CROSSCUTTING RESEARCH

PROGRAM OVERVIEW
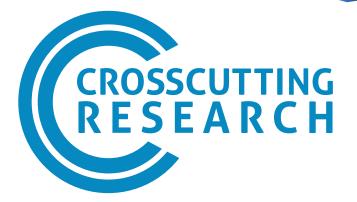
CROSSCUTTING RESEARCH

The Crosscutting Research program is unique in its ability to 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, AND**
- **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 brings together **industry, academia,** and **government** institutions to drive affordable fossil energy solutions.

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.

SENSORS & CONTROLS
The Crosscutting Program conducts R&D within the technical areas of advanced sensors, distributed intelligent controls and cybersecurity to realize flexible operation, enhance reliability, and improve efficiency for fossil-based power plants.

MODELING, SIMULATION, AND ANALYSIS
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 worldleader in multiphase flow modeling that simulates complex energy processes.

UNIVERSITY TRAINING & RESEARCH
Two of the longest-running university training programs, including University Coal Research (UCR), and, Historically Black Colleges and Universities and Minority Serving Institutions (HBCU/MSI). Both programs reinforce fossil energy research-based education, training, and workforce development.

HIGH-PERFORMANCE MATERIALS
Enhances the nation's high temperature materials supply chain and develops solutions for today's fossil fleet as well as the next generation of power plants.

ADVANCED ENERGY STORAGE
Mature advanced energy storage technologies and integrate them with fossil assets to promote a more reliable and affordable energy supply, a cleaner environment, and stronger energy infrastructure.

WATER MANAGEMENT
Addresses 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 condenser and cooling technologies will improve plant efficiency, water consumption, and maintenance. New water treatment technologies will enhance environmental performance and reduce fresh water intake.

U.S. DEPARTMENT OF ENERGY | **NETL NATIONAL ENERGY TECHNOLOGY LABORATORY**

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