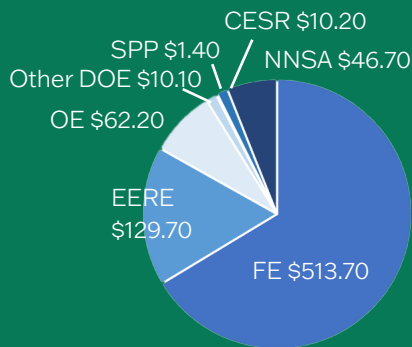# AT A GLANCE: NATIONAL ENERGY TECHNOLOGY LABORATORY

The National Energy Technology Laboratory's (NETL) mission is to discover, integrate and mature technology solutions to enhance the Nation's energy foundation and protect the environment for future generations. NETL's advanced technology development is crucial to U.S. energy innovation. Through R&D, partnerships, and initiatives, NETL enables production of the clean, reliable, and affordable energy required to increase domestic manufacturing, improves our nation's energy infrastructure, enhances electrical grid reliability and resilience, expands domestic energy production, educates future scientists and engineers, promotes workforce revitalization, and supports U.S. energy and national security goals. As the only government-owned and -operated laboratory in the DOE complex, NETL and its predecessor laboratories support DOE goals by maintaining nationally recognized technical competencies and collaborating with partners in industry, academia, and other research organizations to nurture emerging technologies.

FUNDING BY SOURCE

FY 2019 Costs (in $M)
Total Laboratory Operating Costs: $303
DOE/NNSA Costs: $773
SPP (Non-DOE/Non-DHS) Costs: $1.4
SPP as % of Total Laboratory Operating Costs: 0.46%
DHS Costs: $0
Active Research (DOE + Performer Share): $7.0+ billion

Pie chart: CESR $10.20; SPP $1.40; NNSA $46.70; Other DOE $10.10; OE $62.20; EERE $129.70; FE $513.70

FACTS

Location: Pittsburgh, PA; Morgantown, WV; Albany, OR; Sugar Land, TX; Anchorage, AK
Type: Multiprogram Laboratory*
Website: netl.doe.gov
*The only government-owned and operated laboratory among the 17 National Laboratories.

PHYSICAL ASSETS

237 acres
110 buildings
$686.5 million replacement plant value
1,137,097 GSF in buildings
13,225 GSF in leased facilities
15,078 GSF in 3 excess facilities

HUMAN CAPITAL

1,712 FTE employees
108 joint faculty
121 postdoctoral researchers
54 undergraduate students
115 graduate students

CORE CAPABILITIES

Applied Materials Science and Engineering
Chemical Engineering
Computational Science
Decision Science and Analysis
Environmental Subsurface Science
Systems Engineering and Integration

MISSION UNIQUE FACILITIES

Pittsburgh, PA
Carbon Capture Materials Synthesis Laboratory
Subsurface Experimental Laboratory
Center for Data Analytics and Machine Learning
Biogeochemistry and Water Laboratory

Albany, OR
Severe Environment Corrosion Erosion Research Facility
Magnetohydrodynamics (MHD) Laboratory
Metals Fabrication Laboratory / Metals Melting Facility

Morgantown, WV
Center for High Performance Computing (Joule 2.0 Supercomputer)
Reaction Analysis and Chemical Transformation (ReACT) Facility
Solid Oxide Fuel Cell (SOFC) Manufacturing and Test Laboratory
Center for Advanced Imaging and Characterization

U.S. DEPARTMENT OF ENERGY

# AT A GLANCE: NATIONAL ENERGY TECHNOLOGY LABORATORY

ACCOMPLISHMENTS

Unique Facility: Key Computational Science and Engineering Facilities - Supercomputing is essential in achieving NETL's mission to discover, integrate, and mature technology solutions that enhance the nation's energy foundation and protect the environment for future generations. By expediting technology development through computational science and engineering, NETL can cut costs, save time, and spur valuable economic investments with a global impact. NETL's Center for High-Performance Computing is home to NETL's supercomputer, Joule 2.0. This supercomputer enables the numerical simulation of complex physical phenomena. Joule 2.0 provides computational throughput to run high-fidelity modeling tools at various scales, ranging from molecules, to devices, to entire power plants and natural fuel reservoirs. Facilities associated with Joule allow for enhanced visualization and data analysis, as well as data storage capabilities that enable researchers to discover new materials, optimize designs, and predict operational characteristics.

Tech-to-Market Highlight: Breakthroughs in Laser-induced Breakdown Spectroscopy - NETL researchers revolutionized a laser-induced breakdown spectroscopy (LIBS) subsurface monitoring tool that, because of its simplified construction, reduces the amount of fabrication and alignment needed, thereby minimizing costs. Developed for use in harsh, remote environments, the improved technology requires only two mirrors—as opposed to four in previous versions. By reducing the complexity and cost of the laser head, the probe maximizes the amount and quality of light returned for improved analysis and increases the usefulness of LIBS research. This effort won a 2019 R&D 100 Award and was awarded a U.S. patent.
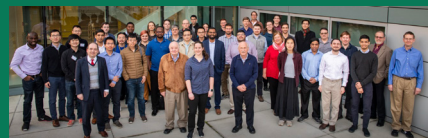
Research Highlight: IDAES Computational Platform - The Institute for the Design of Advanced Energy Systems (IDAES) develops and utilizes multi-scale, optimization-based computational tools to improve the design and operation of fossil energy systems—both the existing fleet and the innovative, advanced coal energy systems of the future. The open-source, next-generation IDAES computational platform revolutionizes industry decision-making by enabling large-scale optimization to gain system-wide insights—to enhance the operation, profitability, efficiency, and design of energy systems. In 2019, IDAES worked extensively with the Escalante Generating Station to improve flexibility and efficiency, while also rolling out the computational platform to multiple stakeholders through its initial open-source release and two major workshops.

U.S. DEPARTMENT OF **ENERGY**