

NETL's REGIONAL SUMMARY

PENNSYLVANIA

1,522

**JOBS
SUPPORTED**

81

**RESEARCH
ACTIVITY
PARTNERS**

\$248M

**TOTAL
ECONOMIC
IMPACT**

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) in Pittsburgh, Pennsylvania, continues to deliver integrated solutions that advance U.S. energy, economic, and manufacturing priorities. The NETL Pittsburgh laboratory's talented researchers and project partners from across the nation are developing and deploying cutting-edge technologies to manage carbon across its full life cycle and enable environmental sustainability for all Americans. Researchers at NETL's Pittsburgh laboratory are part of an energy research powerhouse for the region, tackling thousands of projects and activities that are the focus of nationwide attention, producing results in areas like carbon management, artificial intelligence/machine learning (AI/ML), rare earth elements, and critical minerals.



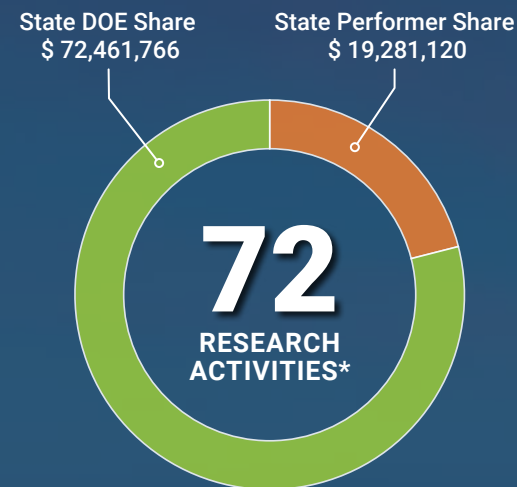
U.S. DEPARTMENT OF
ENERGY



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 – PENNSYLVANIA



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

ECONOMY

\$248M

TOTAL ECONOMIC IMPACT
(Direct, Indirect, and Induced)

\$135M

TOTAL ON-SITE EXPENDITURES

JOBS

1,522

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

658

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

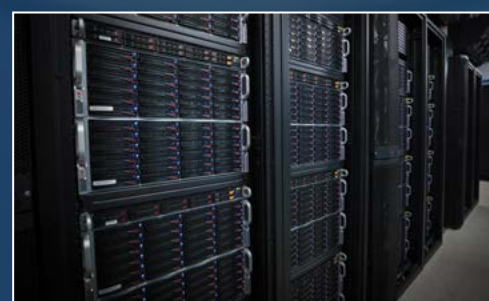
FACILITIES



Direct Air Capture (DAC) Center: NETL is playing a leading role in advancing direct air capture technologies, which can remove carbon dioxide (CO₂) from the atmosphere on a large scale. This emerging technology works by processing air from the atmosphere (rather than a power plant or factory flue gas) to capture CO₂ emissions from multiple sources, thereby addressing current and legacy emissions. Featuring one-of-a-kind facilities that empower innovators from government, academia and the private sector, the DAC Center will test emerging technologies that have achieved proof-of-concept but have not reached full pilot scale (technology readiness levels 3 to 6) to expedite development.



Fundamental Combustion Laboratory (FCL): The laboratory focuses on improving efficiency, reducing emissions, and expanding the flexibility of combustion systems, such as gas turbines, engines, and boilers. FCL enables research on the safe use of ammonia as a fuel source, in combination with other fuels such as hydrogen. The laboratory's work is helping acquire fundamental validation data that will allow researchers to make key adjustments and determinations for the efficient use of ammonia in engines and turbines for power generation. The FCL is also actively involved in developing and validating models and simulations that can predict combustion behavior and inform the design of advanced combustion systems. As the models become more redefined, they will help to reduce greenhouse gas emissions and provide more affordable and reliable energy for the nation.

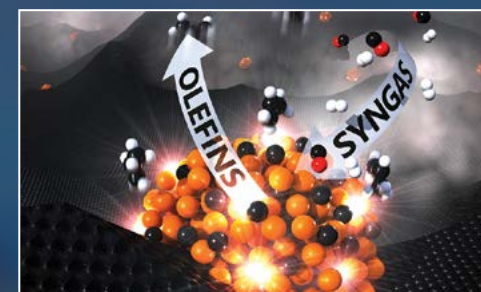


Center for Artificial Intelligence and Machine Learning (CAML): NETL's researchers are exploring problems in machine learning, artificial intelligence, data mining, and data analytics to enable scientific discovery and accelerate technology development. The center features NETL's WATT—a private Infrastructure as a Service (IaaS) cloud computing environment—designed to house, transport, and process up to 19 petabytes of data using cutting-edge algorithms developed by NETL and external collaborators. This world-class center is being leveraged to design the cleaner, more efficient power generation systems necessary for the nation's power sector and economy's near-term decarbonization.

CUTTING-EDGE RESEARCH



Carbon Capture: Carbon capture technologies are vital to the nation's efforts to achieve a carbon-free sector by 2035 and a net-zero economy by 2050. The Pittsburgh laboratory's research aims to improve the efficiency and effectiveness of the carbon capture processes, reduce costs, and address challenges—such as scaling up and integrating carbon capture, utilization, and storage (CCUS) systems into existing power generation and industrial processes. The work at NETL is critical in supporting the transition to a low-carbon energy future and achieving national and global climate goals.



Carbon Conversion: Carbon conversion is revolutionizing how we think about CO₂ by transforming it from a harmful greenhouse gas into a valuable resource. NETL is at the forefront of carbon conversion research, developing innovative technologies that can turn CO₂ into valuable products, such as fuel, chemicals, agricultural products, animal feed, building materials, and other goods and services.



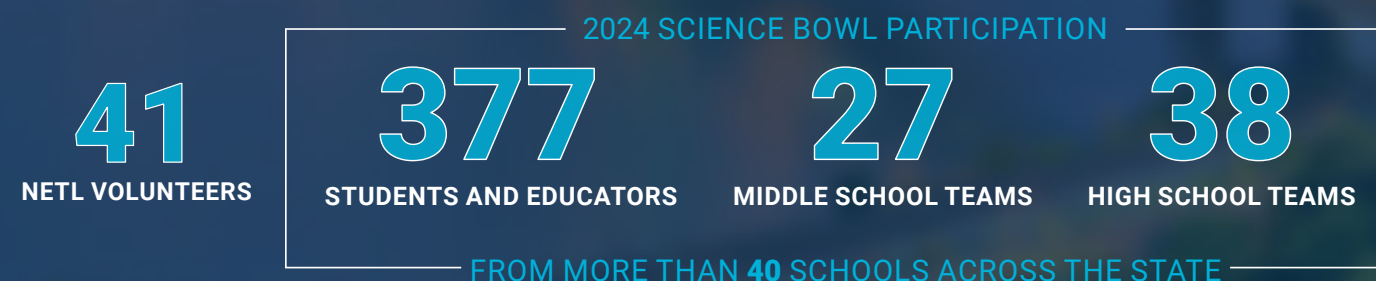
Rare Earth Elements (REE) and Critical Minerals (CM): NETL is leading research on REE and CMs, essential components in a wide range of advanced technologies, including electric vehicles, renewable energy systems, and electronics. NETL strives to develop and test the technologies that industry will need to establish an economic, competitive, sustainable domestic REE and CM supply chain to help fuel our nation's economic growth, transition to clean energy technologies, secure our energy independence, and minimize our environmental impact.

COMMUNITY INVOLVEMENT

Carnegie Science Center SciTech Days: Carnegie Science Center hosts middle and high school students to explore STEM career paths. This event includes flash workshops, demonstrations, interviews, shows, and career conversations.



Western Pennsylvania Science Bowl (WPASB): The U.S. DOE National Science Bowl is a nationwide academic competition that tests students' knowledge and promotes science, technology, engineering, and mathematics (STEM). For over 30 years, NETL has hosted and offered volunteers for the WPASB Regional Middle and High School Competition, held annually in partnership with the Community College of Allegheny County, to select middle and high school students from the region to participate in the National Science Bowl held in Washington D.C.



ACADEMIC AND INDUSTRY-LEADING PARTNERS ACROSS THE STATE



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pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

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

Western Pennsylvania has continually played an important role in energy production for the country. As a result, the IWG has designated much of this area to be among the nation's 25 coal and plant communities at the most significant risk of experiencing a severe economic downturn due to the decarbonization of the energy sector. The IWG has identified existing federal funding that energy communities could address for infrastructure, environmental remediation, union job creation, and community revitalization efforts. In addition to identifying resources available for immediate deployment, the IWG's report identified urgent geographic areas, hard-hit by a past coal mine and plant closures and vulnerable to future closures, that are priorities for investment and engagement and next steps for the IWG to deliver on the President's long-term commitment to support energy workers and communities. These communities and energy workers who fueled the nation's economy for generations must not get left behind.

To best support economic revitalization in America's energy communities immediately and over the long term, the IWG is guided by these principles to prioritize the most meaningful actions:

- 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 in the tri-state region and beyond 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
- Nearly 1500 registrants in the past year to RWFI webinars
- NETL partnered with the ARC to establish a job-training programs that will help create a high-tech workforce with advanced welding skills (RFP totaling \$1M)
- Developed a workforce readiness 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 many of which will be in the tri-state region and across the Appalachia
- Worked with the National Renewable Energy Laboratory to identify skills and occupations in demand in the tri-state and Appalachian region as well as across the country

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