



U.S. DEPARTMENT OF
ENERGY



NATIONAL
ENERGY
TECHNOLOGY
LABORATORY



REGIS CONRAD

Director

Division of Advanced Energy Systems
Regis.Conrad@hq.doe.gov

BRIGGS WHITE

Technology Manager

Crosscutting Research Program
Briggs.White@netl.doe.gov



Pittsburgh, **PA**
Morgantown, **WV**
Albany, **OR**
Anchorage, **AK**
Houston, **TX**



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**PROGRAM
OVERVIEW**



The Crosscutting Research program is unique in its ability to see and foster applications of a given technology across a number of fossil energy programs, and is able to efficiently leverage resources to accomplish common goals.

Often, processes and materials that advance one technology platform may well have application in another with little to no modification.

The Crosscutting Research program leverages the latest technology trends such as:

- **DATA ANALYTICS**
- **ADVANCED MANUFACTURING**
- **HIGH-PERFORMANCE COMPUTING**

These advanced capabilities accelerate progress toward addressing the challenges facing today's fossil power plants and realize the next generation of fossil energy technology platforms.

The technologies developed by the Crosscutting Research program improve power plant efficiency and reduce operating and maintenance costs, while maintaining reliable and resilient energy infrastructure.

The Crosscutting Research program utilizes the advanced technological capabilities of the National Energy Technology Laboratory. Including the open-source Multiphase Flow with Interphase eXchanges (MFiX) software suite for multiphase modeling, Extreme Environment Materials consortium to accelerate materials development, and NETL's Joule supercomputer for complex modeling and simulations.

Crosscutting has a unique ability to develop a range of technologies that have a broad range of fossil energy applications accelerating technology readiness levels toward commercial application.



HIGH-PERFORMANCE MATERIALS

Develops cost effective structural and functional materials capable of operating under extreme conditions that revolutionize energy systems, and leverages advanced analytical capabilities to develop, modify, and qualify new materials.



SENSORS & CONTROLS

Novel sensors are capable of monitoring key parameters while operating in harsh environments with real-time measurement capabilities. The data collected from sensors is vital in enhancing plant reliability and improving efficiency of key plant components.



UNIVERSITY TRAINING & RESEARCH

The Crosscutting Program sponsors two of the longest-running university training programs that reinforce fossil energy research-based education including an emphasis on science and technology.



WATER MANAGEMENT R&D

Addresses the competing needs for water consumption through a series of dynamic and complex models and analyses that are essential in informing and deciding priority technology R&D initiatives. New water treatment technologies economically derive clean water from alternative sources reducing total water demand, including innovative wastewater treatment processes that reduce fresh water intake.



SIMULATION-BASED ENGINEERING

Focuses on developing and applying advanced computational tools at multiple scales: atomistic, device, process, grid, and market to accelerate development and deployment of fossil fuel technologies. NETL is a world-leader in multiphase flow modeling that simulates complex energy processes.

Crosscutting brings together **industry, academia, and government** institutions to drive affordable fossil energy solutions.