UNIVERSITY TRAINING AND RESEARCH

NETL
NATIONAL ENERGY TECHNOLOGY LABORATORY

The **University Training and Research[1] program within the Crosscutting Research Portfolio** serves several national priorities, the most important of which is to maintain U.S. technological leadership among the world's most sophisticated nations. By investing in the education and training of America's future scientists and engineers, this program, one of the longest-running training programs in the country, highlights the key role technology plays in addressing America's energy challenges, promotes the development of game-changing transformative science, and reinforces our nation's continued security and economic prosperity.

1For FY 2019, the University Training and Research Program is funded by two budget lines under Crosscutting Research – Historically Black Colleges & Universities (HBCU) and Other Minority Institutions (OMI), and University Coal Research (UCR).

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

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The **Historically Black Colleges and Universities (HBCU)** and **Other Minority Institutions (OMI)** portion of the program is designed to build capacity and train students in fundamental fossil energy research and discovery, while the **University Coal Research (UTR)** portion facilitates the creation of student-led research to advance the maturity of technologies and address the responsible development and use of our abundant, domestic energy resources.

Together, these programs encourage the expansion of domestic energy production and the creation of new and innovative conversion and delivery technologies while simultaneously facilitating energy sector job growth and preparing the next skilled generation of America's fossil energy workforce.

HBCU AND OMI

For over 30 years, NETL has supported the HBCU and OMI program, making it one of the longest-running university training initiatives in the country. HBCU and OMI students have produced and published more than 500 technical papers. Each year, NETL awards four to five competitively selected grants based on research topics of the highest priority to Office of Fossil Energy (FE) programs. Grants awarded under this program are intended to maintain and upgrade educational, training, and research capabilities of HBCUs/OMIs in the fields of science and technology related to fossil energy resources. Each selected university is required to provide research education support for at least one student.

UNIVERSITY COAL RESEARCH PROGRAM

This program emphasizes coal research structured to achieve FE strategic goals in concert with student education in relevant fossil energy related topics. Key research areas supported include near-zero emission power plants, carbon capture, computational energy sciences, development of advanced high-performance materials, sensors and controls, and the development of advanced coal power generation systems. Competitively selected grants are awarded each year with a maximum value of $400,000 over a two- to three-year period. Each participating university is required to provide research education support to at least one student. Over the past 30 years, over 1,700 UCR students have published more than 1,000 technical papers on subjects relevant to the advancement of fossil energy science and technology.

Between 1995 and 2017, NETL awarded over 130 grants worth more than $25 million to HBCU and UCR student-led research. This educational outreach initiative has also provided opportunities for qualified undergraduate, graduate and post-doctoral students and researchers to hone their skills by accessing and working with NETL's in-house research scientists and engineers.

INITIATIVES FOCUS ON ADVANCING FOSSIL ENERGY WITH ADVANCED TECHNOLOGY CONCEPTS:

- Creating secure and reliable cyber and physical energy infrastructure.
- Develop innovative water technologies for the reuse of power plant water discharge.
- Big data analytics and machine learning to create optimization and digitization strategies.
- Internet of Things to advance Industry 4.0 principles in fossil energy.
- Cybersecurity to ensure a secure and reliable source of energy.

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