

RWFI E-NOTE MONTHLY

REGIONAL WORKFORCE INITIATIVE • FEBRUARY 2023

Welcome Message

Greetings NETL RWFI stakeholders,

This month's funding opportunity in focus is the National Science Foundation's "*Future Manufacturing*" program. The goal of Future Manufacturing is to support fundamental research and education of a future workforce to overcome scientific, technological, educational, economic and social barriers in order to catalyze new manufacturing capabilities that do not exist today. Future Manufacturing imagines manufacturing decades into the future.

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



Future Manufacturing

National Science Foundation, Deadline, April 19, 2023

The goal of Future Manufacturing is to support fundamental research and education of a future workforce to overcome scientific, technological, educational, economic and social barriers in order to catalyze new manufacturing capabilities that do not exist today. Future Manufacturing imagines manufacturing decades into the future. By supporting research and education, Future Manufacturing will enhance U.S. leadership in manufacturing by providing new capabilities for established companies and entrepreneurs, improving our health, quality of life, and national security, expanding job opportunities to a diverse STEM workforce, and reducing the impact of manufacturing on the environment. At the same time, Future Manufacturing enables new manufacturing that will address urgent social challenges arising from climate change, global pandemics and health disparities, social and economic divides, infrastructure deficits of marginalized populations and communities, and environmental sustainability.

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 funding opportunity announcement (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 \$349 million 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 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.

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 the 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.

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 workforce's next generation 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 recruitment of students, development of collaborative networks in support of trainee experiences, organization of virtual and/or in-person workshops and meetings for trainees and mentors, establishment of peer support groups for students, training for mentors, and assistance for trainee career advancement..

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, 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.

Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants Program

U.S. Department of Agriculture, Deadline April 5, 2023

The Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants (SPECAs) program seeks to: (a) promote and strengthen secondary education and two-year postsecondary education in the food and agriculture sciences in order to help ensure the existence of a workforce in the United States that's qualified to serve the food and agriculture sciences system; and (b) promote complementary and synergistic linkages among secondary, two-year postsecondary and higher education programs in the food and agriculture sciences in order to advance excellence in education and encourage more young Americans to pursue and complete a baccalaureate or higher degree in the food and agriculture sciences.

Fiscal Year 2023 STEM Program

U.S. Department of Defense, Deadline, April 14, 2023

As the capacity of the Department of the Air Force (DAF) Science and Technology (S&T) workforce is interconnected with STEM education and outreach, the Air Force Office of Scientific Research (AFOSR) recognizes the need to support efforts that can jointly improve STEM student outcomes and align education and outreach efforts with DAF 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 as well as the air and space-related workforce. Projects must aim to increase engagement in STEM, from students to

the current workforce, and enhance people with needed DAF STEM skills, knowledge and abilities. AFOSR encourages applications to utilize current STEM education research for informing project design and advancing STEM careers and opportunities of DAF relevance.

Fiscal Year 2023 Lending Library - Defense University Research Instrumentation Program (LL-DURIP)

U.S. Department of Defense, Deadline, April 14, 2023

This announcement seeks proposals from universities to create, market and implement a lending library program using DURIP-funded instrumentation. Proposals are accepted from entities who previously received a DURIP grant and currently have access to the DURIP-funded instrumentation. These could have been funded by the Army Research Office (ARO), ONR and AFOSR. However, this STEM supplement is a stand-alone opportunity that is only provided by the AFOSR. A central purpose of the DURIP-LL program is to provide hands-on experiential learning opportunities using equipment and instrumentation to enhance research related education in areas of interest and priority to the DoD. Therefore, your proposal must address the impact of the equipment or instrumentation on your institution's ability to educate K-12 students through research in disciplines important to DoD missions.

Accelerating Innovations in Biomanufacturing Approaches through Collaboration Between NSF and the DOE BETO funded Agile BioFoundry

National Science Foundation, Deadline April 18, 2023

The NSF and DOE's Bioenergy Technologies Office (DOE BETO) recognize the critical roles that synthetic and engineering biology play in advancing the U.S. Bioeconomy. To translate advances in synthetic and engineering biology into products and processes that will impact the U.S. bioeconomy, there is a need to accelerate innovation and adopt new biomanufacturing approaches. The integrated Design-Build-Test-Learn (DBTL) capabilities of the DOE BETO funded Agile BioFoundry (ABF) offer a unique resource to the academic community to develop and implement innovative biodesign and biomanufacturing technologies and practices.

Advanced Scientific Computing Research — (ASCR-RENEW)

U.S. Department of Energy, Deadline, April 18, 2023

RENEW aims to build foundations for 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. science and technology (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, key personnel, students and postdocs of RENEW awards will be invited to participate in ASCR researcher meetings and/or SC-wide professional development and collaborator events.

Future of Semiconductors

National Science Foundation, Deadline, April 24, 2023

The program seeks to fund research as well as curriculum and workforce development to improve STEM education at the nation's institutions of higher education, spanning two-year colleges and four-year universities and inclusive of minority-serving institutions, to advance semiconductor design and manufacturing. NSF encourages bold, potentially transformative activities that address future semiconductor manufacturing technical challenges and shortages in the skilled scientist, engineer and technician workforce. This solicitation encourages proposers to include a holistic perspective on workforce regarding diversity and equitable access to STEM career paths and education by engaging the academic community to broaden access and exposure to advanced technologies and research capabilities. All proposals should address workforce development plans and research.

Expanding Capacity in Quantum Information Science and Engineering

National Science Foundation, Deadline, April 24, 2023

The NSF Expanding Capacity in Quantum Information Science and Engineering (ExpandQISE) program aims to increase research capacity and broaden participation in Quantum Information Science and Engineering (QISE) and related disciplines through the creation of a diversified investment portfolio in research and education that will lead to scientific and engineering breakthroughs, while securing a talent pipeline in a field where workforce needs of industry, government and academia continue to outgrow the available talent. The ExpandQISE program helps build and maintain a close connection between new efforts and existing impactful work in research, research training, education, outreach and broadening participation done at the existing QISE Centers such as, for example but not limited to, NSF QLCI Institutes, DOE National Research Centers, NSF Quantum Foundries, or leading QISE research Institutions, while creating and nurturing necessary critical mass at Institutions not yet fully involved in QISE. In keeping with the NSF goal of increasing the participation of all members of society in the scientific enterprise, institutions from EPSCoR jurisdictions, and institutions at which more than 50% of enrolled students come from groups that are currently underrepresented in the sciences, e.g., minority-serving institutions (MSIs), are especially encouraged to apply.

Biological and Environmental Research (BER) — Reaching a New Energy Sciences Workforce (BER-RENEW)

U.S. Department of Energy, Deadline, April 24, 2023

The DOE SC program in BER hereby announces its interest in receiving applications for RENEW grants that will target student experiential training and building capacity in BER-relevant programs at non-R1 Minority-Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs). Funding may be requested to support experiential training and mentoring activities in partnership with DOE National Laboratories conducting BER-relevant science and/or with one or more of BER's research efforts at the DOE National Laboratories and/or the Bioenergy Research Centers (BRCs). BER has a goal to broaden and diversify institutional representation in its research portfolio. BER recognizes there are many academic scientists at institutions not currently supported by BER who have limited familiarity with BER programs and research support. BER

further recognizes that such barriers to engagement in research and student training can be surmounted by fostering partnerships and collaborations, particularly with BER-supported long-term research activities and supporting institutional capacity building activities. To help provide technical assistance for student experiential training and advance the goal of broadening institutional participation, this FOA will provide funding for institutions to: (1) develop biological and environmental science training capacity and research at non-R1 MSIs and (2) foster sustained undergraduate and graduate student training and participation in BER-relevant research through new collaborations..

STEM Education Organizational Postdoctoral Research Fellowships

National Science Foundation, Deadline, April 28, 2023

The Directorate for STEM Education, STEM Education Postdoctoral Research Fellowships Program, funds postdoctoral fellowship projects designed to enhance the research knowledge, skills and practices of STEM Education research by recent doctoral graduates in STEM, STEM Education, Education and related disciplines. This solicitation supports organizational postdoctoral fellowship projects; a companion solicitation supports individual postdoctoral fellowship awards. The Program is designed 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. Principal Investigators who are women, veterans, persons with disabilities, and from groups underrepresented in STEM, or who have attended community colleges and minority-serving institutions (e.g., HBCUs, TCUPs, Hispanic Serving Institutions, Alaska Native Serving Institutions, and Hawaiian Native and Pacific Islander Serving Institutions) are especially encouraged to apply.

Geoscience Opportunities for Leadership in Diversity

National Science Foundation, Deadline, April 28, 2023

The World is facing "all minds needed" problems, but due to historical systemic structures, all minds have not been fully engaged. Recent research shows that science scholars who are underrepresented in STEM produce higher rates of scientific novelty, yet they do not persist in the systems where the innovation is created (Hofstra et al. 2020). Because the geosciences continue to lag other STEM fields in creating a diverse community of researchers, scholars and practitioners, disruptive strategies and evidence-based practices are needed to recruit and specifically retain individuals who historically have not been included in geoscience education, research and careers.

NETL News

*Latest Edition of NETL Edge Is Now Available*

NETL has released the latest edition of its semiannual publication that showcases research on emerging energy technologies. NETL Edge shares the latest developments in the laboratory's mission to drive innovation and deliver solutions for an environmentally sustainable and prosperous energy future.

*Morgantown High School and Suncrest Middle School Win West Virginia Regional Science Bowl*

Morgantown High School-Team 1 and Suncrest Middle School-Team 1, also from Morgantown, claimed first-place victories in the 2023 West Virginia Regional Science Bowl sponsored by the DOE and NETL.

*DOE Invests More Than \$130M to Lower Nation's Carbon Pollution*

The DOE today announced \$131M for 33 research and development

projects to advance the wide-scale deployment of carbon management technologies to reduce CO₂ pollution. The projects will address technical challenges of capturing CO₂ from power plants and industrial facilities or directly from the atmosphere and assess potential CO₂ storage sites, increasing the number of sites progressing toward commercial operations..

*Website Now Available to Submit Life Cycle Analysis Data for Carbon Conversion Funding Opportunity*

As the U.S. economy moves toward a net zero carbon emissions future, the DOE is seeking to partner with states, local governments and public utilities or agencies to support the procurement and use of carbon conversion products. These efforts have been enabled by provisions included in Section 40302 of the Bipartisan Infrastructure Law.

*NETL Project Partner Demonstrates Over 2.8 Million Tonnes of CO₂ Capture From Ethanol Production and its Deep Geologic Storage in Mount Simon Sandstone*

Food processing company Archer Daniels Midland, with support from NETL, demonstrated an integrated system of processing CO₂ and transporting it from an ethanol plant to the Mt. Simon Sandstone saline reservoir for permanent geologic storage. This is the largest demonstration of its kind in the United States and marks a crucial step forward in efforts to decarbonize the U.S. economy and power sector by 2050.



NETL/DOE Review Progress on Next-Generation Carbon Capture Projects During California Visit

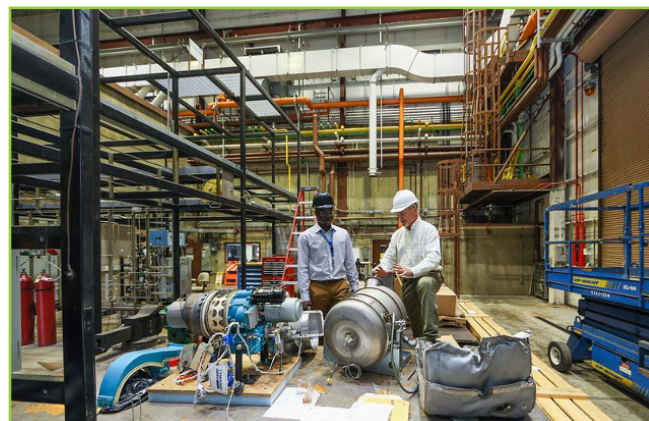
NETL and other DOE representatives toured six sites during four days in California where projects are being developed with the Lab's oversight and support to capture CO₂ and lower atmospheric levels of the greenhouse gas.



Large Pilot Carbon Capture Project Supported by NETL Breaks Ground in Illinois

NETL representatives recently attended a groundbreaking ceremony at the City Water, Light and Power plant in Springfield, Illinois, to celebrate the advancement of a large pilot CO₂ capture project made possible with funding and project management support from the laboratory.

Reports and Resources



Diversity and STEM: Women, Minorities, and Persons with Disabilities 2023

National Science Foundation

Explore statistical information about the representation of women, minorities, and persons with disabilities in STEM employment and science and engineering education. New data show that the STEM workforce is growing, employing nearly a quarter (24%) of individuals in 2021, up 20% from 2011. In addition to growth, the STEM workforce continues to diversify; underrepresented minorities accounted for 24% of the STEM workforce in 2021, up from 18% in 2011, while representation of women reached 35% in 2021, up from 32% in 2011.

The State of U.S. Science and Engineering 2022

National Science Foundation

This report summarizes key findings from the nine thematic reports providing in-depth data and information on STEM education at all levels; the STEM workforce; U.S. and international research and development performance; U.S. competitiveness in high-technology industries; invention, knowledge transfer, and innovation; and public perceptions and awareness of science and technology. Indicators also includes an interactive, online tool that enables state comparisons on a variety of S&E indicators. This report, the nine thematic reports and the online [State Indicators data tool](#) together comprise the full Indicators suite of products.

DOE STEM Rising



DOE's SC is now Accepting Applications for the SC Graduate Student Research Awards 2023 Solicitation 1

The DOE's SC is pleased to announce that the SC Graduate Student Research (SCGSR) program is now accepting applications for the 2023 Solicitation 1 cycle. Applications are due Wednesday, May 3, 2023, at 5 p.m. Eastern Time. SCGSR application assistance workshops will be held on March 9, 2023, 2–3:30 p.m. EST and April 20, 2023, 2–4:30 p.m. EST. The first workshop will provide a general overview of the program and the application requirements and will include a time for discussing potential research topics with the program managers; [register here](#). The second workshop will guide attendees through the application process, answer general questions, provide guidance on proposal writing and feature discussions with scientists and former awardees; [register here](#).

DOE's RENEW Initiative to Support Five Pathway Summer Schools for Students from Underrepresented and Underserved Groups in STEM

The DOE's SC will support nearly 100 high schoolers, recent high school graduates and early undergraduate students from underrepresented groups and underserved schools in STEM through awards for five Pathway Summer Schools at six national laboratories. The funding comes from SC's RENEW. Sponsored by the *Office of Workforce Development for Teachers and Scientists (WDTS)*, the WDTS RENEW Pathway Summer Schools aim to diversify the STEM pipeline via hands-on learning opportunities at DOE national laboratories.

ABOUT NETL



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's 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