NATIONAL ENERGY TECHNOLOGY LABORATORY
MORGANTOWN, WEST VIRGINIA

May 2025

NATIONAL ENERGY TECHNOLOGY LABORATORY

NETL's Morgantown laboratory was established in 1946 with a mission to find more efficient and cost-effective ways of gasifying coal to produce synthesis gas. Today, Morgantown researchers are dedicated to advancing the nation's energy future by creating innovative solutions that strengthen the security, affordability and reliability of energy systems and natural resources.

World War II sparked national interest in synthetic fuels production, leading to passage of the Synthetic Liquid Fuels Act of 1944. It was under this legislation that the Synthesis Gas Branch Experiment Station began government-sponsored coal-gasification research at West Virginia University facilities in Morgantown, West Virginia, in 1946. Administered by the U.S. Department of the Interior Bureau of Mines, the 17-employee station was tasked with developing processes to produce synthesis gas from coal.

Reaction Analysis and Chemical Transformation (ReACT) Facility

By 1954, the Morgantown laboratory became the Appalachian Experiment Station for on-site coal research with a staff of 109 employees. Construction of the Appalachian Experiment Station, which comprised an administrative building and laboratories for the study of petroleum production and coal gasification, began on Collins Ferry Road in June 1952. The new Appalachian Experiment Station represented an important step toward consolidating ongoing investigations of petroleum, coal and synthetic fuels into an overarching program of fossil-energy research that could help guide federal energy policy.

The 1970s brought many changes as the Appalachian Experiment Station came under the purview of the new U.S. Energy Research and Development Administration in 1975 and gained a new moniker: the Morgantown Energy Research Center (MERC). Together with sister Energy Research Centers in Bartlesville (Oklahoma), and Pittsburgh, MERC oversaw federally funded contracts for fossil energy research and development. Research areas included the development of advanced methods for cleaning coal and combustion gases, alternative methods to substitute coal for imported oil and enhanced oil recovery to produce more domestic oil. In 1977, the center was incorporated into the newly established U.S. Department of Energy (DOE) as the Morgantown Energy Technology Center (METC). The center's responsibilities included on-site research with coal, oil and gas technologies, as well as management of millions of dollars' worth of contracts for research and development conducted by universities, private industry and other government research institutions.

In 1996, researchers at the Morgantown and Pittsburgh centers were united in a new Federal Energy Technology Center (FETC). In 2005, FETC joined a third laboratory in Albany, Oregon. These government-owned, government-operated facilities now comprise DOE's NETL.

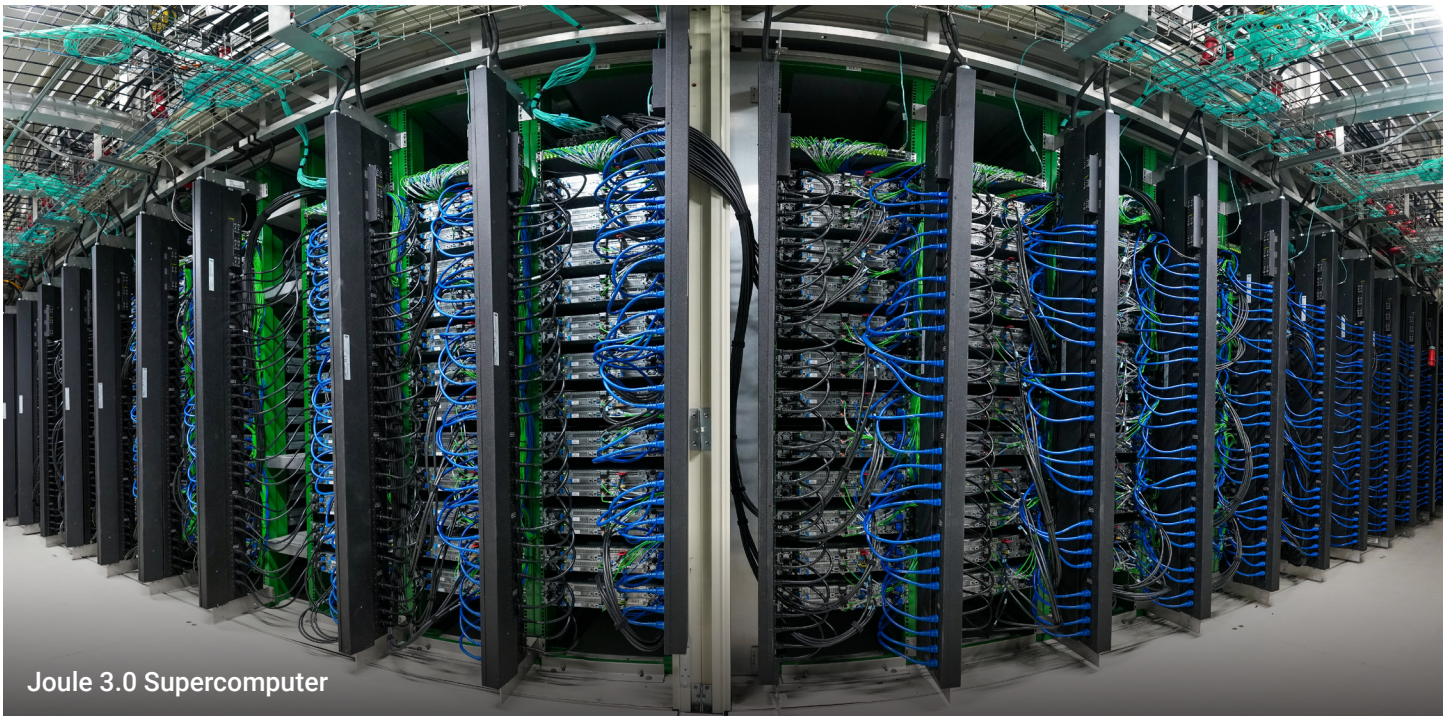
Today, approximately 530 Morgantown-based NETL personnel are dedicated to advancing the nation's energy future by creating solutions that strengthen the security, affordability, and reliability of energy systems and natural resources. The Morgantown site plays a key role in advancing applied energy technologies that support DOE's mission.

NETL researchers leverage computational tools, engineering expertise, and strategic partnerships to address national energy challenges, including advancements in chemical reaction engineering, the development of integrated energy systems, novel reactor designs for high-value carbon and chemical production, fuel cell and electrolyzer innovation, advanced subsurface imaging using in-situ CT technology, and next-generation combustion systems.

Collaborations with industry, government agencies and academia, including West Virginia University, help accelerate the transition of innovative solutions from the lab to real-world applications.

Innovation Center


Technology Support Facility


Joule 3.0 Supercomputer

RESEARCH IN ACTION

NETL's work with partner Cerebras Systems to harness the power of the world's largest computer chip — the Wafer-Scale Engine (WSE) — is one of many innovative research areas underway at the Morgantown site. The WSE is a miniaturized and optimized supercomputer on a single giant silicon wafer that enables energy-efficient, extreme-speed scientific simulations that can help researchers model the complex behavior of energy systems to increase efficiency and performance. The WSE can run high-fidelity simulations hundreds of times faster and with far less energy than typical supercomputers.

Together, NETL and Cerebras established a groundbreaking capability to model scientific simulations on Cerebras' new hardware system called the WSE. NETL innovations allow high-level computer languages to run on the WSE for the first time. With this breakthrough, scientific modelers can use the WSE to accelerate innovation across industrial and energy systems, from fuel production and combustion to thermal management.

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NETL is a DOE national laboratory dedicated to advancing the nation's energy future by creating innovative solutions that strengthen the security, affordability and reliability of energy systems and natural resources. With laboratories in Albany, Oregon; Morgantown, West Virginia; and Pittsburgh, Pennsylvania, NETL creates advanced energy technologies that support DOE's mission while fostering collaborations that will lead to a resilient and abundant energy future for the nation.