.

Data Management, Tracking, and Reporting: To track and monitor the progress of Sustainable Acquisition implementation, TVA will:

- Use data collected in MAXIMO (for contractual purchases). This effort will customize required green procurement fields in MAXIMO to ensure that users address sustainable acquisition early in the acquisition process. The Green Product Matrix will assist users in accurately coding materials/services in MAXIMO.
- Develop other techniques/systems/processes to monitor credit card and automated purchases, which are not captured in MAXIMO.
- Coordinate data collection efforts with the Pollution Prevention & Waste Elimination and Electronics Stewardship Working Subcommittees. Their respective initiatives address procurement of materials that are recyclable and therefore reduce TVA waste generation while simultaneously increasing the TVA recycling rate. The Electronics Stewardship Committee's procurement program also addresses energy consumption via the selection of energy efficient products. Both are discussed in greater detail under Goals 5 and 7, respectively.
- Conduct quarterly sustainable acquisition contract reviews and issue annual reports to demonstrate compliance with EO 13514. Goals which have been included in the Environmental Management System will be monitored for progress and addressed in the annual report as well.
- Update agency affirmative procurement plans (also known as green purchasing plans or environmentally preferable purchasing plans), policies and programs to ensure that all designated products and services which TVA is mandated to select under Federal law are included in all relevant acquisitions.

TVA will continue to update its Green Procurement Plan to address the requirements of EO 13514. This revision will address the details of Sustainable Acquisition implementation, including new resources required, the re-formation of the Sustainable Acquisition Working Subcommittee, training requirements, updating of the Green Products Matrix and data management/tracking techniques.

d. Positions

At present the agency has a Green Procurement Team that meets periodically, but has no dedicated manager or resources except for required training time by Technical Contract Stewards (TCSs). Well over 100 staff members currently are involved in the supply chain for TVA, including line staff for each plant and office complex. The new Sustainable Acquisition Working Subcommittee will take the lead to improve the program at TVA. Although EO 13514 is limited to procurements made with appropriated funds and TVA's Supply Chain organization is funded with non-appropriated dollars, TVA will attempt to provide staffing for the sustainable acquisition initiative to the extent TVA deems practicable.

To fully implement Sustainable Acquisition at TVA current staff time will be leveraged by incorporating Sustainable Acquisition into their routine duties. TVA will also, as an incremental investment, reassign staff to support Sustainable Acquisition. In addition, TVA will utilize intern/staff augmentation positions to support implementation of the program.

Current TVA Contract Managers and Procurement Agents staff time will be leveraged to support the program by participating in enhanced training, incorporating standardized contract language, and properly coding contract actions. In addition, current line organization staff will be contributing through participation on the Sustainable Acquisition Working Subcommittee and supporting the Green Products matrix revamping described in the

Implementation Methods. One full-time TVA manager will be assigned to oversee implementation of the Sustainable Acquisition program, and will be supported by the cross-functional team members, one intern/staff augmentation employee based on budget approval, and a portion of two TVA technical staff members' time to contribute to the achievement of Pollution Prevention/Waste Elimination and Electronics Stewardship initiatives. The working committee/intern will be responsible for product substitution research and lifecycle analyses to support both the Green Matrix revamping and non-routine purchasing actions. TVA staff with training expertise will partner with Sustainable Acquisition and the TVA Sustainable Acquisition Manager to enhance training content and delivery. TVA staff and contractors with MAXIMO expertise will implement necessary customization and enhancement efforts to support tracking and reporting efforts.

e. Planning Table

Table 13: Sustainable Acquisition Planning Table

Sustainable Acquisition	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
New Contract Actions Meeting Sustainable Acquisition Requirements	%	24	95	hold	hold	hold	hold	...	hold
Energy Efficient Products (Energy Star, FEMP-designated, and low standby power devices)	%	2	95	hold	hold	hold	hold	...	hold
Water Efficient Products	%	-	95	hold	hold	hold	hold	...	hold
Biobased Products	%	-	95	hold	hold	hold	hold	...	hold
Recycled Content Products	%	22	95	hold	hold	hold	hold	...	hold
Environmentally Preferable Products/Services (excluding EPEAT - EPEAT is included in Goal 7)	%	0.4	95	hold	hold	hold	hold	...	hold
SNAP/non-ozone depleting substances	%	-	95	hold	hold	hold	hold	...	hold
Other, as defined by agency		none	none	none	none	none	none	...	none

f. Agency Status

TVA has recently updated its Green Procurement Policy in response to several federal actions including EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*; the Energy Independence and Security Act of 2007 (EISA07); the Federal Electronics Challenge; Resource Conservation and Recovery Act, Section 6002; the Farm Security and Rural Investment Act of 2002; the Energy Policy Act of 2005 (EPAct05); and EO13221, *Energy Efficient Standby Power devices*. TVA has also updated its external supplier portal and the supplier code of conduct to reflect TVA's commitment to sustainability. TVA-SPP-05.22 updated and replaced TVA-SPP4.1 which was created in 2007. To support the Green Procurement Plan TVA developed an online training program which is required training for Technical Contract Stewards and Procurement Managers/Agents. In addition, classroom training has been developed for all employees involved in the procurement process and has been delivered to over 90 Supply Chain associates with additional classes scheduled. Training for Work Management employees and other Maximo users outside Supply Chain is under development. Data for FY 2010 was reviewed for categories identified in the TVA Green Procurement Product List and over \$8 million of our spending was identified as Recycled, Energy Star, Low Standby Power, Bio-based, or Environmentally Preferred. This data was included in TVA's annual report on Energy and Building Management. Based on a review of 41 randomly selected purchase orders issued during the first quarter FY 2011, of the goods and services bought that should have been 'green', 66 percent met the requirements. This data was provided for the OMB scorecard report.

g. Return on Investment

Currently, no significant projects or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI. Likewise, no specific projects or initiatives have been expanded due to higher than expected ROI.

h. Highlights

Green Procurement Training - Training has been conducted for over 100 Supply Chain employees on 'green procurement' and the importance of properly coding data in the MAXIMO system. Green Procurement Codes have been corrected on over 150,000 ITEMS in the MAXIMO system to facilitate tracking and reporting 'green' spend. Future training efforts will be aimed at employees outside of Supply Chain.

GOAL 6: Sustainable Acquisition (Goal-Specific Items)

- a. Ensure 95% of new contract actions, including task and delivery orders under new contracts and existing contracts, require the supply or use of products and services that are energy efficient (Energy Star or FEMP-designated), water efficient, biobased, environmentally preferable (excluding EPEAT-registered products), non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives.**

TVA will implement a Sustainable Acquisition program that will require all appropriate contractual actions to evaluate the use/purchase of items and services, which when evaluated against TVA performance requirements, will meet or exceed at least one of the following criteria:

- Energy Efficient (Energy Star, FEMP-designated, and low standby power devices)
- Water Efficient
- Bio-based
- Recycled-content
- Environmentally Preferable Products/Services (excluding EPEAT), and SNAP/non-ozone depleting substances
- SNAP/non-ozone depleting substances
- EO 13514 sets a goal that 95 percent of all new contract actions will meet these criteria. In addition, EO 13514 establishes a goal that TVA will update its affirmative procurement plans, policies and programs to ensure that all Federally-mandated designated products and services are included in all relevant acquisitions. Although EO 13514 is limited to procurements funded with appropriated funds and TVA's acquisitions are made with non-appropriated funds, TVA intends to implement the sustainable acquisition provisions of EO 13514 to the extent TVA deems practicable.
- TVA will utilize its external supplier portal and the supplier code of conduct to reflect TVA's commitment to sustainability. TVA's green procurement process is documented in TVA-SPP-05.22. To support the Green Procurement Plan TVA developed an online training program which is required training for Technical Contract Stewards and Procurement Managers/Agents. In addition, classroom training has been developed for all employees involved in the procurement process. Training will be developed for Work Management employees and other Maximo users outside Supply Chain.

Table 14: Quarterly Review of a Five Percent Sample of TVA Contracts

SUSTAINABLE ACQUISITION CONTRACT REVIEW	1st QTR FY 11	2nd QTR FY 11	3rd QTR FY 11 (Planned)	4th QTR FY 11 (Planned)
Total # Agency Contracts	31,626	33,890	32,758	32,758
Total # Contracts Eligible for Review	820	662	741	741
Total Contracts Eligible Contract Reviewed (i.e., 5% or more eligible based on previous OMB guidance)*	41	33	37	37
# of Compliant Contracts	27	24	30	35
Total % of Compliant Contracts	66	73	86	95

- b. Update agency affirmative procurement plans (also known as green purchasing plans or environmentally preferable purchasing plans), policies and programs to ensure that all designated products and services which TVA is mandated to select under Federal law are included in all relevant acquisitions.**

TVA has updated its external supplier portal and the supplier code of conduct to reflect TVA’s commitment to sustainability. TVA-SPP-05.22 was updated and replaced TVA-SPP4.1 which was created in 2007. To support the Green Procurement Plan TVA developed an online training program which is required training for Technical Contract Stewards and Procurement Managers/Agents. In addition, classroom training has been developed for all employees involved in the procurement process and has been delivered to over 100 Supply Chain associates with additional classes to be scheduled as needed. Training for Work Management employees and other Maximo users outside Supply Chain is under development.

GOAL 7: Electronic Stewardship and Data Centers (Basic Performance)

a. Goal Description

The EO 13514 has directed to incorporate power management, duplex printing and other energy efficient or environmentally preferred options/features on all eligible agency electronic products into existing TVA policy and guidance. Additionally, the EO calls for an agency to have eligible electronic products with power management and other energy-environmentally preferable features (duplexing) actively implemented and in use. TVA is already conducting many activities that specifically address several sub-targets. Activities to address the sub-targets have been identified within this plan and are described in detail. They can be integrated into the TVA existing operations as appropriate to streamline the overall goal implementation.

b. Agency Lead for Goal

Implementation of Electronic Stewardship and Data Centers at TVA will be accomplished by the following key staff:

- TVA Senior Sustainability Officer
- TVA Chief Information Officer
- Manager of IT Engineering Design
- Engineering Support Manager
- IT Engineering & Operations
- Manager, Enterprise IT Asset Management

These individuals will be supported by:

- TVA Information Systems (I.S.) Team: The I.S. team, reporting to the CIO, is critical for managing data center architecture, operations and maintenance including power metering, electronics asset management/disposition, power management policies, output devices (printers/copiers) acquisitions, settings and disposition.
- All Employees: Even though IT equipment is issued by the I.S. team and power management can be controlled centrally; employees play a vital role in conserving energy and material resources. Employees currently have the ability to override duplex printing and use single sided copying. Under the new Enterprise PC Power Management Program, personal computers will automatically be placed in a low power state at the end of each day. In addition employees will be educated to shut off their PCs at an earlier time (as soon as they complete each workday). Employee engagement is considered essential to overall energy savings.

c. Implementation Methods

TVA has positioned itself to play a vital role in waste minimization, electronics, e-waste recycling and pollution abatement through best management practices in electronics stewardship. Energy reduction at the IT equipment level has the greatest effect on system-wide energy consumption because it cascades throughout all supporting systems.

The annual power consumption baseline for TVA personal computers is 7,900 MWh. By implementing the Enterprise PC Power Management project, TVA is projected to save 4,000 MWh (\$300,000 annually) which is over 50 percent of this energy baseline.

According to the EPA's recent report entitled "Municipal Solid Waste Generation, Recycling, and Disposal in the United States Detailed Tables and Figures for 2008", only 430,000 tons (13.6 percent) of the estimated 3.2 million tons (86.4 percent) of electronic waste generated in the United States is recovered or recycled. TVA has integrated Best Management approaches to address this alarming trend through environmentally sound management practices for electronics disposition. Maximizing electronics product life cycle enhances mitigates environmental impacts through minimizing the amount of functioning equipment units in the waste stream, increased recycling rates, and reduced energy consumption. TVA is positioned to meet or exceed the electronics stewardship goals set forth in EO 13423 and EO 13514 during CY 2011. In terms of Green Product Purchases, 99 percent of covered electronics purchases are EPEAT registered. In addition, TVA has allocated \$300,000 to fund its Enterprise PC Power Management Project which is slated for deployment by September 2011. TVA follows Environmentally Sound Management Practices at End-of-Life via recycling or donating 100 percent of its computer-related electronics equipment.

Energy use in data centers has a significant portion of TVA's energy use footprint. Increased use of software applications and agency virtual communication has increased activity. The increase in overall power consumption was only 5 to 8 per cent associated with power use per unit. A spike in the volume of servers in data centers is accountable for 90 percent of the growth in power consumption for most industries. Thus, the TVA's efforts to consolidate servers and to virtualize applications (i.e., combine applications onto idle servers) will save the agency energy in server use, as well as the cooling associated with data centers.

TVA has focused on improving efficiency and performance in corporate Data Centers. Activities in the Chattanooga Data Center including health checks, installation of standard data center tools and standard server racks, cable management, air flow analysis, new Computer Room Air Conditioning (CRAC) units, hot air return/plenum, and improved Data Center design.

In addition, TVA regularly establishes personal computer standards that go beyond Energy Star requirements by specifically achieving enhanced electrical efficiency during active usage. The IT staff will also highlight the importance of IT energy consumption and conservation through employee education about estimated energy savings.

To address the EOs suggested best practices for the efficient energy management of data centers; TVA will consolidate data centers, computer rooms and virtualize applications where practical. Virtualization in years 2006-2009 resulted in a 6 to 1 virtual to physical server ratio in the Chattanooga location; 11 to 1 in Browns Ferry Nuclear facility; and 4 to 1 in 11 regional sites.

TVA also plans to hire a Green IT Sustainability Architect to identify additional virtualization opportunities.

To achieve a Power Usage Effectiveness (PUE) range of 1.3-1.6, TVA plans to individually meter data centers aside from overall facility energy usage. This metering will be accomplished by the Facilities Project team responsible for installing building meters required by EPA Act 05. Until then, TVA will use modeled energy consumption data. After a measured baseline is established, TVA will reevaluate data center configuration to reduce energy consumption to achieve a PUE range of 1.3-1.6.

To reduce personal computer power usage across the Agency, TVA plans to complete implementation of the Advanced PC Power Management project by September 30, 2011. In addition, TVA will use an automated reporting and auditing system to monitor power usage in specific departments and locations across TVA and, communicate success stories of power management. TVA will communicate these best practices to employees, the power industry and local community. Weekend power savings per capita power savings in energy units and dollars saved reinforced the right actions for the agency.

TVA can reduce printing associated with financial, communication, and other administrative uses by monitoring printing volume and duplex printing at Consolidated Output Device centers. Methods may include:

- User surveys and paper usages per center or per capita

- An agency-wide duplex print settings as default on all eligible devices
- Working with the Sustainable Acquisitions Working Subcommittee to identify off-site printers using recycled fiber content, soy inks, and digital/remote print processes for large or unusual print jobs
- Encouraging web-based communication, make available shared documents (e.g., SharePoint)

d. Positions

The TVA I.S. team currently is using 10 to 25 percent of seven different positions. This is equal to 0.6 FTE in FY 2010 and one FTE in FY 2011 and FY2012 for all sub-targets mentioned in Goal 7. The I.S. team will fill a new position -- a green IT sustainability architect – in FY 2011. Many of the electronics stewardship efforts as well as data center improvements initiated in FY 2010 or earlier were undertaken for the benefit of using new technology and easing operations for both users and IT staff. As such, with the exception of hiring a new green IT sustainability architect, projects underway and proposed will use leveraged resources.

e. Planning Table

Table 15: Electronic Stewardship and Data Centers Planning Table

ELECTRONIC STEWARDHIP & DATA CENTERS	Units	FY10	FY11	FY12	FY13	FY14	FY15
% of electronic product acquisition covered by current Energy Star specifications that must be energy-star qualified	%	98	98	100	hold	hold	hold
% of covered electronic product acquisitions that are EPEAT- registered	%	99	99	99	hold	hold	hold
% of covered electronic product acquisitions that are FEMP- designated	%	97	97	97	hold	hold	hold
% of agency, eligible PC, Laptops, and Monitors with power management actively implemented and in use	%	55	98	100	100	hold	hold
% of agency, eligible electronic printing products with duplexing features in use	%	100	100	100	100	hold	hold
% of electronic assets covered by sound disposition practices	%	100	100	100	100	hold	hold
% of agency data centers independently metered, advanced metered, or sub-metered to determine monthly (or more frequently) Power Utilization Effectiveness (PUE)	%	0	40	60	80	90	100
Reduction in the number of agency data centers	#	Input agency baseline from 10/1/10 Update on the FDCCI memo; found on www.CIO.gov					

% of agency data centers operating with an average CPU utilization greater than 65%	%	5	50	75	hold	hold	hold
Maximum annual weighted average Power Utilization Effectiveness (PUE) for agency.	#	0	1.8	1.7	1.6	1.5	1.4

f. Agency Status

TVA continues to perform IT improvements that address a number of the goal-specific items prior to issuance of the current EO; therefore, TVA will be able to meet or exceed many of the performance targets in FY 2012. For other targets, TVA will be able to implement integrated and measured IT policy changes and make innovations pending confirmation of planned resources.

Below are methods being used or implemented to meet Goal 7 of the EO:

TVA is implementing some very contemporary IT enhancements that improve not only operations and costs but also energy efficiency. Device types that must be Energy Star qualified include desktop computers, laptop computers, and monitors. TVA has been using Energy Star criteria for procurement since 2003 and all standard IT purchases or leases are Energy Star qualified. Additionally, since 2005 TVA standard monitors have been exclusively LCD panels which are 60-80 percent more energy efficient than older CRT technology. Any remaining standard legacy CRT monitors are projected to be retired by FY 2012.

Since July 2008, TVA has purchased 98 percent-plus EPEAT-registered items for covered electronic product acquisitions.

TVA contracts with DOE to process all surplus electronics (at no cost to TVA) through TORNRC, which is a division of 5R Processors. In addition, TVA has a MOU with DOE Oak Ridge Operations Office. Objectives of this understanding are as follows: “To provide for a reliable, secure, environmentally compliant, and cost effective dispositioning pathway for obsolete surplus electronic and computer equipment that no longer meets the needs of the Tennessee Valley Authority (TVA) and its network of power customers.”

Currently 99 percent of all PCs are diverted from landfill. Data is wiped off PCs in-house PC and printers are resold, donated to community-based organizations or recycled by 5R Processors. Three to four percent are donated (using 17,000 as the total number of PCs); five to eight percent are sold, and 88 to 92 percent are recycled. TVA attempts to get as much use as possible so reuse and redistribution are considerably higher than donations and sales.

TVA has two data centers, Chattanooga has a modeled PUE of 1.9 and Knoxville has a modeled PUE of 1.92. Driving these numbers down to the target 1.3-1.6 PUE range requires more energy efficiency or lower energy consumption by the data center portion of a facility. The FY12 goal is 90 percent of data centers metered and monitored on a weekly basis, FY 13 goal is 100 percent.

The stated EO virtualization goal in FY 2011 is 30 percent. Current server virtualization is a little more than 45 percent. Virtualization project begun in 2009 produced an average of 4:1 ratio (virtualized machines to physical servers). In COC, the largest data center with 72 servers, the virtualization ratio was 6:1. Recent server virtualization is more than 45 percent, exceeding the EO goal of 30 percent in FY 2011. TVA will continue to do server virtualization to achieve 50 percent virtualization by FY 2012. The FY 2012 goal is 40 percent, and hold in FY 2013.

In 2009, TVA began rolling out Output Device Management throughout the agency, business unit by business unit. The goal is to reduce the number and model types of output devices, namely printers, copiers, fax machines and scanners. By no longer supporting personal printers in individuals’ offices, by reducing the variety of output devices

from 600 models to 10 models and by limiting output device stations to one per floor or one per department, TVA is reducing paper waste, cartridge waste, and personnel hours servicing individual devices.

The best management practices include: use of Energy Star output devices (printer, copier, fax, scanner all-in-one); default duplex printing, standard device configurations, standard lifecycle guidelines; and “Think before You Print” guidelines of “duplex printing, print preview, and standard monochrome print.” Additionally, a pilot group was created in FY 2010 for print release. Data shows that there has been a reduction in jobs and pages printed for those using print release devices. Expansion of the print release pilot, as well as recording energy and paper savings are planned.

g. Return on Investment

Currently, no significant projects or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI. Likewise, no specific projects or initiatives have been expanded due to higher than expected ROI.

h. Highlights

Green IT Days - Information Technology is sponsoring Green IT Days, which are daylong events held at multiple locations across the valley during which TVA employees and contractors are encouraged to bring in any unused, broken or surplus TVA-owned information technology assets to a designated location for later reuse by TVA or recycling. Any type of TVA-owned technology asset is accepted at the events, including the following:

- Computers (laptops and desktops)
- Monitors (both LCD and liquid-crystal displays)
- CRT (cathode-ray tube models)
- Televisions
- Cables and extension cords
- Flash drives and external hard drives
- Keyboards and computer mice (all models; optical, wireless, trackballs, etc.)
- Speakers
- Mobile devices (cell phones, pagers, etc.)
- Cameras
- Projectors
- Surge protectors

Items returned during the events are properly documented and, depending on condition, either stored with IT surplus hardware for future needs or prepared for e-waste disposal.

GOAL 7: Electronic Stewardship and Data Centers (Goal-Specific Items)

a. Ensure acquisition of EPEAT registered, ENERGY STAR qualified, and FEMP designated electronic office products when procuring electronics in eligible product categories.

To achieve a high percentage of device types covered by current Energy Star specs that must be Energy Star qualified and a high percentage of covered electronic product acquisitions that are EPEAT-registered, TVA will continue acquisition of Energy Star qualified and EPEAT-registered electronics for device types used at TVA. Specifically, for each type of device at TVA that has Energy star qualified models, the I.S. Team collaborates with

the TVA Sustainable Acquisitions Team to keep Energy Star specifications and EPEAT-registered brands in future procurement requests.

b. Establish and implement policy and guidance to ensure use of power management, duplex printing, and other energy efficient or environmentally preferred options and features on all eligible agency electronic products.

Policies are established and implemented to set duplex printing the default of all devices when feasible. In addition, guidance is provided to employees on how to manually duplex print. Communications are also published with the support of TVA's CEO to stress the importance of conserving paper and consumables when possible. TVA currently manages power utilization of PCs through settings enforced by the logon script. These settings turn off the monitors after a specified period of time. TVA reevaluates the settings periodically to optimize power consumption. More sophisticated power management capabilities will be deployed in summer 2011 which will allow PCs to be centrally powered down at preset times. This power management system also allows PCs to be powered on to receive software updates when necessary.

c. Update agency policy to reflect environmentally sound practices for disposition of all agency excess or surplus electronic products.

The policy has been updated to reflect standard, environmentally sound practices. As aforementioned, TVA contracts with DOE to process all surplus electronics (at no cost to TVA) through TORNRC, a division of 5R Processors. Also as aforementioned, TVA has a MOU with DOE Oak Ridge Operations Office.

Objectives of this understanding are as follows: "To provide for a reliable, secure, environmentally compliant, and cost effective dispositioning pathway for obsolete surplus electronic and computer equipment that no longer meets the needs of the Tennessee Valley Authority (TVA) and its network of power customers."

d. Discuss how the agency will increase the quantity of electronic assets disposed through sound disposition practices. Include in the discussion how your agency is using or plans to use programs such as disposal through GSA Xcess, recycling through Unicor, donation through GSA's Computer for Learning (CFL) or other non-profit organizations, and/or recycling through a private recycler certified under the Responsible Recyclers (R2) guidance or equivalent certification.

To increase the percentage of electronic assets covered by sound disposition practices, TVA balances the cost of new technology and disposal with the gains in performance and energy savings. The I.S. team will use the established PC lifecycle or replacement schedule established for different device types (desktops laptops, monitors, printers). Currently, TVA disposes of end-of-life electronics through a combination of redeployment of PCs within TVA, donations to schools, resale, and electronics recycling using a Department of Energy contract. To ensure that these disposal practices are sound and to reduce the human and financial resources involved in e-waste management, TVA audits its donation, resale, and e-recycling partners to minimize risks. TVA also will consider outsourcing the entire electronics disposition program to ensure proper data destruction and e-waste management. TVA will also consider asset management services bundled with lease or purchase electronics procurement.

As aforementioned, ninety-nine percent of TVA's electronics never see a landfill. They are donated, sold through public auctions or shipped to a responsible e-waste recycler. TVA has in-house I.S. staff that ensures all PCs have been wiped clean of data, before determining their disposition. Approximately three to four percent are donated, approximately five to eight percent are sold, and the balance; 88 to 92 percent are recycled. Even if TVA redeployes equipment, it eventually comes back to us to be processed again and usually at that time it goes to our e-waste recycler, TORNRC.

e. Discuss how the agency will require IT planning/Life Cycle Manager to replace and or waive equipment that does not meet "Green" compliance requirements.

Life cycle processes currently includes green compliance requirements, and therefore we do not waive new equipment. We do not redeploy non-compliant devices where feasible, such as CRT monitors.

f. Update agency policy to ensure implementation of best management practices for energy efficient management of servers and Federal data centers, including how the agency will meet data center reduction goals included in the Federal Data Center Consolidation Initiative.

TVA continues to evaluate its computational footprint. The Nashville data center is scheduled to be decommissioned in summer 2011 resulting in a substantial reduction in power utilization and water consumption. TVA also is evaluating various techniques such as innovative cooling solutions, hot/cold aisle arrangement and optimization of HVAC assets to reduce power consumption in the primary and secondary data centers in Chattanooga and Knoxville, respectively.

GOAL 8: Agency Innovation & Government-Wide Support (Basic Performance)

a. Goal Description

There is great pride among TVA employees that technological innovation and environmental stewardship has been central to its mission from its inception under the TVA Act in 1933. Over the years, and with the evolving understanding of the times, TVA has fostered the care of the Tennessee River Basin and its bounteous natural resources. The inclusion of the environment in the TVA mission has long driven the agency to invest in innovative practices that improve environmental performance and promote sustainability. TVA has a long, proud tradition of technology innovation that started in the beginning with the TVA Act. The TVA Act sets out that TVA's Board Members shall affirm support for the objectives and missions of the Corporation, including being a national leader in technological innovation, low-cost power, and environmental leadership.

Now, more than ever, TVA's mission of technology innovation is key to address new challenges facing the utility industry. TVA is challenged to meet the need for increased demand for electricity at a time when fuel prices are uncertain, air quality regulations are becoming more stringent, and TVA's aging coal fleet is in need of expensive infrastructure upgrades.

Despite these complex challenges and as the nation's largest provider of public power, TVA is committed to become one of the nation's leading providers of low-cost and clean energy by 2020 through a renewed vision. This vision is to be the nation's leader in improved air quality and increased nuclear production; and the Southeast's leader in increased energy efficiency---all while staying focused on rates, reliability and responsibility.

Innovative technologies that enable this vision are the thrust of TVA's strategic focus going forward. Central to that focus is advancing TVA's leadership in three research areas. TVA will be a leader and world-recognized expert in these TVA Signature Technologies:

- **Small modular nuclear reactors (SMRs)** to help reduce our use of carbon-based fuels;
- **Electric transportation infrastructure** and the role TVA will play in supplying the fuel;
- **Smart grid (bulk power system) technology** to assure we maintain an even higher reliability by using smart sensors-- instruments and software that can detect incipient failures for timely intervention and fleet-wide asset management of our 90,000 miles of transmission assets

In addition to TVA's Strategic Technologies, there are several issue areas where TVA is also active: water resources, renewable and integration of renewable products into commercial and residential sites; long term operational impacts on coal plants; coal asset layup and reuse; and asset sensors.

The TVA vision will be achieved by developing objective technology assessments; demonstrating technology in a real world environment, and delivering the technology to the operational units. A key ingredient in this path forward is close collaboration with TVA operating units as well as external partners. Partnerships with academia, national labs and industry partners such as the Electric Power Research Institute (EPRI) extend and leverage TVA's research efforts. In today's TVA culture as well, there is a reservoir of commitment to the well-being of both the natural systems and human populations of the Tennessee Valley. This commitment is reflected in the enthusiastic response to the challenge issued by the TVA Board of Directors and management for TVA to take a leadership position in sustainability among both federal agencies and in the electric utility industry. TVA's desires to lead in innovation and fulfill our goal go beyond measures directed in the Executive Order and will help TVA reach its goals.

b. Agency Lead

Implementation of Agency Innovation and Government-wide Support will be accomplished by the following key staff:

- TVA Senior Sustainability Officer
- TVA Environmental Sustainability Manager
- TVA Technology Innovations Senior Manager

The Environmental Sustainability and Technology Innovation employees will provide support to these individuals.

c. Implementation Methods

Agency innovation is implemented across TVA via operational processes that are driven by TVA strategy and mission-related initiatives. Innovative research and development and the application of associated technologies is conducted to address agency initiatives and is selected and implemented through a technology transfer process - meaning that we first develop a concept, demonstrate it on a pilot scale, and then implement it into TVA operations. Innovation is weaved throughout TVA and TVA explores and uses a variety of innovative tools to help reach sustainability goals.

TVA implemented a company-wide reorganization in FY2010 via consolidation of environmental functions within the Environment and Technology group, including the TVA Environmental Sustainability Group (ESG). The ESG became fully staffed in 2011 to focus on achieving the goals set forth in this sustainability plan, promote personal sustainability and a sustainability culture throughout TVA while forming partnerships throughout TVA on Sustainability Innovations.

To ensure company-wide understanding and support to achieve the goals of this SSPP, TVA formed the Sustainability Steering Committee (SSC), an executive-level committee responsible for reviewing and funding sustainability projects. To develop and recommend projects for funding, in addition to assisting with project implementation, the EESC was also developed to work directly with the ESG and represent TVA business units. The EESC took over the functions of the former TVA Internal Energy Management Committee that had been in existence for the past two decades coordinating energy-saving efforts throughout TVA.

d. Positions

TVA does not regularly share their building space with other Federal agencies but does provide electric power to many agencies located in our service area. However, TVA does share space with the US Army Corps of Engineers at TVA dams with navigation locks along the Tennessee River. TVA owns 13 locks at 9 dams on the Tennessee River and 1 lock at Melton Hill Dam on the Clinch River. TVA has a Memorandum of Agreement with the U.S. Army Corps of Engineers Nashville District for the operation and maintenance of the navigation facilities on the Tennessee River and its tributaries. Since TVA provides power to many of these facilities TVA has been conducting energy/water surveys to uncover potential energy conservation measures.

e. **Planning Table**

Table 16: Agency Innovation & Government-Wide Support Planning Table

AGENCY INNOVATION & Government-Wide Support	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Programs, Projects, Initiatives that support Government wide efforts	\$M	0.230	1.586	1.476	TBD	TBD	TBD	...	TBD
Other, as defined by agency		none	none	none	none	none	none	...	none

f. **Agency Status**

TVA recognizes that this challenge requires not only commitment, but creativity and innovation as well. Sustainability is an evolving process that is best supported by an educated, involved and innovated workforce and a cultural value system in place to promote it. To that end, in addition to the measures described previously in this Plan, TVA currently employs multiple innovative practices, technologies and techniques to achieve sustainability goals. Several examples of these practices are highlighted below.

- Since 2003, the agency has operated “Growth Readiness,” a program using collaborative planning methods to help communities within its service area create smart growth policies around water use and to support sustainable development. Through this program, 230 communities have evaluated their codes and ordinances against model principles. Average initial scores were 39 out of 100 points, indicating “serious reform needed.” After checking back with these programs five years later, 123 of the Growth Readiness communities report that they have made or plan to make changes to achieve more quality growth that will result in scores increasing by 41 percent to 54.6. In addition, communities report the use of best practices promoted by the program in 57 projects including pervious pavement, preserved open space, grassy swales, and bioretention and rain gardens across the TVA region. TVA has worked with key partners including EPA Region IV, EPA Office of Smart Growth and the Southeast Watershed Forum to develop a new Quality Growth Worksheet, a training curriculum and workshop series to address environmental concerns in a wider set of Smart Growth issues.
- The Technology Innovation group within the TVA Environment and Technology business unit is responsible for developing and managing the TVA strategic research and development (R&D) portfolio. The Technology Innovation groups evaluate and demonstrate energy efficiency technologies for consumers; applications of smart grid for power delivery; clean technology programs including biomass, solar technology, wind power and waste technologies; and evaluate ways to prevent harmful impacts to the environment by developing and implementing generation control technologies.
- Strategic research is focused in key areas of clean energy technology, energy efficiency and smart grid, electric transportation, environment and generation, and by leveraging research through partnerships with external stakeholders and prestigious research institutes. TVA is responsible for evaluating and developing sustainable, non- and low-carbon emitting power generation technologies that support TVA’s strategic goals for clean energy reduce TVA’s overall environmental footprint and result in new clean generation in the Valley. TVA demonstrates new clean technologies and conducts innovative research that addresses performance, cost, sustainability, and availability issues associated with clean energy technologies. TVA also engages the external engineering and scientific communities for collaborative research in clean energy technologies.
- Renewable portfolio standards (RPSs) and GHG emission regulations are driving the growth of biomass-based electricity generation as well as other renewable energy requirements. Renewable energy sources such as biomass have the potential to greatly reduce GHG emissions. TVA is currently researching and investigating biomass feed stocks sources such as wood, plants, and agriculture residues along with emerging preparation technologies that provide increased heat input. The potential for incorporating these

valuable carbon neutral fuels to co-fire with coal supports TVA goals for increased power generation from renewable energy sources.

- Within the TVA service territory many distributor and direct serve customer production processes generate waste heat. Reclaiming this production byproduct can increase production efficiency, reduce load demand and provide clean peak power generation to the grid. Within TVA several internal programs such as Valley Investment Initiative, Generation Partners, Major Industrial Program and Energy Efficiency, and the Dispersed Power Program are individually offering specific education and incentives to industrial customers for energy efficiency improvements, load reductions, and peak power generation. TVA has completed a comprehensive identification and documentation of Valley waste heat sources for clean energy generation.
- Integration of renewable energy to augment fossil generation - With emphasis on using renewable energy sources, carbon credits, the rising cost of fossil fuels, and their impact on the environment, there is interest in exploring the feasibility of using solar energy to augment fossil fuel consumption at an existing power plant in a cost-effective manner. The Technology Innovation group is interested in determining the potential benefits and feasibility of utilizing solar energy to augment the energy requirements of their fossil fuel power plants. Successfully employing a renewable energy source such as solar can reduce fossil fuel consumption and lessen plant emissions. In 2010, TVA completed an evaluation of fossil fleet and selected Colbert Fossil Plant in Alabama as the study site for the solar thermal power/fossil plant integration feasibility study.
- The Energy Efficiency and Power Delivery Utilization group (EE&PDU) focuses on the deployment of multiple high-efficiency technologies in consumer facilities to evaluate energy savings potential and future consideration for TVA marketing initiatives and development of smart grid technology.
- Energy efficiency research focuses on developing cost-effective residential energy efficiency and demand-response tools to educate builders, developers and consumers. “Demand response” refers to approaches that encourage consumers to reduce their energy use during periods of peak demand. TVA has built three experimental homes at Campbell Creek in Knoxville and will use them over the next few years to evaluate residential building techniques, energy efficiency technologies, smart grid concepts and consumer energy-use behaviors. The Campbell Creek research project is a unique test facility that will enable TVA and its partners, Oak Ridge National Laboratory (ORNL) and EPRI, to evaluate the effectiveness of residential construction and efficiency technologies in a controlled environment. During 2010, the Energy Efficiency and Power Delivery Utilization (EE &PDU) group from Technology Innovation completed first year of testing and documentation of energy savings for residential energy efficiency technologies at the Campbell Creek research facility. Technology Innovation is also participating in the National Energy Efficiency Demonstration.
- Technology Innovation’s, EE&PDU is developing a Smart Grid deployment plan for the Tennessee Valley that will lead to characterization of important applications for the transmission, distribution and consumer systems; enable a better understanding of the cost/benefit of such applications; and resolve questions in terms of technology integration and interoperability between operations and end devices. A component of the deployment plan is demonstration of key applications, such as: wide-area visualization of power system assets and operating conditions; more efficient use of existing transmission corridors; integration of renewable/ storage technologies; smart asset management using advanced sensing devices; and engagement of end use consumers in energy efficiency and demand response.
- The Environment and Generation group is responsible for innovative, cost-effective technologies that mitigate the impact of TVA’s generation and meet compliance. Research under this area includes generation control technologies for mercury, mitigation of environmental impacts from wet to dry coal combustion byproducts, the development of passive waste water treatment technologies, and the evaluation of carbon capture technologies and storage opportunities for the TVA fossil fleet. Technology Innovation, in cooperation with other organizations within TVA’s Environment & Technology business unit, is conducting a small-scale, terrestrial carbon sequestration pilot-project in the Tennessee Valley. The purpose of the project is to generate certified and fungible above and below ground carbon credits, but more importantly, to develop a working knowledge and internal expertise that can be applied to similar, but larger-scale, greenhouse gas emissions offsets projects in the future. Environmental stewardship will be an

integral part of this project. Mixed vegetation (trees, native warm season grasses and legumes) as opposed to a monoculture will be used to support biodiversity and provide habitat for wildlife.

- Anticipation is increasing that electric vehicles will soon be entering the public and private sectors. The increased use of electricity as a transportation fuel requires effective integration of charging stations with the power grid. TVA is supporting the development of solar-assisted stations to increase the use of renewable energy in the Valley; provide electric vehicle owners with a greener charging option; reduce the likelihood of negative impacts from charging vehicles during periods of peak power demand; defer costly system upgrades; and support system reliability. TVA partnered with Nissan North America, the State of Tennessee and the Electric Transportation Engineering Corporation (eTec) along with regional power distributors, to develop the plan to deploy electric vehicle charging infrastructure to support the Tennessee launch of the Nissan LEAF, a battery /electric vehicle, in late 2010. Part of a larger national research demonstration that covers five geographically and socioeconomically diverse locations, Tennessee will showcase Chattanooga, Knoxville and Nashville in the largest electric vehicle project of all time.
- The proposed Tennessee Valley Camp-Right Campground (TVCRC) Initiative is a program developed and implemented by the Tennessee Valley Authority (TVA) to promote environmentally responsible campground management and camping practices. It is designed as an ongoing program to reduce pollution and erosion in the Tennessee River watershed. The effort will encourage camper education and better communication of existing laws, as well as offer incentives, when possible, for creative and pro-active campground operators. In addition to regulatory and contractual requirements that all campgrounds are required to meet, the TVCRC Initiative includes four *management measures* that were identified as being important in the management of campgrounds: 1) resource conservation and management, 2) campground siting, design, and maintenance, 3) waste management, and 4) public education.
- TVA is also engaged in non-road transportation technology research. One of the benefits of electricity as a transportation fuel is the reduction in greenhouse gases over petroleum fuels. A critical aspect of our work is to assess these emissions reductions. One way TVA is working to achieve this goal is looking at the total footprint of individual systems, such as utility and air cargo sectors, and developing options through research to reduce environmental footprints through transportation electrification.
- The TVA Technology Partnerships group promotes environmental stewardship and economic development in the Tennessee Valley by including, collaborating, and educating stakeholders. Technology Innovation manages external partnerships with other leading research organizations to assure achieving TVA's strategic goals of providing lost cost rates, reliability and responsibility. The TVA partnerships group works with TVA distributors to implement strategic energy efficiency design for distribution circuits and energy efficiency technologies, including smart grid integration.

g. Return on Investment

Currently, no significant projects or initiatives included in the 2010 Sustainability Plan have been cancelled or suspended due to a lower than expected ROI. Likewise, no specific projects or initiatives have been expanded due to higher than expected ROI.

h. Highlights

- TVA's Personal Sustainability Initiative, launched on Earth Day, April 22, 2010 engages and empowers employees to weave sustainability into their personal lives on a meaningful basis, focuses on four key areas--health, efficiency, community, and environment. Through the program, employees are encouraged to maintain their own health, work to ensure that the Tennessee Valley is a healthy place, make more efficient use of water and energy, give back to their community, and preserve the region's environment and natural beauty.
- Another noteworthy innovation is the TVA Environmental Utility Benchmarking Forum, a utility industry benchmarking forum organized and hosted on May 12-13, 2010. The forum brought together representatives from 16 electric utilities from across the country to provide an opportunity for the industry participants to share environmental performance data and best practices in performance reporting. A second forum is set for September 2011.

- To promote transparency and ensure clear communication of environmental performance to stakeholders, TVA has committed to developing an environmental footprint. The TVA Environmental Footprint identifies Environmental Performance Metrics that capture the spectrum of responsibilities in the TVA Environmental Policy aligned with the Global Reporting Initiative Framework for Sustainability Reporting. Using these metrics, benchmark data has been compiled for other electric utilities to identify performance rankings in key environmental areas and to identify areas for improvement and priorities for environmental performance.

GOAL 8: Agency Innovation & Government-Wide Support (Goal-Specific Items)

a. Agencies responsible for interagency working groups that support efforts covered in this plan

TVA is not a named agency responsible for sponsoring and leadership of any of the Federal Interagency Working Groups.

b. Agencies that are responsible for coordination, review, analysis and maintenance of Federal/Congressional reporting requirements

TVA is not a named agency responsible for coordination of Federal/Congressional reporting requirements but through working groups does provide review, analysis and maintenance assistance as requested. TVA regularly attends and participates in interagency working group meetings including the Energy Task Force, Sustainable Working Group, Water Working Group, EISA Section 432 Working Groups, Exclusions Working Group, GHG Working Group, Legislative Working Group, Metering Working Group, Procurement Working Group, Renewable Working Group, Federal Electronics Stewardship Working Group, and Sustainable Acquisition & Materials Management Practices Working Group.

c. Agencies that have developed tools or provide assistance to other agencies in meeting Federal/Congressional reporting requirements

As a member of the various working groups TVA has contributed to the development of tools such as the SGPs and EISA 2007 CTS database. TVA has also contributed to EO language and legislative and EO guidance and regularly shares energy/water/sustainability efforts at working group meetings.

d. Agencies that have collaborated to transfer to or share space with other agencies (e.g. sharing a laboratory, warehouse, or office space) or co-located field offices across a metropolitan area or region

TVA does not regularly share their building space with other Federal agencies but does provide electric power to many agencies located in our service area. TVA does share space with the US Army Corps of Engineers at TVA dams with navigation locks along the Tennessee River. Since TVA provides power to many of these facilities TVA has been conducting energy/water surveys to uncover potential energy conservation measures.

Section 3: Agency Self Evaluation

Questions	Answer
Does your Sustainability Plan incorporate and align sustainability goals, GHG targets and overarching objectives for sustainability with the Agency Strategic Plan?	Yes
Does it provide annual targets, strategies and approaches for achieving the 2015 and 2020 goals?	Yes
Is the Sustainability Plan consistent with the FY2012 President's Budget?	No
Does the Sustainability Plan integrate all statutory and Executive Order requirements into a single implementation framework for advancing sustainability goals along with existing mission and management goals, making the best use of existing and available resources?	Yes
Does your plan include methods for obtaining data needed to measure progress, evaluate results, and improve performance?	Yes

As TVA developed this plan, it started with the TVA Mission and TVA’s 2007 Strategic Plan and analyzed how that mission and plan align with sustainability: The TVA Mission is to serve the Tennessee Valley through Energy, Environment, and Economic Development. The Strategic Plan focuses on leveraging and aligning TVA’s strengths and addressing the customer, financial, operational and organizational actions necessary for TVA to support the region’s continuing growth and success. These areas of service have a direct, clear relationship with the main tenets of sustainability, so achieving the EO Sustainability goals directly supports the broader TVA Mission and Strategy.

TVA developed this SSPP using a multi-committee collaborative process, and the plan reflects the work of staff across the TVA organization. The groups worked together to develop strategies and approaches to meet the EO goals and annual targets in the plan and benefitted from as much cross communication as possible — facilitating the best use of existing and available resources. This cross-organizational coordination fosters the integration of multiple statutory and Executive Order requirements into a single implementation framework. The long term goal of the TVA Environmental Sustainability Program is to change the culture of TVA from focusing on compliance and reaction to proactive pursuit of environmental, economic and social benefit beyond what is required by law. The TVA SSPP has clearly identified milestones as laid out in the EO, and it will serve as a guide in implementing projects that achieve the goals and milestones listed in the plan. In addition, the goals and strategies to meet those goals have been analyzed in terms of capital costs, employee time and the associated environmental, economic, and social benefits. TVA intends to use this SSPP as an integral part of our operations going forward and a constant reminder of our commitment to sustainability in all of our actions.

Finally, we realize that a plan without measurement and review is not useful for continuous improvement. Therefore, we have a renewed commitment and focus to track environmental and social benefits in and outside of our organization. A commitment to sustainability is a commitment to stakeholders, including the environment, our employees, our neighbors and our customers. In order to assess progress, evaluate results, and improve performance, we plan to measure stakeholder satisfaction and feedback on our progress as well as traditional environmental metrics such as waste diversion and recycling, GHG emissions, energy usage, water usage and green purchasing.

TVA has planned actions to achieve success on the OMB scorecard aligned with our strategies and actions defined for many of our goals in Section II. We find our success with the scorecard directly aligned with our commitment to this sustainability plan and achieving the goals set forth.

Other Key Questions for 2011:

1. Did your agency meet by 12/30/10 due date and/or is it now able to demonstrate comprehensive implementation of the EO 13423 Electronic Stewardship goals?

- **Acquire at least 95% EPEAT-registered electronics**

EPEAT purchasing was successfully implemented by 12/30/2010. TVA achieved a 99 percent EPEAT acquisition rate during FY 2010.

- **Enable energy star or power management features on 100% of eligible PCs**

Power Management of PC equipment was partially implemented at a 55 percent level by 12/30/2010. TVA is in the process of instituting a new Enterprise PC Power Management project. This high priority project is scheduled to achieve 98 percent power management by September 30, 2011, with comprehensive agency-wide power management to be in place by December 30, 2012. Complete reporting and audit functions are a part of the IT infrastructure capability being acquired through contract.

- **Extends the life and/or uses sound disposition practices for its excess or surplus electronics**

These requirements were successfully implemented by 12/30/2010.

2. Is your agency tracking and monitoring all of its contract awards for inclusion of requirements for mandatory federally-designated green products in 95% of relevant acquisitions?

Yes, TVA utilizes the MAXIMO for tracking sustainable acquisitions. TVA developed and implemented customized training on green coding in MAXIMO tailored to the contract managers, material analysts and other buying personnel.

3. Has your agency completed energy evaluations on at least 75% of its facilities?

The TVA Internal Energy Management Program has continued surveying its covered facilities to identify energy reduction opportunities and meet the covered facilities survey requirements under EISA 2007. To date in FY 2011 TVA has surveyed 4,434,619 square feet of covered facilities exceeding the 75 percent goal based on square footage. TVA is currently on track to complete the EISA surveys requirement next year.

4. Will your agency meet the deadline of October 1, 2012 (EPACT'05 Sec 103) for metering of energy use? (Agency should provide current status of buildings metered and plans for meeting the deadline).

TVA anticipates meeting the October 1, 2012 EPACT05 goal for metering applicable buildings. In the TVA Annual Report on Energy Management for FY 2010 TVA reported that 77.7 percent of appropriate buildings had been metered and is on track to metering 100 percent by the due date. TVA has been following its metering plan which was updated in June, 2010 to incorporate the required natural gas and steam meters in appropriate facilities by 2016 to meet EISA 2007 requirements.

5. If your agency reports in the FRPP, will it be able to report by December 2011 that at least 7% of its inventory meets the High Performance Sustainable Guiding Principles?

TVA has been showing incremental progress in applying SGPs to its two largest buildings the Chattanooga Office Complex (COC) and Knoxville Office Complex (KOC) which together, once completed, will well exceed the 15 percent requirement by FY 2015 as these buildings represent 21 percent of the square footage applicable to the SGPs. OMB has recognized that TVA is on track to meeting this requirement based on incremental progress, but also cannot count this progress via the FRPP as it is limited to only counting buildings that are 100 percent

complete. The COC and KOC are very large and complex and it will likely be FY 2015 before completion of the application of the SGPs. Recognizing this, TVA is currently evaluating multiple smaller buildings that can be quickly and inexpensively retrofitted to adhere to OMB's decision to count progress by numbers of buildings through the FRPP rather than square footage.