NETL's REGIONAL SUMMARY

WEST VIRGINIA

1,188
JOBS SUPPORTED

43
RESEARCH ACTIVITY PARTNERS

$169M
TOTAL ECONOMIC IMPACT

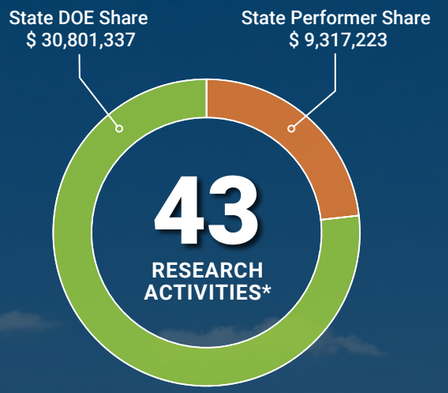
The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) in Morgantown, West Virginia, has long supported and informed energy strategies that can turn the threat of climate change into an opportunity to revitalize the U.S. energy and manufacturing sectors, while creating good-paying jobs, spurring economic revitalization, advancing environmental justice, and remediating environmental degradation. NETL's Morgantown laboratory has grown to a full-service applied energy innovation center, investigating energy technologies related to geological and environmental sciences, energy conversion, computational science and more—all with the common goal of advancing energy and environmental technologies into the marketplace.

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

NETL delivers integrated solutions to enable the transformation to a sustainable energy future. NETL implements strategies and technologies to enable a decarbonized future and meet net-zero emission goals, including — carbon management, advanced hydrogen technologies, integrated energy systems, artificial intelligence and machine learning, and sustainable fuels and chemicals.

Updated: 03.26.2024

NETL's REGIONAL SUMMARY – WEST VIRGINIA



* "Research activity" refers to the total number of performers (prime + sub-recipients) doing work on a given project.

ECONOMY

$169M
TOTAL ECONOMIC IMPACT
(Direct, Indirect, and Induced)

$104M
TOTAL ON-SITE EXPENDITURES

JOBS

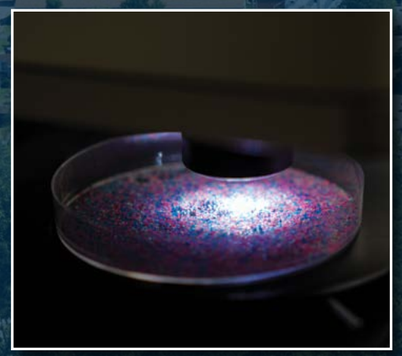
1,188
TOTAL JOBS SUPPORTED
(Direct, Indirect and Induced FTE Equivalent Jobs)

560
ON-SITE FEDERAL EMPLOYMENT AND SITE SUPPORT CONTRACTOR
(FTE Equivalent Jobs)

CUTTING-EDGE RESEARCH

μWave

Microwave Chemistry: The same technology that turns a frozen entrée into a delicious hot meal in minutes is being advanced by NETL researchers to bring revolutionary changes to the field of reaction chemistry. Applying microwave fields to chemical processes may transform the way chemical reactions occur, with NETL focusing on ammonia synthesis, hydrogen generation, polymer and plastic conversion, and synthetic fuels conversion. The groundbreaking techniques being developed at the laboratory are intensifying carbon conversion processes to significantly cut costs and reduce energy requirements while achieving higher yields and greater selectivity of products. Microwave reactions can reduce carbon footprint, transform transportation, enable renewable power storage, and benefit the country far beyond impacts on energy production.



MFS NETL Multiphase Flow Science
Home of the MFiX Software Suite

Multiphase Flow Science (MFS): To address today's energy challenges, NETL researchers are leveraging technology trends such as data analytics, advanced manufacturing, cybersecurity, and high-performance computing. NETL's Multiphase Flow Science research program is a strategic combination of computational modeling expertise and experimental facilities for developing and validating science-based reacting, multiphase-flow modeling tools. NETL's world-renowned MFiX software includes an improved modeling capability that allows for more accurate descriptions of real particle-size distributions, offering an important new tool for designing next-generation energy systems to power the nation.

FACILITIES

Joule: NETL is home to Joule 2.0, one of the fastest, largest, and most energy-efficient supercomputers in the United States. The powerful 5-petaflop system provides capabilities for running modeling tools at various scales ranging from molecules to devices, to entire power plants and natural fuel reservoirs. NETL's supercomputer is breaking barriers by accelerating the development of innovative, cost-effective energy technologies to ensure affordable, reliable energy for all Americans.

ReACT Facility: A robust clean energy economy supports a high quality of life for millions of Americans, sustains its manufacturing and high-tech industries, and fosters economic growth. NETL's ReACT facility is fully automated with a wide range of temperature and pressure capabilities and the ability to operate 24/7 with advanced diagnostics such as high-speed imaging, thermal imaging, and online gas analysis. ReACT is a fuel-flexible facility that can work with various gaseous, liquid, and solid fuels, including biomass and syngas, and can optimize chemical reactor designs for specific chemical transformations. The facility is unique worldwide due to its capabilities, and technologies help increase power cycle efficiency while generating more power with less fuel and fewer emissions.

The Center for Advanced Imaging and Characterization: NETL's suite of geoimaging technologies provides researchers with access to comp-rehensive non-destructive testing and evaluation of a wide variety of geo-materials. NETL's state-of-the-art computerized tomography (CT) scanning technology is used to determine under what conditions carbon dioxide (CO_2) generated by energy production and industrial processes can be injected underground safely and permanently stored in rock formations deep within the subsurface to reduce emissions of greenhouse gases in the atmosphere.

Hybrid Performance (HYPER) Facility: NETL's HYPER facility is the only one of its kind in the world and was created to research highly efficient power generation technologies that can reduce U.S. dependence on foreign sources of oil and other energy feedstocks. This state-of-the-art facility simulates groundbreaking technology to achieve increased efficiency, improved flexibility, and reduced emissions, resulting in the development of highly integrated or hybrid power generation technologies.

COMMUNITY INVOLVEMENT

West Virginia Science Bowl (WVSB): The U.S. DOE National Science Bowl is a nationwide academic competition that requires students to answer questions on topics related to science, technology, engineering, and mathematics (STEM). For over 30 years, NETL has hosted and provided volunteers for the WVSB Regional Middle and High School Competition, held annually in partnership with West Virginia University (WVU), to select students from the region to participate in the National Science Bowl held in Washington D.C.

2024 SCIENCE BOWL PARTICIPATION

242 STUDENTS AND EDUCATORS

24 HIGH SCHOOL TEAMS

16 MIDDLE SCHOOL TEAMS

27 NETL VOLUNTEERS

FROM MORE THAN **28** SCHOOLS ACROSS THE STATE

ACADEMIC AND INDUSTRY-LEADING PARTNERS ACROSS THE STATE

West Virginia University

FOAM

West Virginia Office of Energy

West Virginia University Research Corporation

Touchstone Research Laboratory, Ltd.

Interagency Working Group on Coal & Power Plant Communities & Economic Revitalization: Many energy communities across the Appalachia are facing job loss and economic challenges due to the decline in the coal industry. Between 2011 and 2021, 70% of all mine closures in the United States occurred in Central Appalachia. In 2021, during his first week in office, President Biden signed an Executive Order creating an Interagency Working Group (IWG) on Coal and Power Plant Communities and Economic Revitalization to address these problems. NETL provides program leadership and project management to execute the mission of the IWG as it works with partner agencies, stakeholders, and community leaders.

Interagency Working Group on Coal & Power Plant Communities & Economic Revitalization

Eight of the 25 priority energy communities identified by the IWG are located in Appalachia, and the team is focused on assisting these communities in meeting their unique needs. The IWG is guided by the following principles to prioritize the most meaningful actions to support economic revitalization in America's energy communities immediately and over the long term.

- Create Good-Paying Clean Energy Jobs
- Provide Federal Investments to Catalyze Economic Revitalization
- Support Energy Workers by Securing Benefits and Providing Opportunity
- Prioritize Pollution Mitigation and Remediation
- Adopt a Government-Wide Approach
- Formalize Stakeholder Engagement Efforts

REGIONAL WORKFORCE INITIATIVE (RWFI)

The mission of **NETL's Regional Workforce Initiative (RWFI)** is to create a platform for regional stakeholders to engage the laboratory and other federal agencies in collaborative workforce development efforts. These efforts complement energy and advanced manufacturing innovation and research by addressing the necessary workforce assessments and training.

- Approximately 400 institutions and organizations have connected across NETL webinars, meetings, and the monthly E-Note
- Over 1,450 registrants in the past year to RWFI webinars
- NETL partnered with the ARC to establish a job-training program that will help create a high-tech workforce with advanced welding skills (RFP totaling $1M)
- Developed a workforce workplan based on NETL technologies that are 3-5 years from commercialization to prepare academia for the skills that will be needed to support these potential jobs

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