

Energy Policy Act 2005 PURPA Standards Fossil Fuel Generation Efficiency

Staff Comments

Standard:

Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.

Recommendation:

TVA staff recommends adoption of a modified standard, with a 5-year plan requirement instead of a 10-year.

Basis for Recommendation:

TVA has ongoing efforts to improve the reliability and efficiency of its fossil fleet. Since FY 2000, the equivalent forced outage rate (EFOR) has improved from 10% to approximately 6%, and plans are to be in the top quartile of performance in the coming years. Additionally, efforts to improve plant heat rate (a measure of consumed fuel per unit of electricity) are ongoing at several facilities and will be standardized across the fossil fleet to improve efficiency.

Methods are being standardized through a collaboration of TVA fossil plant engineering managers to share and implement projects across the fleet that have been demonstrated at specific plants. Additionally, several projects are planned for implementation, and others are being evaluated, that will improve the efficiency and output of the plants with no additional fuel consumption. Examples are refurbishments of cooling towers, turbine rotor upgrades, and turbine valve replacements.

The evolution of efficiency-improving technology, the current plan for deployment of additional clean air equipment, and the potential for significant regulatory increases makes development of a credible 10-year plan for efficiency impractical. Otherwise, the standard requires actions which are sound business practices.

Background:

Reliability improvement remains a focus area for TVA's Fossil Power Group. Unreliability results in the purchase of more expensive replacement power, substantially more expensive than TVA generation in peak seasons. The focus of the TVA reliability improvement program has been on boiler, turbine, and other

critical equipment reliability; improved maintenance practices and processes; outage effectiveness; and human error reduction. These efforts continue, with a special emphasis on plants and units that have not yet achieved top levels of reliability.

Heat rate or efficiency improvement comes in the form of eliminating thermal losses (steam leaks, missing or damaged insulation, turbine wear, etc.) and identifying opportunities to install more energy efficient equipment (primarily improved turbine-generator components). Plants with significant deviations from their expected heat rates have begun programs to systematically troubleshoot plant equipment to identify and eliminate losses.