

## Environmental Management Systems

This case study shows how Environmental Management Systems can be effectively used to incorporate monitoring and adaptive management into environmental analyses and used in conjunction with NEPA.

**PRACTICE:** Development and implementation of an agency-wide EMS, including the NEPA process with direct linkages to other EMS processes.

**AGENCY:** Tennessee Valley Authority (TVA).

**INVOLVED PARTIES:** Internal TVA organizations

**POINT OF CONTACT:** Jon M. Loney (865) 632-3012, [jmloney@tva.gov](mailto:jmloney@tva.gov).

**DATES:** *Began:* January 2001 *Ended:* Development completed and ongoing implementation since April 2002.

**Project Description:** In 2002, TVA completed a revision of its Environmental Management System (EMS). The new EMS meets Executive Order 13148 requirements for federal agencies to develop environmental management systems. The EMS incorporates the NEPA process as an integral component of the system with direct linkages to other EMS processes.

The NEPA process was strengthened by its integration into the revised comprehensive EMS. A new Environmental Policy and Principles was adopted which re-established TVA's commitments to environmental protection and stewardship, to assess and minimize the effects of TVA operations on the environment, and to involve the public. An Achievement Plan was developed to assure TVA meets its corporate environmental commitment and recognized the EMS as the principal tool for doing so. Corporate environmental objectives and targets were established and new methods to measure TVA's overall environmental performance were introduced.

Significantly, the NEPA Process was directly linked to other EMS Processes, including those for environmental training, communication and stakeholder involvement, records management, environmental auditing, corrective and preventive action, performance monitoring and reporting, and management review. In turn, a system of business unit and facility-level processes and procedures tier from the agency-level EMS to assure consistent implementation at TVA plants and field locations. These systematic linkages work together to reinforce all aspects of NEPA performance, and provide improved environmental compliance, cost savings in environmental management programs, and measurable improvements in achieving TVA environmental objectives.

**Internet Site:** (Internal TVA Web).

**Value as a Practice:**

***Results:***

The EMS invokes the monitoring component of the adaptive management model through a formal system of mitigation identification and tracking, systematic environmental performance measurement, and auditing and corrective action programs for NEPA compliance. Before the issuance of a decision document, TVA requires that the mitigation commitments are entered into the electronic system with due dates and assignments of the individuals responsible for implementation. The system enables TVA to effectively track commitments for mitigation made in NEPA documents. Performance is measured by a NEPA Process Effectiveness Index calculated from survey results taken for each completed review. A broader TVA Environmental Impact Index provides a composite measure of TVA project impacts, both beneficial and detrimental, on air quality, water quality, land, waste production, and energy consumption. The audit function includes all elements of EMS conformance in the same fashion as regulatory compliance. Thus, audits of TVA facilities and programs address NEPA and any NEPA findings, and track status and closure of each finding. This system provides for a greater sense of accountability among management and staff.

Related EMS processes linked to NEPA also provide for appropriate NEPA training across TVA, consistent public messages and approaches to public involvement, and systematized records management for all NEPA administrative records. Managing the NEPA process within an overall EMS framework better enables TVA to effectively and efficiently meet its energy, economic development and environmental objectives. The full integration of NEPA into an agency-wide EMS helps meet the national environmental policies set forth in Section 101 of NEPA.

***Challenges overcome:*** The development and implementation of an integrated NEPA/EMS approach was a challenge because of the diversity and scope of TVA programs and facilities. As an agency with broad natural resources and economic development programs as well as operational responsibilities for its system of dams, electric power plants, and transmission, TVA must deal with widely varying NEPA actions and a complex array of environmental regulations. Designing an agency-wide system that balances consistent implementation with the particular needs of organizations and facilities is difficult. This was achieved through design of the NEPA process revisions and all EMS processes through work teams with representatives from across TVA, with guidance and review by senior environmental managers from the major TVA organizations.

TVA is still in the early stages of implementing its new EMS and NEPA process improvements. However, performance indicator data for the first two years points to

substantial progress in environmental performance and the Environmental Impact Index.

***Challenges remaining:*** A major challenge is to meet increasing project schedule demands, with competing priorities and, at best, static technical resources. TVA is exploring an initiative for establishing an improved structure for establishing NEPA project priorities that will help address this issue.