

REGIONAL WORKFORCE INITIATIVE



NETL

NATIONAL ENERGY TECHNOLOGY LABORATORY

Over the past decade, the energy landscape of our nation has experienced a dramatic shift—coal-fired power, once the primary source of electricity, has declined, shale gas exploration has expanded our domestic oil and gas industry and supply, and the renewable energy and energy efficiency sectors continue to grow. A trained workforce is required to support the energy industry, and the rapid changes in the industry present a challenge to maintaining a prepared workforce. In addition, certain segments of the existing energy industry workforce are rapidly reaching the age of retirement, potentially causing gaps in the labor pool and putting the energy sector, as well as national and economic security, at risk. The need for workforce training to aid personnel as they transition from a traditional energy workforce like coal mining to the next-generation energy industry is imperative. The U.S. Department of Energy (DOE) is working to convene multiple federal agencies and apply their collective expertise to address workforce development specific to the energy arena.

As part of DOE's network of 17 national laboratories, the National Energy Technology Laboratory (NETL) is supporting the drive to develop the region's workforce and approaching that development through multiple externally-focused facets. These efforts align with DOE's call for a multi-agency initiative to develop energy workforce, community outreach, and K-12 education opportunities as part of NETL's research and development (R&D) work, and as an element in some of the program work that NETL manages.

Albany, OR • Anchorage, AK • Houston, TX • Morgantown, WV • Pittsburgh, PA



U.S. DEPARTMENT OF
ENERGY



March 2018

ENERGY WORKFORCE DEVELOPMENT INITIATIVE

Since 2015, NETL has worked with the Department of Energy to create a multi-agency workforce development initiative. The goal is to create a structure and space for federal agencies to meet, prioritize funding opportunities, and leverage resources to connect the existing energy workforce and training systems (supply) to the evolving and emerging energy careers (demand) while leveraging investments from federal, state, labor, education, and industry stakeholders. Key opportunities include:

- Create a model for producing real-time and predictive analysis of energy labor market demand across the nation.
- Intensify job skills and career cross-walks between subsectors and stakeholders.
- Equip training centers, align curricula and certification standards; connect industry, institutions, and trainers.
- Modernize jobs information dissemination and career marketing.
- Deploy a sustainable model for enduring coordination of energy workforce development.

REGIONAL OUTREACH & COMMUNITY SUPPORT

NETL is engaged with multiple regional entities to address workforce development actions:

- NETL holds ongoing relationships and discussions with regional interests (Allegheny Conference), and continued discussions among participants in the Tristate Agreement (Ohio, Pennsylvania, West Virginia).
- NETL supports the Allegheny Conference on workforce development issues.
- NETL participates in Tri-State Shale Workforce working groups.
- NETL collaborated with Westmoreland Community College on the ShaleNet program that provides training for jobs in the oil and natural gas industry.
- NETL signed a memorandum of understanding with the City of Pittsburgh to work jointly to design a 21st century energy infrastructure. One goal of this partnership is to grow energy jobs and encourage workforce development and training.



ENERGY WORKFORCE STUDIES

In 2013, NETL commissioned the RAND Corporation to provide guidance on how to improve energy sector workforce development in the region (including West Virginia and several counties in Pennsylvania and Ohio) and to help determine how the postsecondary education and training system could best meet growing and shifting skill demands. The study identified technological innovations in the energy sector and key skills that would be required for the region's workforce, along with gaps in current educational and training programs, and barriers to accessing educational and training opportunities. The study also identified best practices of programs that have successfully responded to innovation in other sectors and regions.

Short-term actions recommended for improving the energy sector's workforce development pipeline included:

- Develop stronger partnerships among industry employers and community college/training programs
- Include "bridge" services with high school and younger students
- Offer comprehensive training
- Consider barriers to implementation (including geographic restrictions/access to transportation and instructor recruitment and retention)

Improving K–12 science, technology, engineering, and mathematics (STEM) education with emphasis on content knowledge was found to be the best long-term action.

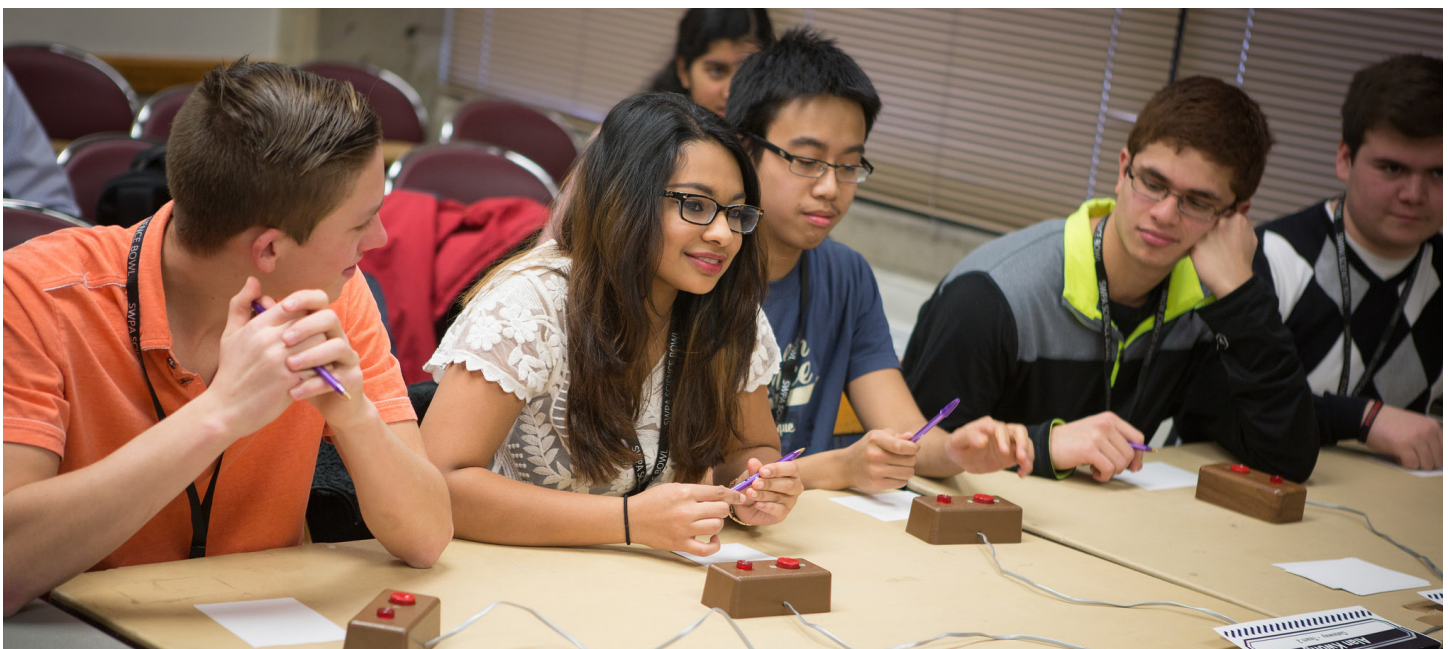
K–12 EDUCATION

NETL's Education Outreach mission is to provide educational opportunities for the next generation of energy scientists and engineers. To accomplish this mission, NETL's education outreach team develops engaging, age-appropriate STEM materials designed to inspire students to pursue STEM careers. These materials are available to students and teachers through the following activities:

- Classroom visits at all regional locations
- Hands-on activities and demonstrations
- Museum and professional organization partnerships
- Underrepresented student initiatives
- On-site STEM Lab Days

REGIONAL SCIENCE BOWL COMPETITIONS

The U.S. Department of Energy National Science Bowl® is a nationwide academic competition for middle and high school students that tests their knowledge on a range of science disciplines including biology, chemistry, Earth science, physics, energy, and math. The DOE created the National Science Bowl in 1991 to encourage students to excel in mathematics and science and to pursue careers in those fields. NETL has been hosting regional qualifying Science Bowl competitions since the inception of the national competition. NETL sponsors and facilitates the West Virginia Regional Science Bowl and the Southwestern Pennsylvania Regional Science Bowl for both high school and middle school students.



RESEARCH INTERNSHIPS

NETL offers internships to members of the academic community from undergraduates through faculty. The goals are to inspire bright scientists and engineers to tackle challenges in energy research and to stimulate NETL's program with the new ideas, techniques, and approaches to problems that these highly motivated students and faculty bring to bear.

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION (ORISE)

NETL's ORISE Program is administered by Oak Ridge Associated Universities and provides opportunities for undergraduate students, recent graduates, graduate students, postdoctoral researchers, and faculty researchers to perform energy-related research at NETL. To complement NETL's mission, the ORISE program helps to ensure that NETL has a robust stable of scientists and engineers to meet our future science and technology needs.



MICKEY LELAND ENERGY FELLOWSHIP PROGRAM

The Mickey Leland Energy Fellowship program is a ten week summer internship, sponsored by the DOE Office of Fossil Energy, which provides opportunities to students who are pursuing degrees in Science, Technology (including information technology), Engineering, or Mathematics (STEM majors). The goal of the program is to improve opportunities for minority and female students in these fields. Candidates who are selected have the opportunity to work under the mentorship of program officials and researchers on focused research projects consistent with the mission of the Office of Fossil Energy at one of NETL's three research locations.



ADVANCED ENERGY SIMULATOR

The Advanced Energy Simulator is designed to promote safe, reliable, and efficient energy plant operations and control. NETL developed the Advanced Energy Simulator in collaboration with industry, academic, and software partners for simulating advanced gasification and natural gas-fired power generation systems. The research component resides at NETL, and an education center used for workforce training is located at West Virginia University in Morgantown, WV.



SMART GRID

NETL managed a large suite of projects focused on workforce development for the Smart Grid Program. Projects under this program facilitated the development of a trained, skilled workforce capable of implementing a national clean-energy smart grid and providing for the next generation of skilled technicians, engineers, and managers for the electric power industry. The program also raised awareness and encouraged interest in careers in the electric power industry, helping to address predicted labor shortfalls as an aging utility workforce moves toward retirement. The Smart Grid Program was part of NETL's portfolio of R&D conducted through partnerships, cooperative R&D agreements, financial assistance, and contractual arrangements with universities and the private sector.



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