RWFI E-NOTE MONTHLY

REGIONAL WORKFORCE INITIATIVE • JUNE 2020

Welcome Message

Greetings NETL RWFI stakeholders,

In this month's E-note you will find a grant announcement in our funding in focus section to develop workforce opportunities for rural communities and the applications are due at the end of July from the U.S. Department of Labor. In our reports section, you will find a report from the Appalachian Regional Commission that examines state and county level performance data from the 13 Appalachian states.

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.

– Sincerely, The NETL Regional Workforce Initiative Team

Workforce Funding Announcements

FUNDING SPOTLIGHT

Workforce Opportunity for Rural Communities (WORC)

U.S. Department of Labor, Deadline, July 29, 2020

This announcement solicits applications for the WORC Initiative for grants serving the Appalachian and Delta regions. The purpose of this program is to demonstrate the alignment of regionally driven, comprehensive approaches to addressing economic distress and the workforce development activities necessary to ensure a workforce capable of succeeding in current and future job opportunities. Successful long-term economic growth strategies build upon bottom-up, community-led plans that promote economic resilience and maximize regional strengths. The WORC Initiative grants take a long-term view toward assisting eligible communities in diversifying their economies by investing in local strategies developed by regional partners. This long-term view also acknowledges the impact of the opioid crisis and the significant challenges it presents to a community's workforce. To address these challenges, the Employment and Training Administration encourages applicants to include within their applications strategies to address the employment and training needs of individuals affected by substance use disorder in their communities.

The Science of Learning and Augmented Intelligence Program (SL)

National Science Foundation, Deadline, July 8, 2020

The SL supports potentially transformative research that develops basic theoretical insights and fundamental knowledge about principles, processes and mechanisms of learning, and about augmented intelligence — how human cognitive function can be augmented through interactions with others, contextual variations, and technological advances.

National Science Foundation (NSF) Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science Planning Grants

National Science Foundation, Deadline, July 13, 2020

In 2016, NSF unveiled a set of "Big Ideas," 10 bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering (see *https://www.nsf.gov/news/special_reports/big_ideas/index.jsp*). The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. As such, when responding to this solicitation, even though proposals must be submitted to the Education and Human Resources Directorate/Division of Human Resource Development, once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors.

Office of Career, Technical, and Adult Education: FY 2020 Education Stabilization Fund: Reimagine Workforce Preparation (ESF-RWP) Grants Program

U.S. Department of Education Deadline, August 24, 2020

The purpose of the ESF-RWP Grants program is to provide support to help states with the highest coronavirus burden create or expand short-term education and training opportunities and/or or career pathways programs that help citizens return to work, become

entrepreneurs, or expand their small businesses or to enable states to create or expand small business incubators that offer education and training, mentorship, as well as shared facilities and resources that will help small businesses recover and grow and new entrepreneurs thrive.

FY20 Advanced Manufacturing Office Multi-Topic Funding Opportunity Announcement (FOA)

U.S. Department of Energy, Deadline, August 26, 2020

The Advanced Manufacturing Office (AMO) supports innovative, advanced-manufacturing applied research and development (R&D) projects that focus on specific, high-impact manufacturing technology and process challenges. AMO invests in foundational, energy-related, advanced-manufacturing processes (where energy costs are a determinant of competitive manufacturing) and broadly applicable platform technologies (the enabling base upon which other systems and applications can be developed). The competitively selected projects from this FOA will focus on developing next-generation manufacturing material, information, and process technologies that improve energy efficiency in energy-intensive and energy-dependent processes, and facilitate the transition of emerging, cost-competitive energy technologies to domestic production.

AMO's vision and mission — as well as the strategic goals, targets, and metrics for key technology focus areas — are described in the Draft AMO Multi-Year Program Plan available *here*.

Industry-University Cooperative Research Centers (IUCRC) Program

National Science Foundation, Deadline, September 8, 2020

The IUCRC program catalyzes breakthrough pre-competitive research by enabling close and sustained engagement between industry innovators, world-class academic teams, and government agencies. IUCRCs help industry partners and government agencies connect directly and efficiently with university researchers to achieve three primary objectives: 1) Conduct high-impact research to meet shared and critical industrial needs in companies of all sizes; 2) Enhance U.S. global leadership in driving innovative technology development, and 3) Identify, mentor and develop a diverse, highly skilled science and engineering workforce.

1890 Institutional Teaching, Research, and Extension Capacity Building Grants (CBG) Program

U.S. Department of Energy, Deadline, September 10, 2020

The 1890 CBG is intended to strengthen teaching, research and extension programs in the food and agricultural sciences by building the institutional capacities of the 1890 Land-Grant Institutions, including Tuskegee University, West Virginia State University, and Central State University (per Section 7129 of Pub. L. 113-79). The CBG program supports projects that strengthen teaching programs in the food and agricultural sciences in the need areas of curriculum design and materials development, faculty development, and others. CBG supports projects that strengthen research and extension programs in need areas of studies and experimentation, extension program development support systems, and others. The CBG also support integrated project grants. The intent of this initiative is to increase and strengthen food and agriculture sciences at the 1890s through integration of education, research and extension. Applications submitted to CBG must address at least one of the following National Institute of Food and Agriculture strategic goals: sustainable bioenergy, food security, childhood obesity prevention, or food safety.

Economic Development Research and National Technical Assistance FY18–FY20

U.S. Department of Commerce, Economic Development Agency, Deadline, September 30, 2020

Through the Research and Evaluation program, The Economic Development Agency (EDA) builds the knowledge base for sound, market-driven regional and local economic development. This work is critical to ensure that EDA's initiatives and investments are consistent with current best practices in economic development. Program evaluations ascertain EDA's impact on measures such as return on taxpayer investment; private capital investment leveraged; and the creation of higher-skill, higher-wage jobs. Projects under the Research and Evaluation program may be carried out through grants or cooperative agreements, as well as through studies conducted in-house, to maximize the impact of this modestly funded program.

NETL News

Report Shows Adjacent Market Opportunities for DOE's High-Performance Materials Program

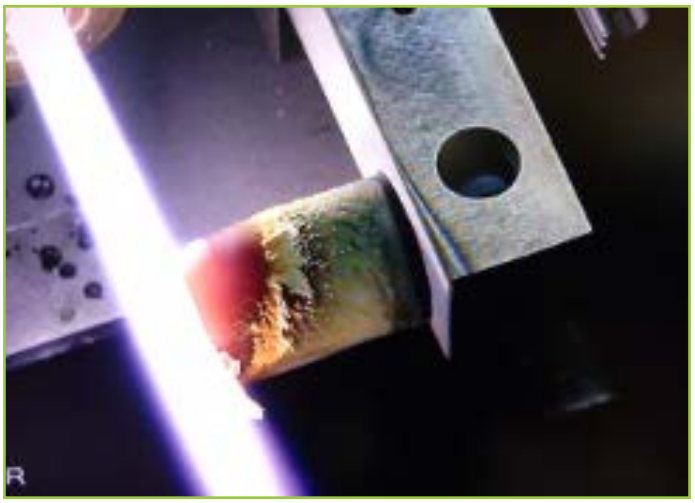
A new NETL report explores opportunities to leverage high-performance alloy (HPA) research supported by DOE FE beyond coal-fired power plants and expand into industrial gas turbines as well as adjacent markets that require similar materials, such as the aerospace, industrial and chemical processing and automotive industries. HPAs are metals that display superior characteristics in high temperature and corrosive environments. Expensive to develop and produce, HPAs enable power plant processes to run at higher temperatures and pressures, improving performance and efficiency. These materials are critical to plant reliability under cyclic operation and have long been a key area of research for NETL and its partners. According to the report, the global HPA market generated more than $4 billion revenue in 2016, which is expected to climb to $7.6 billion in 2023. The largest application of HPAs is aerospace, followed by industrial gas turbines, industrial and chemical processing, and automotive. Together, these industries make up 92.5 percent of the current HPA market.

Acid Digestion and Electrowinning Processes Demonstrate Recovery of Rare Earth Elements from Coal Fly Ash

An NETL-supported collaboration demonstrated favorable results that showed potential toward developing an environmentally benign and economically sustainable process for generating rare earth element (REE) products from domestic coal ash sources, marking a step forward in enabling a domestic supply of these critical materials. As part of an NETL-funded cooperative agreement, Battelle Memorial Institute (BMI) and Rare Earth Salts (RES) worked together to advance the development and validation of BMI's acid digestion process, along with RES's novel electrowinning separation and purification process. Acid digestion is a method of making metals easier to separate by first dissolving a coal ash sample into solution by adding acids and heating it until the metals break away from the other undesired materials. Electrowinning is a process in which metal ions present in a solution are separated using a direct current.

NETL Unveils Additional Infographics Highlighting the Achievements of Second-Generation Projects in the Carbon Capture Program

Committed to its goal of developing new energy technologies while retaining environmental integrity, NETL manages a vast portfolio of carbon capture R&D projects that are successfully reducing costs to ensure the availability of clean, reliable and affordable power from America's abundant domestic resources. In 2007, the Administrator of the U.S. Environmental Protection Agency found that current and projected atmospheric concentrations of greenhouse gases, including carbon dioxide (CO_2), threaten the public health and welfare of present and future generations. Carbon capture technologies reduce greenhouse gas emissions by capturing CO_2 from fossil energy-fueled power plants before they are released into the atmosphere. Existing capture technologies add costs for industry and consumers. NETL is leveraging cutting-edge research facilities, world-class technical expertise and strategic collaborations to develop efficient and economical solutions that make carbon capture technology viable for decades to come.



NETL Leading in Magnetohydrodynamic Power Generation Research

NETL-led research shows the possibilities and benefits of developing magnetohydrodynamic (MHD) power generation such as improved efficiency for fossil fuel power plants and reducing the costs of implementing carbon capture. MHD generation works by taking direct kinetic energy from fast-moving ionized gases and converts it into electricity without any moving parts. This is done through the Lorentz force, which deflects opposite charged particles away from each other in a strong magnetic field. By collecting oppositely charges on electrodes, an electrical potential or voltage is developed that can be used to drive external loads. Peter Hsieh, with NETL's Structural Materials Team, said the conditions to make an MHD generator work can be applied in solar, nuclear, and fossil fuel power plants to increase energy efficiency and drive down the costs of carbon capture. Carbon dioxide and water vapor are the only combustion products in oxyfuel fired power plants, and the latter is readily separated through condensation.

Reports and Resources

Building America's Skilled Technical Workforce

National Academies of Sciences, Engineering, and Medicine

Skilled technical occupations — defined as occupations that require a high level of knowledge in a technical domain but do not require a bachelor's degree for entry—are a key component of the U.S. economy. In response to globalization and advances in science and technology, American firms are demanding workers with greater proficiency in literacy and numeracy, as well as strong interpersonal, technical, and problem-solving skills. However, employer surveys and industry and government reports have raised concerns that the nation may not have an adequate supply of skilled technical workers to achieve its competitiveness and economic growth objective

The Appalachian Region: A Data Overview from the 2014–2018 American Community Survey

Appalachian Regional Commission

The report contains over 300,000 data points about Appalachia's demographics, income, employment, as well as education, computer access, housing, transportation and other indicators — all presented at the regional, sub-regional, state, and county level with comparisons to the rest of the Nation. The Chartbook also examines data change over recent years to identify trends and offer a useful baseline for additional future research.

DOE STEM Rising

Department of Energy Invests $65 Million at National Laboratories and American Universities to Advance Nuclear Technology

The DOE announced more than $65 million in nuclear energy research, cross-cutting technology development, facility access, and infrastructure awards for 93 advanced nuclear technology projects in 28 states. The awards fall under DOE's nuclear energy programs called the Nuclear Energy University Program, the Nuclear Energy Enabling Technologies, and the Nuclear Science User Facilities.

Idaho National Laboratory Coding Coalition Helps Local Team Rank Highly in National Cybersecurity Competition

It would have been a challenge even in normal times, but a four-girl team from Skyline High School in Idaho Falls overcame quarantine and equipment issues to finish 29th in Girls Go CyberStart, a national online problem-solving competition held in late May 2020. "It was kind of a hard push at first," said Carla Rudolf, adviser to the Skyline High School Code Club. Members still had schoolwork to focus on, and Rudolf herself had 133 math students to teach remotely.

Celebrating Oceans Month with Mikaela Freeman

"My name is Mikaela Freeman and I joined Pacific Northwest National Laboratory's Coastal Science Division in 2016 after receiving my Master of Marine Affairs degree from the University of Washington. I am a marine science and policy analyst focusing on environmental impacts of marine renewable energy and outreach and engagement. In my time at Pacific Northwest National Laboratory, I have supported projects related to marine renewable energy and wind energy environmental effects, co-locating aquaculture and wave energy as part of the blue economy, water resource management in the Puget Sound, review and synthesis of U.S. marine energy regulations, and permitting for growing macroalgae. Previously, my master's work focused on marine spatial planning and the human dimensions of the marine environment."

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.

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