RWFI E-NOTE MONTHLY

REGIONAL WORKFORCE INITIATIVE • JANUARY 2023

Welcome Message

Greetings NETL RWFI stakeholders,

This month's funding opportunity in focus is the National Science Foundation's *Training-based Workforce Development for Advanced Cyberinfrastructure* program. The program seeks to prepare, nurture and grow the national scientific research workforce for creating, utilizing and supporting advanced cyberinfrastructure to enable and potentially transform fundamental science and engineering research and education as well as contribute to the nation's overall economic competitiveness and security.

As always, feel free to reach out to us at *NETL.RWFI@netl.doe.gov* if you have any suggestions for information to present in future E-notes.

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– Sincerely, The NETL RWFI Team

Workforce Funding Announcements

FUNDING SPOTLIGHT

Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining)

National Science Foundation, Deadline, Feb. 23, 2023

This program seeks to prepare, nurture and grow the national scientific research workforce for creating, utilizing and supporting advanced cyberinfrastructure (CI) to enable and potentially transform fundamental science and engineering (S&E) research and education as well as contribute to the nation's overall economic competitiveness and security. This solicitation aims to ensure broad adoption of CI tools, methods and resources by the research community in order to catalyze major research advances and to enhance researchers' abilities to lead the development of new CI. It also seeks to integrate core literacy and discipline-appropriate advanced skills in advanced CI as well as computational and data-driven methods for advancing fundamental research into the nation's undergraduate and graduate educational curriculum/instructional materials. Proposals responding to this solicitation may target one or both of the two solicitation goals. For the purpose of this solicitation, advanced CI is broadly defined as the set of resources, tools, methods and services for advanced computation. It also includes large-scale data handling and analytics, along with networking and security for large-scale systems that collectively enable potentially transformative fundamental S&E research and education.

YouthBuild

Department of Labor, Deadline, Feb. 7, 2023

Under the YouthBuild funding opportunity announcement (FOA), the Department of Labor will award grants through a competitive process to organizations providing pre-apprenticeship services that support education, occupational skills training and employment services to young people between the ages of 16 and 24 while performing meaningful service work to their communities. The YouthBuild program model prepares participants for quality jobs in a variety of careers, including infrastructure and contains wraparound services such as mentoring, trauma-informed care, personal counseling and employment — all key strategies for addressing community violence. YouthBuild applicants must include construction skills training and may list occupational skills training in other in-demand industries. This expansion into additional in-demand industries is the construction plus component, a priority in this grant competition.

Science of Learning and Augmented Intelligence (SL)

National Science Foundation, Deadline, Feb. 8, 2023

SL supports potentially transformative research that develops basic theoretical insights and fundamental knowledge about principles, processes and mechanisms of learning, as well as augmented intelligence — how human cognitive function can be augmented through interactions with others or with technology, or through variations in context.

Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSIs)

National Science Foundation, Deadline, Feb. 8, 2023

The goals of the HSI program are to enhance the quality of undergraduate STEM education and to increase the recruitment, retention and graduation rates of students pursuing associate or baccalaureate degrees in STEM. Achieving these, given the diverse nature and context of the HSIs, requires additional strategies that support building capacity at HSIs through innovative approaches. These include incentivizing institutional and community transformation and promoting fundamental research on engaged student learning. The program will focus on diversifying and increasing participation in STEM effectively, which will improve our understanding of how to build institutional capacity at HSIs. Intended outcomes of the HSI program include broadening participation of students that are historically underrepresented in STEM, expanding students' pathways to continued STEM education and integration into the STEM workforce.

FY23 Guidelines for Brownfields Training, Research, and Technical Assistance Grant

Environmental Protection Agency, Deadline, Feb. 14, 2023

The EPA's Office of Brownfields and Land Revitalization is soliciting applications for funding under Section 104(k)(7) of the Comprehensive Environmental Response, Compensation, and Liability Act, which authorizes funding to eligible entities to provide training, research and technical assistance to facilitate the inventory of brownfield sites, site assessments, remediation of brownfield sites, community involvement or site preparation. Grants awarded under this solicitation will help communities, organizations, government agencies, nonprofits and individuals tackle the challenge of cleaning up and revitalizing brownfield properties.

Industrial Assessment Center Program — Centers of Excellence

Department of Energy, Deadline, Feb. 17, 2023

The Office of Manufacturing and Energy Supply Chains (MESC) is issuing this restricted eligibility FOA to establish up to five regional Centers of Excellence at existing Industrial Assessment Centers (IACs) to coordinate with and advise IACs located in the regions of the Centers of Excellence. DOE expects to make a total of up to $18.75M of federal funding available for three to five awards under this FOA, subject to the availability of appropriated funds. However, DOE may issue one, multiple or no awards. Individual awards are anticipated to be for $2.5M to $3.75M each over a five-year performance period. Awards made under this FOA will be funded, in whole or in part, with funds appropriated by the Bipartisan Infrastructure Law (BIL).

Education Core Research: Building Capacity in STEM Education Research (ECR: BCSER)

National Science Foundation, Deadline, Feb. 24, 2023

ECR: BCSER supports projects that build investigators' capacity to carry out high-quality STEM education research that will enhance the nation's STEM education enterprise. In addition, ECR: BCSER seeks to broaden the pool of researchers who can advance knowledge regarding STEM learning and learning environments, broadening participation in STEM fields and STEM workforce development. Researchers of races and ethnicities, genders, sexual orientations and abilities who are currently underrepresented in their participation in STEM education research and the STEM workforce, as well as faculty at minority-serving and two-year institutions, are particularly encouraged to submit proposals.

Experiential Learning for Emerging and Novel Technologies

National Science Foundation, Deadline, March 2, 2023

Through this new initiative, the Directorate for Education and Human Resources (EHR) and the newly established Directorate for Technology, Innovation and Partnerships (TIP)seek to support experiential learning opportunities for individuals from diverse professional and educational backgrounds that will increase access to, and interest in, career pathways in emerging technology fields (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics). As the National Science Foundation (NSF) seeks to support the development of technologies in such fields, similar support will be needed to foster and grow a diverse STEM workforce to contribute to such innovation. Large scale societal challenges like climate change and clean energy also require a STEM workforce that brings varied perspectives and expertise to further accelerate the translation of science and engineering discoveries into large-scale solutions.

Bipartisan Infrastructure Law: Long-Duration Energy Storage Demonstrations Funding Opportunity Announcement

Department of Energy, Deadline, March 3, 2023

The DOE is releasing this FOA to solicit emerging Long-Duration Energy Storage (LDES) demonstration projects capable of delivering electricity for 10-24 hours or longer to support a low-cost, reliable, carbon-free electric grid. This $349M effort seeks LDES demonstration projects that will validate new technologies, enhance the capabilities of customers and communities to integrate LDES more effectively, and sustain American global leadership in energy storage. LDES demonstration projects are encouraged to have substantial engagement with local and regional stakeholders to ensure that they generate local, regional, and national benefits. Demonstration projects will be expected to carry out meaningful community and labor engagement; invest in America's workforce by creating good-paying jobs with the free and fair choice to join a union; advance diversity, equity, inclusion, and accessibility; and contribute to the President's Justice40 Initiative goal that 40% of the overall benefits of certain federal investments, including those in climate change, clean energy and energy efficiency, flow to disadvantaged communities.

Innovations in Graduate Education (IGE) Program

National Science Foundation, Deadline, March 27, 2023

The IGE program is designed to encourage the development and implementation of bold, new, and potentially transformative approaches to STEM graduate education training. The program seeks proposals that explore ways for graduate students in research-based master's and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers.

NSF Scholarships in STEM (S-STEM) Program

National Science Foundation, Deadline, March 29, 2023

The main goal of the S-STEM program is to enable low-income students with academic ability, talent or potential to pursue successful careers in promising STEM fields. Ultimately, the S-STEM program seeks to increase the number of academically promising low-income students who graduate with a S-STEM eligible degree and contribute to the American innovation economy with their STEM knowledge. Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to institutions of higher education not only to fund scholarships, but also to adapt, implement, and study evidence-based curricular and co-curricular activities that have been shown to be effective supporting recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM. Social mobility for low-income students with academic potential is even more crucial than for students that enjoy other economic support structures.

Future of Work at the Human-Technology Frontier: Core Research

National Science Foundation, Deadline, March 30, 2023

The specific objectives of the Future of Work at the Human-Technology Frontier program are to facilitate inter-disciplinary or convergent research that employs the joint perspectives, methods, and knowledge of behavioral science, computer science, economics, engineering, learning sciences, research on adult learning and workforce training, and the social sciences; develop deeper understandings of how human needs can be met and values respected in regard to how new technologies, conditions, and work experiences are changing; support deeper understanding of the societal infrastructure that accompanies and leads to new work technologies and new approaches to work and jobs, and that prepares people for the future world of work; encourage the development of a research community dedicated to designing intelligent technologies and work organization and modes inspired by their positive impact on individual workers, the work at hand, the way workers learn and adapt to technological change, creative and inclusive workplaces (including remote locations, homes, classrooms, or virtual spaces), and benefits for social, economic, educational, and environmental systems at different scales; promote deeper basic understanding of the interdependent human-technology partnership to advance societal needs by advancing design of intelligent technologies that operate in harmony with human workers, including consideration of how adults learn the new skills needed to interact with these technologies in the workplace, and by enabling broad and diverse workforce participation, including improving accessibility for those challenged by physical, learning or cognitive impairment and other visible and invisible disabilities; and understand, anticipate, and explore ways of mitigating potential risks including inequity arising from future work at the human-technology frontier.

FY22 FOA for the Office of Naval Research (ONR) STEM Program

Department of Defense, March 31, 2023

As the capacity of the Department of the Navy Science and Technology (S&T) workforce is interconnected with STEM education and outreach, ONR recognizes the need to support efforts that can jointly improve STEM student outcomes and align education and outreach efforts with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students of all ages and the naval-related workforce. Projects must aim to increase engagement in STEM, from students to the current workforce, and enhance people with needed Naval STEM skills, knowledge and abilities. ONR encourages applications to utilize current STEM educational research for informing project design and advancing STEM careers and opportunities of naval relevance.

ISOTOPE R&D AND PRODUCTION (IP) — REACHING A NEW ENERGY SCIENCES WORKFORCE (RENEW)

Department of Energy, Deadline, March 31, 2023

As a part of the RENEW initiative, DOE IP hereby announces its interest in receiving applications from Minority Serving Institutions (MSIs) seeking to participate in a training, research, and development program related to the mission space of DOE IP. Successful applications will incorporate isotope science and technology relevant coursework for undergraduate and/or graduate students, as well as research and/or isotope production experiences at DOE IP supported isotope production sites to expose students to potential career paths and foster the development and training of the next generation of workforce in isotope related science. Awards are envisioned to be led by an MSI and include a minimum of one DOE IP isotope production site as a subaward recipient, acting as a resource in training, research, and development efforts. Successful applicants will describe activities including student recruitment, development of collaborative networks in support of trainee experiences, organization of virtual and/or in-person workshops and meetings for trainees and mentors, establishing peer support groups for students, training for mentors, and trainee career advancement assistance.

RENEW for High Energy Physics (HEP)

Department of Energy, Deadline, March 31, 2023

RENEW aims to build foundations for Office of Science (SC) research and training at institutions historically underrepresented in the SC research portfolio. RENEW leverages SC's unique national laboratories, user facilities, and other research infrastructures to provide undergraduate and graduate training opportunities for students and academic institutions not currently well represented in the U.S. S&T ecosystem. The hands-on experiences gained through RENEW will open new career avenues for participants, forming a nucleus for a future pool of talented young scientists, engineers, and technicians with the critical skills and expertise needed for the full breadth of SC research activities. Principal Investigators (PIs), key personnel, and students and postdoctoral researchers supported by RENEW awards will be invited to participate in HEP researcher meetings and/or SC-wide professional development and collaborator events.

Cultural Transformation in the Geoscience Community

National Science Foundation, Deadline, April 3, 2023

The Geosciences Directorate (GEO) proposes a novel approach to simultaneously address two major challenges that require immediate action. First, foster a just, equitable and inclusive geoscience research community that reflects the diversity of the United States and second, develop a workforce with the skills required to understand how the Earth system can continue to sustain society. Cultural Transformation in the Geoscience Community (CTGC) responds to the desire of individuals from a wide range of backgrounds to make a difference in their world and supports the creative power of truly diverse groups to make major strides in Earth System Science in service of humanity. CTGC aims at engaging institutions that support black, indigenous, people of color (BIPOC); persons with disabilities; LGBTQIA+; and other individuals from marginalized/ minoritized groups to help promote career advancement and advance Earth system science. CTGC builds on tenets of NSF programs like GOLD (Geoscience Opportunities for Leadership in Diversity), ADVANCE, and NSF INCLUDES that lead to environments that foster inclusion and belonging.

Tribal Colleges and Universities Program (TCUP)

National Science Foundation, Deadline, April 3, 2023

TCUP provides awards to federally recognized Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions to promote high quality science (including sociology, psychology, anthropology, linguistics, economics and bioeconomics, statistics, and other social and behavioral sciences; natural sciences; computer science, including, but not limited to,

artificial intelligence, quantum information science, and cybersecurity), STEM, STEM education, research, and outreach. Support is available to TCUP-eligible institutions (see the Additional Eligibility Subsection of Section IV of this solicitation) for transformative capacity-building or community engagement projects through Instructional Capacity Excellence in TCUP Institutions, Targeted STEM Infusion Projects, TCUP for Secondary and Elementary Teachers in STEM, TCU Enterprise Advancement Centers, Cyberinfrastructure Health, Assistance, and Improvements, and Preparing for TCUP Implementation. Collaborations led by TCUP institutions that involve non-TCUP institutions of higher education are supported through TCUP Partnerships, with the participation of other NSF programs to support the work of non-TCUP institutions. Finally, research studies that further the scholarly activity of individual faculty members are supported through Small Grants for Research. Through the opportunities highlighted above, as well as collaborations with other NSF divisions and directorates, and other organizations, TCUP aims to increase Native individuals' participation in STEM careers, improve the quality of STEM programs at TCUP-eligible institutions, and facilitate the development of a strong STEM enterprise in TCUP institutions' service areas.

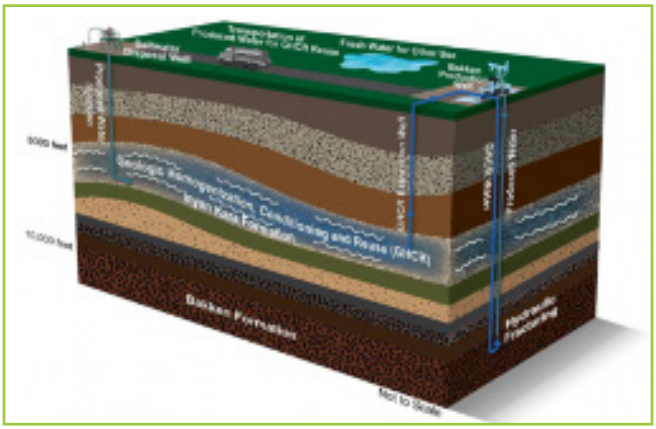
NETL News

NETL's Kutchko to Share Experiences at Penn State Women in Energy Seminar

Barbara Kutchko, Ph.D., a celebrated and award-winning NETL researcher who works to increase the safety and efficiency of oil and gas well operations around the world, will share her technical and personal perspectives with a new generation of young people as part of Penn State University's Celebrating Women in Energy and Water Research seminar series in February.

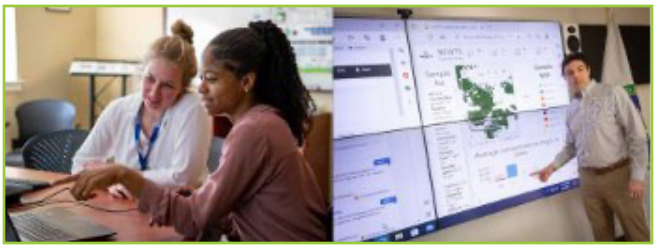
NETL, University of Pittsburgh Sign memorandum of understanding (MOU) on Infrastructure Sensor Development

NETL and the University of Pittsburgh have signed an MOU to explore areas of cooperation in the field of novel sensors for infrastructure monitoring. Such sensors are essential to ensuring the optimum operation of existing and new energy technologies while driving economic development. "This MOU presents an exciting opportunity for both the Lab and our academic partners at Pitt to combine our strengths in pursuit of common goals," said NETL's David Alman, associate director, Materials Engineering & Manufacturing.



Produced Water Recycling Approach Attracts International Attention

NETL-funded research on an approach to recycle hydraulic fracturing water using natural filtration and biogenic activity in specific layers of rock is attracting international attention with a "highly commended" recognition in a global competition sponsored by an acclaimed engineering organization.



NETL-Developed Online Database Brings Energy-Related Wastewater Stream Data to Public's Fingertips

Community leaders and water researchers can now access publicly available online datasets curated and processed by NETL to better understand the composition of energy-related wastewater streams. The data will help mitigate environmental risks and identify possible sources of valuable critical minerals (CMs).

NETL-Supported Projects Seek to Convert Flared Gases into Usable Products

Often, bright orange flames can be seen dancing atop vertical pipes that rise above landscapes where oil and gas is retrieved from below the ground. It's called flaring and it is a way to dispose of associated gases that come with oil production. It's a practice that has been used for nearly 160 years when other options for the use or transport of the gas are not readily available to the producers, but it's also a source of greenhouse gas emissions and significant waste of a valuable natural resource that could be used to make useable products.

Novel Technologies to Extract CMs Advance with NETL Oversight

Three additional projects advanced under FOA 2404 have made positive strides toward their objectives and have reached key development milestones, providing solutions that could create a sustainable domestic supply chain of CMs, including rare earth elements (REEs), which are crucial to the development of clean energy and national defense technologies.

U.S. Department of Energy Invests $2.5M to Support University Training and Research for Decarbonization and Net-Zero Greenhouse Gas Emissions Technologies

The DOE's Office of Fossil Energy and Carbon Management (FECM) and NETL announced $2.5M in funding for four training and research projects to be conducted at U.S colleges and universities. The projects will support the development of technologies capable of converting natural gas to high-value products, such as fertilizer, antifreeze, pharmaceuticals, and a wide range of chemicals like ammonia, methanol, and propane, and will also promote collaborative work in humanities-driven STEM fields.

NETL Team Helps Bring Energy-Efficient Transportation Lessons to National Clean Cities Training Workshop

An award-winning NETL team that assists and guides a nationwide network of Clean Cities coalitions played key roles in the National Clean Cities Training Workshop in Denver, Colorado that attracted more than 180 participants from around the nation who fine-tuned their expertise in strategies for advancing alternative, and energy-efficient transportation fuels and technologies.

Biden-Harris Administration Announces $3.7B to Kick-Start America's Carbon Dioxide Removal Industry

The Biden-Harris Administration, through the DOE and NETL, announced yesterday the launch of four programs that will help build a commercially viable, just, and responsible carbon dioxide removal industry in the United States.

Backpack-Size Laser System to Find REEs May Breathe New Life into Coal Communities

As demand for REEs and CMs increases, research completed with NETL support and oversight has advanced the development of a lightweight tool that can be carried into the field to measure concentrations of these valuable materials in coal wastes and byproducts.

DOE Invests Over $5M to Help Secure Domestic Supply Chain for Critical Minerals to Support Development of Clean Energy Technologies

The DOE's FECM and NETL today announced $5.3M in funding for five cutting-edge projects that will advance research supporting the domestic production of REEs and other CMs. Projects announced today will leverage the unique expertise of five DOE national laboratories to develop technologies to improve sensing and characterization of unconventional and secondary sources that contain rare earth elements and other critical minerals. These sources are typically derived from mining waste streams, including previous and current coal mining operations, or fossil energy-related waste streams, such as produced water from oil and gas operations.

Reports and Resources

How State and Local Leaders Can Harness New Infrastructure Funding to Build a Stronger, More Inclusive Workforce

Brookings Report

The U.S. currently faces a once-in-a-generation window to invest in infrastructure and expand economic opportunity. With the *Infrastructure Investment and Jobs Act* of 2021, the federal government directed unprecedented levels of funding to improve the country's transportation, water, energy, and broadband systems, in addition to addressing a variety of climate needs. Now, attention shifts to state and local leaders, who hold the most control over how infrastructure projects will ultimately be planned, designed, and implemented.

The Manufacturing Experience: Closing the Gender Gap

The Manufacturing Institute

This paper from the Manufacturing Institute and Colonial Life explores what manufacturers are doing to help close the gender gap, incorporating survey responses and interviews with various company executives to identify best practices and provide insights for other manufacturers. To address the workforce shortage, manufacturers need to expand their talent pools, bringing in more diverse and underrepresented candidates. Women represent a sizable talent pool that manufacturers cannot ignore, especially as the sector becomes more advanced.

Creating Pathways for Tomorrow's Workforce Today

National Association of Manufacturing

The manufacturing skills gap in the U.S. could result in 2.1 million unfilled jobs by 2030, according to a *new study* by Deloitte and The Manufacturing Institute, the workforce development and education partner of the National Association of Manufacturing. The cost of those missing jobs could potentially total $1T in 2030 alone.

DOE STEM Rising

DOE Announces $56M for Traineeships Supporting Historically Underrepresented Groups and Institutions

The DOE announced $56M to provide research opportunities to historically underrepresented groups and institutions in STEM. The funding, through the DOE Office of Science's RENEW initiative, will support internships, mentorship, and training programs at Historically Black Colleges and Universities, other MSIs, and other research institutions. These investments will diversify American leadership in the physical, biological, and computational sciences to ensure America's best and brightest students have pathways to STEM fields.

Growing Access to Opportunity with the Launch of DOE STEM

Through recent listening sessions with community and stakeholder groups on barriers to participation and growing access to DOE opportunities, we heard it has been too difficult to know what DOE opportunities exist and how to apply or participate. Today marks a turning point with the launch of a new website, *DOE STEM* — which offers a single portal dedicated to empowering students, educators, and the scientific workforce with access to all of DOE's STEM resources in one place.

ABOUT NETL

NATIONAL ENERGY TECHNOLOGY LABORATORY

NETL, owned and operated by DOE, is one of the Department's 17 National Laboratories. NETL supports DOE's mission to advance the national, economic, and energy security of the United States.

1450 Queen Avenue SW
Albany, OR 97321-2198
541-967-5892

3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507-0880
304-285-4764

626 Cochran Mill Road
P.O. Box 10940
Pittsburgh, PA 15236-0940
412-386-4687

Program staff are also located in
Houston, Texas and Anchorage, Alaska

WEBSITE: *www.netl.doe.gov*

CONTACTS

Anthony Armaly
NETL RWFI Federal Coordinator
412-386-6040
Anthony.Armaly@netl.doe.gov

Kirk Gerdes
Regional Workforce Initiative Coordinator
304-285-4342
Kirk.Gerdes@netl.doe.gov

Mike Knaggs
Associate Director of Partnerships
304-285-4926
Michael.Knaggs@netl.doe.gov

Matthew Garcia
Regional Workforce Initiative Consultant
956-314-0645
Matthew.Garcia@netl.doe.gov