

RWFI E-NOTE MONTHLY

REGIONAL WORKFORCE INITIATIVE • MARCH 2023

Welcome Message

Greetings NETL RWFI stakeholders,

This month's funding opportunity in focus is the National Science Foundation's "*Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education*." This funding opportunity is targeted at two-year undergraduate institutions. On Thursday, March 9, 2023, the NETL RWFI held an Energy 101 Webinar on Point Source Carbon Capture. The slides and a recording of that webinar can be found on the NETL RWFI Webinar Archives site [here](#).

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



Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education

National Science Foundation, Deadline, May 1, 2023

The National Science Foundation's (NSF) Education and Human Resources Directorate seeks to significantly enhance its support for research, development, implementation, and assessment to improve STEM education at the nation's two-year colleges. NSF encourages bold, potentially transformative projects that address immediate challenges facing STEM education at two-year colleges and/or anticipate new structures and functions of the STEM learning and teaching enterprise. This program description is a targeted approach for advancing innovative and evidence-based practices in undergraduate STEM education at two-year colleges. It also seeks to support systemic approaches to advance inclusive and equitable STEM education practices.

Cultural Transformation in the Geoscience Community (CTGC)

National Science Foundation, Deadline, April 3, 2023

The Geosciences Directorate 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. 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; 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 (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science) 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 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 (SPECA) Program

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

The SPECA program seeks to 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 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 (FY) 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 and 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. This Funding Opportunity Announcement (FOA) is specifically seeking STEM education and outreach projects that address scientific and technical areas identified in the following thrust areas. Project scope may range in size and complexity. While not a formal requirement or program focus of this FOA, applicants are strongly encouraged to consider under-represented and under-served populations including women and minorities in project plans. Special audience priority areas may include, but not be limited to, military connected students, veteran initiatives, and education systems integral to DAF science and technology.

FY23 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, the Office of Naval Research, 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 Bioenergy Technologies Office (BETO) funded Agile BioFoundry

National Science Foundation, Deadline April 18, 2023

The NSF and the 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 capabilities of the DOE BETO funded Agile BioFoundry offer a unique resource to the academic community to develop and implement innovative biodesign and biomanufacturing technologies and practices.

Advanced Scientific Computing (SC) Research (ASCR) Reaching a New Energy Sciences Workforce (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. 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, and 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 (ExpandQISE)

National Science Foundation, Deadline, April 24, 2023

The NSF ExpandQISE program aims to increase research capacity and broaden participation in 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 QICI 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 Established Program to Stimulate Competitive Research jurisdictions, and institutions at which more than 50% of enrolled students come from groups that are currently under-represented in the sciences, e.g., minority-serving institutions (MSIs), are especially encouraged to apply.

Biological and Environmental Research (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 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. 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 develop biological and environmental science training capacity and research at non-R1 MSIs and 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.

Higher Education Challenge Grants Program

U.S. Department of Agriculture, Deadline, April 28, 2023

Projects supported by the Higher Education Challenge Grants Program will address a state, regional, national, or international educational need; involve a creative or non-traditional approach toward addressing that need that can serve as a model to others; encourage and facilitate better working relationships in the university science and education community, as well as between universities and the private sector, to enhance program quality and supplement available resources; and result in benefits that will likely transcend the project duration and United States Department of Agriculture support.

Enabling Partnerships to Increase Innovation Capacity

National Science Foundation, Deadline, May 25, 2023

The purpose of this solicitation is to broaden participation in innovation ecosystems that advance emerging technologies (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors and microelectronics) by supporting capacity-building efforts at institutions of higher education interested in growing external partnerships. Creation of this program is motivated by the commitment of the NSF, including the newly established NSF Directorate for Technology, Innovation, and Partnerships, to accelerating scientific and technological innovation nationwide and empowering all Americans to participate in the U.S. research and innovation enterprise. Establishing more inclusive innovation ecosystems will require broad networks of partners working together in support of use-inspired research; the translation of such research to practice or commercial application; and the development of a skilled workforce.

Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)

U.S. Department of Transportation, Deadline, May 30, 2023

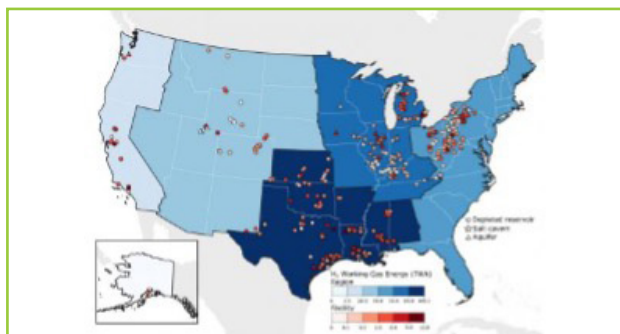
The CFI Program is a new competitive grant program created by President Biden's Bipartisan Infrastructure Law (BIL) to strategically deploy publicly accessible electric vehicle charging and alternative fueling infrastructure in the places people live and work — urban and rural areas alike — in addition to along designated Alternative Fuel Corridors. CFI Program investments will make modern and sustainable infrastructure accessible to all drivers of electric, hydrogen, propane, and natural gas vehicles. This program provides two funding categories of grants — Community Charging and Fueling Grants and Alternative Fuel Corridor Grants. The BIL provides \$2.5 B over five years for this program. This first round of funding makes \$700 M from FY22 and FY23 funding available to strategically deploy electric vehicle charging infrastructure and other fueling infrastructure projects in urban and rural communities in publicly accessible locations, including downtown areas and local neighborhoods, particularly in underserved and disadvantaged communities.

Environmental Justice (EJ) Thriving Communities Grantmaking Program

Environmental Protection Agency, Deadline, May 31, 2023

The Environmental Protection Agency (EPA) is issuing this solicitation to request applications for the design and management of a new EJ-competitive pass-through program where EPA will competitively select multiple pass-through entities to provide grant funds via subawards to community-based nonprofit organizations and other eligible subrecipient groups representing underserved and disadvantaged communities. The definition of the term pass-through entity in 2 CFR 200.1 provides that a pass-through entity is a non-federal entity that provides a subaward to a subrecipient to carry out part of a federal program. The EPA provides extensive guidance to pass-through entities in the EPA Subaward Policy and related materials available on the EPA internet website.

NETL News



NETL Releases Study on Hydrogen Storage Potential in Existing Underground Gas Facilities

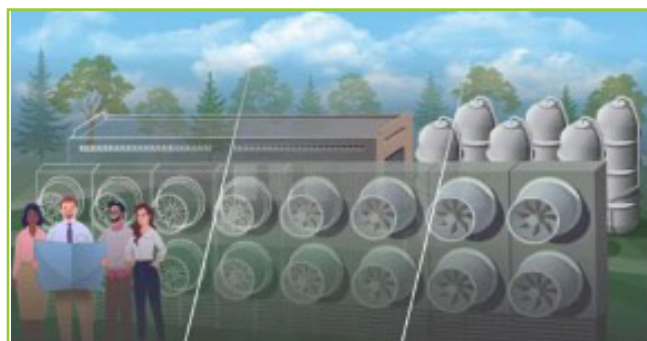
A new study by NETL researchers, in collaboration with Pacific Northwest National Laboratory and Lawrence Livermore National Laboratory researchers, demonstrated that existing U.S. underground gas storage facilities can viably store hydrogen-methane blends, reducing the need to build new hydrogen infrastructure while meeting a range of the hydrogen demand projected for 2050 and helping to

support the transition to a clean hydrogen economy.



DOE Invests \$47 M to Reduce Methane Emissions From Oil and Gas Sector

The DOE, the DOE Office of Fossil Energy and Carbon Management (FECM), and NETL today announced nearly \$47 M in funding for 22 research projects to advance the development of new and innovative measurement, monitoring, and mitigation technologies to help detect, quantify, and reduce methane emissions across oil and natural gas producing regions of the United States.



NETL Providing Technical Expertise for Direct Air Capture (DAC) Prize Competitions

NETL will provide technical support and expertise to award the American-Made DAC Prizes, a series of interconnected competitions offering up to \$115 M to advance CO₂ removal technologies from hard-to-decarbonize sectors of the U.S.



DOE Invests \$6 Million to Develop Useful Products from Coal and Coal Wastes in Support of a Clean Energy Economy

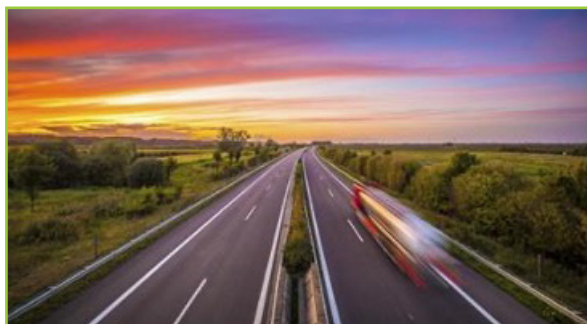
The DOE, the FECM, and NETL announced \$6 M in funding for six university-led research and development projects that will repurpose

domestic coal resources for high-value graphitic products and carbon-metal composites that can be employed in clean energy technologies.



NETL Celebrates Women's History Month

March is Women's History Month, providing NETL with an excellent opportunity to celebrate the achievements of women from across the Lab. As part of the celebration, women throughout our organization were invited to explain why it's important for NETL to foster gender diversity within its workforce and discuss the steps they take to encourage more women to pursue careers in science, technology, engineering and mathematics (STEM) or other careers at NETL.



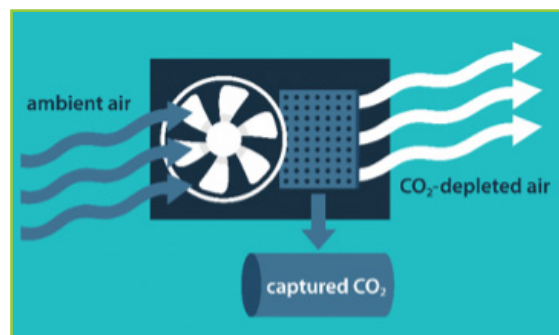
NETL Receives Patent for Process to Produce Game-Changing Carbon Nanosheets

NETL researchers who asked the question — "How can we use coal without burning it and generating greenhouse gas?" — have been awarded a U.S. patent for an invention that transforms coal into a game-changing material to manufacture valuable products and generate jobs in coal communities as the nation transitions to clean energy.



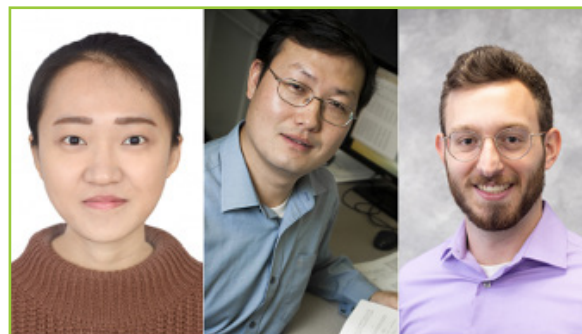
NETL Team Uses Microwaves to Cut Costs of DAC Technologies

NETL researchers have reported the successful use of microwaves to accelerate sorbent regeneration — results that can lead to substantial reduction of expensive water and energy requirements of some promising DAC technologies.



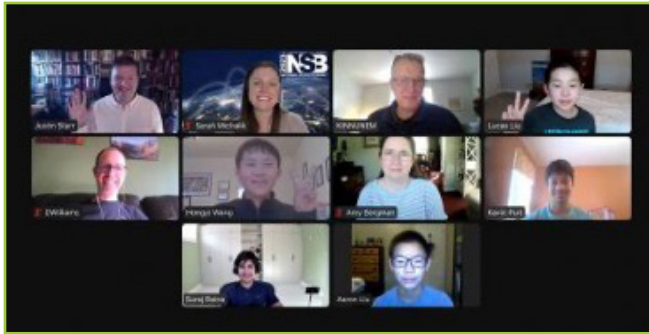
NETL's DAC Research Focuses on Key Decarbonization Goals

Reduction and removal of CO₂ from the atmosphere are key objectives in the climate change challenge. NETL has been at the forefront of carbon capture and storage research for decades. Now, its CO₂ removal technology research is helping set the pace for additional innovations in DAC and other technological approaches that are focused on attaining the Biden Administration's goal of a net-zero greenhouse gas emissions economy by 2050 through just and sustainable decarbonization pathways.



NETL Research Associates Contribute to Lab's Goals of Decarbonization and Value-Added Products

Conducting projects on reducing air pollutants, understanding the dynamics of extreme materials and finding ways to use waste products, NETL research associates Hang Zhou, Shun-Li Shang and Samuel Flett, guided by their lab mentors, strive to address some of the nation's greatest energy challenges.



Marshall Middle School Team 1 Wins 2023 Western Pennsylvania Science Bowl (WPASB)

North Allegheny's Marshall Middle School Team 1 captured first place at the 32nd Western Pennsylvania Science Bowl middle school competition, which was held Saturday, March 4, 2023. Twenty-five teams from the region competed in the event that was sponsored by the DOE and NETL.



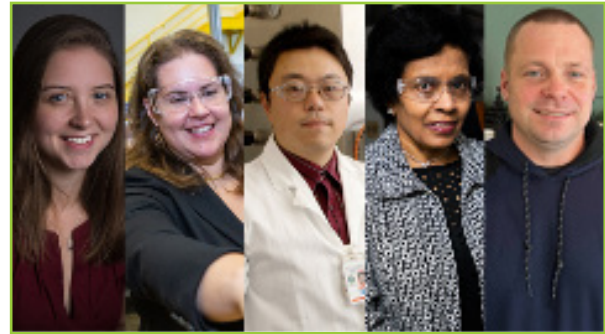
North Allegheny Senior High School — Team 1 Wins 2023 WPASB

North Allegheny Senior High School — Team 1 claimed victory at the 2023 WPASB regional high school competition, held Saturday, Feb. 25, 2023, in a virtual format. Forty-one teams from 26 high schools participated in the contest, sponsored by the DOE and NETL. The WPASB tested students' knowledge of math and science in a fast-paced, quiz-style tournament.



NETL Pittsburgh Site to Host New DACe Center

A new facility will be established at NETL's Pittsburgh campus with the goal of jumpstarting the development of DAC technologies that can provide new economic opportunities while lowering the quantities of CO₂ in the planet's atmosphere.



NETL's Science Bowl Heroes Step Up To Inspire Tomorrow's Engineers and Scientists

Some use their expertise to ask complex science- or math-based questions. Others carefully monitor the clock to ensure answers are provided within the prescribed time limit, accurately tally scores during each fast-paced round or complete other important tasks.



DOE To Invest More Than \$18 M To Treat Wastewater, Recover Valuable Minerals

The DOE, the FECM, and NETL today announced more than \$18 million in available funding for research and development projects that focus on the characterization, treatment, and management of produced water — or wastewater associated with oil and natural gas development and production — as well as management of legacy wastewater associated with coal-based thermal electric power generation facilities, primarily coal combustion residuals waste streams.

Reports and Resources



More Women Join the Manufacturing Workforce

National Association of Manufacturers

Fresh off International Women's Day, which was March 8, 2023, there's some encouraging news on the labor front: more women are coming back to the workforce, both in manufacturing and throughout the economy. In manufacturing: Female employment in the industry reached its height this year, with a total of 3.77 million workers, according to National Association of Manufacturers calculations based on Bureau of Labor Statistics numbers. Women now account for 29% of the manufacturing workforce.

Higher Education in Science and Engineering (S&E)

National Science Foundation

The number of S&E degrees awarded continues to increase at all levels and across many fields. S&E degrees increased at the associate's, bachelor's, master's, and doctoral levels from 2000 to 2019, both in numbers and as shares of total degrees.

DOE to Announce Funding Opportunity for Transitioning Tribal Colleges and Universities to Clean Energy

The DOE Office of Indian Energy Policy and Programs (Office of Indian Energy) issued a Notice of Intent to release a \$15 M FOA this spring to install clean energy technology at Tribal Colleges and Universities (TCUs). Awards from this planned FOA are anticipated to range from \$100–\$250 K for planning grants or from \$1–\$3 M for deployment grants. "TCUs are vital to Native communities and the generations to come," said Wahleah Johns, Director of the Office of Indian Energy. "This \$15 M in funding is a down payment in our future, by investing in these essential institutions we can pave the way to a safer, healthier, and cleaner tomorrow."

DOE's Office of Science is now Accepting Applications for the Office of Science Graduate Student Research (SCGSR) Awards 2023 Solicitation 1

The DOE Office of Science is pleased to announce that the Office of SCGSR program is now accepting applications for the 2023 Solicitation 1 cycle. Applications are due 5:00 p.m. EDT on Wednesday, May 3, 2023.

DOE STEM Rising



Fifty-Seven Teams Advance to Solar Decathlon 2023 Design Challenge Final

Fifty-seven teams from 63 collegiate institutions have earned a spot in the final stage of the *DOE Solar Decathlon* 2023 Design Challenge. "Solar Decathlon has pioneered energy efficient building designs for more than two decades; this year's finalist teams showed there is always room to push the envelope on zero energy buildings," said Rachel Romero, *Design Challenge* competition manager.

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.

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