LEWIS–BURKE ASSOCIATES LLC

TUFTS UPDATE – APRIL 8, 2020
PREPARED BY LEWIS-BURKE ASSOCIATES LLC

Contents

Introduction

This edition of the Tufts Washington Update for early April includes Administration and Agency Updates and Funding Opportunities. Faculty, staff, and researchers are welcome to schedule calls or virtual meetings with the Lewis-Burke Tufts team. When COVID-19 measures are not in effect, faculty, staff, and researchers can also meet with the team when they visit Washington, DC. Contact Amanda Bruno, Lewis-Burke Associates LLC, at amanda@lewis-burke.com with any questions or comments related to the Update's content, for more information on updates and opportunities, or to add a new recipient to the distribution list.

Administration and Agency Updates

Lewis-Burke Analysis of COVID-19 Guidance and Opportunities

Lewis-Burke has compiled a list of Congressional updates, federal guidance, research opportunities, and Administration updates related to the novel coronavirus COVID-19. It is linked below.

Sources and Additional Information:

Lewis-Burke's analysis of COVID-19 guidance and opportunities is available at https://www.lewis-burke.com/sites/default/files/april_6_federal_update_-_covid_guidance_and_opportunities.pdf.

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President Trump signs the *Coronavirus Aid, Relief, and Economic Security* (CARES) Act

On March 27, President Trump signed the *Coronavirus Aid, Relief, and Economic Security* (CARES) Act into law. The bill is the result of several days of intense negotiations between congressional leadership and the Administration. The economic toll of the COVID-19 pandemic is growing, with the largest number of unemployment claims filed in a single week announced on March 26

Much of the more than $2 trillion in spending will go to support unemployment benefits, aid for small businesses, funding for hospitals, and disaster aid to state and local governments, among other efforts. More than $300 billion in funding will go to support federal agencies to address impacts of the pandemic. This includes aid for institutions of higher education and for research related to COVID-19. Federal policymakers have indicated that there will be future stimulus packages to aid in recovery.

Lewis-Burke's analysis of the *CARES Act* is linked below.

Sources and Additional Information:

- Lewis-Burke's analysis of the CARES Act is available at https://www.lewis-burke.com/sites/default/files/policy_update-_coronavirus_aid_relief_and_economic_security_act.pdf.

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USDA Releases Request for Stakeholder Comment for Agriculture Innovation Strategy

On April 1, the U.S. Department of Agriculture (USDA) published a "Solicitation of Input from Stakeholders on Agricultural Innovations" in the Federal Register. This request for input (RFI) follows on the February release of the *Agriculture Innovation Agenda* and is part of its efforts to create a comprehensive agriculture innovation strategy to support USDA's long-term goals to decrease the environmental impact of American agriculture while dramatically increasing yields.

The RFI builds on the 2018 National Academies report, *Science Breakthroughs to Advance Food and Agricultural Research by 2030 (Breakthroughs 2030)* which included recommendations to address agricultural challenges guided by five themes: transdisciplinary and systems approaches to agricultural

research, advanced sensing, data science, gene editing, and microbiome sciences. Using the themes from Breakthroughs 2030, the RFI identifies four innovation clusters from the report that show "broad potential for transformative innovation:

- **"Genome Design**—Utilization of genomics and precision breeding to explore, control, and improve traits of agriculturally important organisms.
- **Digital/Automation**—Deployment of precise, accurate and field-based sensors to collect information in real time in order to visualize changing conditions and respond automatically with interventions that reduce risk of losses and maximize productivity.
- **Prescriptive Intervention**—Application and integration of data sciences, software tools, and systems models to enable advanced analytics for managing the food and agricultural system.
- **Systems Based Farm Management**—Leverage a systems approach in order to understand the nature of interactions among different elements of the food and agricultural system to increase overall efficiency, resilience, and sustainability of farm enterprises."

To support strategic development, the RFI invites stakeholders to answer the following questions:
"1. What agricultural commodity, group of commodities, or customer base does your response pertain to or would benefit?
2. What are the biggest challenges and opportunities to increase productivity and/or decrease environmental footprint that should be addressed in the next 10- to 30-year timeframe?
3. For each opportunity identified, answer the following supplemental questions:
    a. What might be the outcome for the innovation solution (e.g., the physical or tangible product(s) or novel approach) from each of the four innovation clusters?
    b. What are the specific research gaps, regulatory barriers, or other hurdles that need to be addressed to enable eventual application, or further application, of the innovation solution proposed from each of the four innovation clusters?"

USDA will not only use the input collected to shape its strategic efforts but also hopes that this RFI will **"**inform private-sector product development in order to maximize the U.S. Agriculture sector's continued ability to meet future demands." Comments are due August 1, 2020, and should be submitted using the Federal eRulemaking Portal.

Sources and Additional Information:

- The Federal Register posting of the RFI can be found at https://www.federalregister.gov/d/2020-06825.
- The Federal eRulemaking portal for this RFI can be found at http://www.regulations.gov/#!docketDetail;D=USDA-2020-0003.
- The *Agriculture Innovation Agenda* can be found at https://www.usda.gov/sites/default/files/documents/agriculture-innovation-agenda-vision-statement.pdf.
- Lewis-Burke's analysis of the Agriculture Innovation Agenda can be found at https://www.lewis-burke.com/sites/default/files/agency_update_-_usda_releases_agriculture_innovation_agenda.pdf.
- Lewis-Burke's analysis of the *Science Breakthroughs to Advance Food and Agricultural Research by 2030* can be found at https://www.lewis-burke.com/sites/default/files/agency_update-

_nas_report_on_science_breakthroughs_to_advance_food_and_agricultural_research_by_2030_-_july_2018.pdf.

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NASA Advisory Council's Technology, Innovation, and Engineering Committee Highlights Emerging Priorities and Opportunities

On March 19, the National Aeronautics and Space Administration (NASA) Advisory Council's Technology Innovation, and Engineering Committee (NACTIE) met, and their discussion focused on current and emerging priorities of the NASA Space Technology Mission Directorate (STMD) as well as upcoming funding opportunities. Presenters included STMD Associate Administrator Jim Reuter, Lunar Surface Innovation Initiative (LSII) Lead Niki Werkheiser, and Flight Opportunities and Small Spacecraft Technology Program Executive Chris Baker among others. Additional notes from the meeting are below, including information on anticipated upcoming solicitations.

Mr. Reuter provided a broad overview of STMD's budget and priorities, which are becoming increasingly tied to the lunar exploration-focused Artemis program. This was illustrated by his focus on the directorate's "Go, Land, Live, Explore" strategic framework, which prioritizes STMD's investment in technologies for enabling human exploration and settlement of the Moon and use of the lunar surface as a proving ground for capabilities needed for future crewed missions to Mars. One major emerging focus area for STMD is nuclear propulsion, with NASA and the National Academy of Sciences currently pursuing parallel feasibility studies of both nuclear thermal propulsion (NTP) and nuclear electric propulsion (NEP). Some committee members cautioned STMD officials against allowing unconstrained cost growth associated with NTP and NEP to compromise budgets for core programs.

Despite the ongoing shift in STMD's focus toward human exploration, which has traditionally been dominated by large contractors, Mr. Reuter noted that the significant growth to STMD's topline budget has enabled larger investments in programs aimed at universities. LSII is also enabling greater university participation in the Artemis program through its focus on early-stage technology development relevant to lunar exploration. STMD expects to issue solicitations for the following opportunities relevant to universities this year:

- **Lunar Surface Research and Technology (LuSTR)** – As Lewis-Burke previously reported, STMD's recently established Lunar Surface Innovation Consortium (LSIC) will use the new LuSTR opportunity to support university-led, early-stage development of sustainable power, lunar dust mitigation, in-situ resource utilization, and surface excavation and construction among several other lunar exploration-focused technology areas. STMD expects to provide $30 million for LuSTR, with individual awards ranging between $1 million and $2 million over an initial performance period of two years. The first LuSTR solicitation is expected in early summer.
- **NASA Innovative Advanced Concepts (NIAC)** – A NIAC Phase I solicitation is expected in the June-July timeframe, with STMD allocating $4 million for all awards. NIAC focuses on maturing a technology from a basic idea to an experimental proof of concept, which is technology readiness level (TRL)-1 to TRL-3. Proposals for NIAC funding are generally "blue sky" ideas for radical new mission concepts that depend on an enabling new technology. NIAC Phase I awards are typically $100,000.
- **Early Stage Innovations (ESI)** – A solicitation for ESI is expected in the April-July timeframe, with STMD allocating $6 million for all awards. ESI provides two-year grants of no more than

$500,000 to support university-based research aimed at advancing technologies from TRL-1 to TRL-3. Unlike NIAC, ESI solicitations are generally responsive to the recommendations of NASA's Technology Taxonomy, though it is expected that LSII will influence forthcoming solicitations as well.

- **NASA Space Technology Graduate Research Opportunity (NSTGRO)** – The next NSTGRO solicitation is expected between September and November. NSTGRO provides financial and material support to graduate students through training grants and opportunities to conduct research at a NASA Center. STMD expects to provide $19 million for NSTGRO awards in FY 2020**.**
- **Space Technology Research Institutes (STRIs)** – STRI competitions are run every two years, with the next solicitation expected in the May-July timeframe. STRIs are university-led, multi-institutional teams focused on developing technologies for addressing specific technical challenges chosen by NASA (e.g. in-space manufacturing, computational materials design, and human habitation systems). As in previous years, STMD expects to allocate $30 million to support two STRIs, each funded at $15 million over a five-year performance period.
- **SmallSat Technology Partnerships (SSTP)** – SSTP leverages university partnerships to advance small spacecraft capabilities and subsystems from validation in an operational environment to technology demonstration in an operational environment (TRL-3 to TRL-7). STMD expects to provide $3 million for SSTP during the next round of funding, though the next solicitation is not expected until FY 2021.
- **Centennial Challenges** – Centennial Challenges are competitions open to teams comprised of students, faculty, and/or industry researchers. The focus of the competitions varies, though Ms. Werkheiser mentioned that a competition focused on lunar surface power generation is expected in the near future. She did not provide a timeframe. In total, NASA expects to provide $8 million for Centennial Challenges in FY 2020.
- **Flight Opportunities (FO)** – The FO program provides suborbital flights to test new space technologies in relevant environments. The FY 2020 solicitation is currently open, and STMD expects to provide $10 million in total. New this round is that NASA will allow FO paylods to be human-tended.

Sources and Additional Information:

- Presentations are available at https://www.nasa.gov/directorates/spacetech/nac_ti_committee/index.html.

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DOE Releases Request for Information on Connected Communities Funding Opportunity

On March 27, the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) released a Request for Information (RFI) to inform a future $42 million funding opportunity on grid-interactive efficient buildings (GEBs). The RFI seeks input from utilities, industry, academia, and research laboratories. Responses to the RFI (attached and linked above) should be submitted to CCPilotsRFI@ee.doe.gov by **May 12, 2020 at 5:00 PM ET**.

EERE plans to use responses from the RFI to inform topics in the full Connected Communities solicitation which is expected to be released in Summer 2020. EERE plans to provide $42 million to fund up to six regional pilot projects ranging between $3 million to $7 million in the form of cooperative agreements.

The "Connected Communities" funding opportunity, originally announced in February 2020, seeks to demonstrate the ability of a community of efficient buildings to interact with one another and the grid to balance energy loads without compromising cost or efficiency. The ultimate goal of this funding opportunity would be to use regional pilot projects to demonstrate flexible end use equipment to maximize building efficiency and provide "peak demand reduction, reduced capacity and energy needs, and other grid services through demand flexibility", as well as evaluate building technologies in a variety of different climates/grid/regulatory environments.

Sources and Additional Information:

- The Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) released a Request for Information (RFI) is available at https://www.lewis-burke.com/sites/default/files/request_for_information_funding_opportunity_announcement_2206_connected_communities.pdf.
- Additional Information on Grid-Interactive Efficient Buildings is available at https://www.energy.gov/eere/buildings/grid-interactive-efficient-buildings.
- Additional information on the February 2020 "Connected Communities" funding opportunity is available at https://www.energy.gov/eere/articles/new-notice-intent-funding-opportunity-improve-energy-efficiency-and-demand-flexibility.

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Funding Opportunities

Update on NASA's University Leadership Initiative

Please see the report linked below on the National Aeronautics and Space Administration (NASA) University Leadership Initiative (ULI). In preparation for the upcoming ULI competition, which is expected to begin in the next week or two, we wanted to provide some advanced intelligence on future directions for the program and an analysis of existing ULI awards. In addition to reviewing the attached report, interested proposers are encouraged to join the ULI Applicants Workshop currently scheduled for **1:00pm-3:00pm (ET)** on **April 30.**

Established in 2015 within NASA's Aeronautics Research Mission Directorate (ARMD), ULI supports universities or university-led teams conducting research to address specific topics relevant to ARMD's mission while contributing to the long-term health and diversity of the aeronautical workforce. ULI awardees typically pursue multidisciplinary and convergent research and technology development that is high-risk, system-level, and transformational, rather than incremental. ARMD views the ULI program as a mechanism for exploring concepts that are one or two generations removed from the current state of the industry.

Faculty who are interested in pursuing NASA funding for space and aeronautical technology development should be prepared for forthcoming solicitations in ULI as well as the Space Technology Research Institute (STRI) and Lunar Surface Technology Research (LuSTR) programs.

Sources and Additional Information:

- Lewis-Burke's report on the NASA ULI program is available at https://www.lewis-burke.com/sites/default/files/future_funding_opportunity_-_nasa_uli_program.asd.pdf.
- Additional information regarding the ULI Applicants Workshop is available at https://nari.arc.nasa.gov/applicantsworkshop4.

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National Science Foundation Releases Civic Innovation Challenge Solicitation on Mobility and Resilience

On April 7, 2020, the National Science Foundation (NSF), in coordination with the Department of Energy (DOE) Vehicle Technologies Program and the Department of Homeland Securities (DHS) Science and Technology Directorate, released a new solicitation for the Civic Innovation Challenge (CIVIC) program. The CIVIC Program aims to build on the Smart and Connected Communities (S&CC) program by funding projects that can deliver innovations to address community-identified priorities on an accelerated 12-month timeline.

The solicitation identifies two research tracks to be addressed:

- Track A: *Communities and Mobility: Offering Better Mobility Options to Solve the Spatial Mismatch Between Housing Affordability and Jobs*. This track aims to connect job centers to housing areas via affordable transportation and address economic and societal costs of transportation such as extended commutes and inefficient energy usage.
- Track B: *Resilience to Natural Disasters: Equipping Communities for Greater Preparedness and Resilience to Natural Disasters*. This track aims to leverage sensor and decision technologies to help communities prepare for, respond to, and recover from natural disasters such as floods, hurricanes, wildfires, and heatwaves.

Within NSF, the CIVIC competition is supported by NSF's Directorate for Computer and Information Science and Engineering (CISE) and Directorate for Social, Behavioral, and Economic Sciences (SBE). Track A is supported by NSF and DOE. Track B is supported by NSF/CISE and DHS. Interested parties may apply for four-month long "Stage 1" planning grants for pre-development activities, such as finalizing the project team, developing project plans, and preparing for submission of a full proposal. Only awardees of Stage 1 grants will be eligible to apply for "Stage 2" full proposal awards to implement and evaluate their projects.

The solicitation highlights a number of differences between CIVIC and the NSF S&CC program:

- CIVIC asks "communities to identify civic priorities ripe for innovation and then to partner with researchers to address those priorities;"
- CIVIC is focused on research ready to pilot with communities on a short timescale "where real-world impact can be evaluated within 12 months;"
- Community partners are required to be core team members for CIVIC; and
- "CIVIC organizes and fosters 'communities of practice' around high-need problem areas that allow for meaningful knowledge sharing and cross-site collaboration during both pre-development and piloting."

As noted above, core project teams responding to this solicitation should include community partners, such as state and local government officials, non-profit organization representatives, or community advocates, as senior personnel on the application. Awardees will be required to participate in "community of practice" activities led by MetroLab Network[1], including kickoff workshops, showcases of progress, demonstration presentations, and other networking and capacity building activities.

Due Date: Stage 1 proposals are due July 1, 2020. Stage 2 proposals are due March 31, 2021.

Eligibility: There is no limit on the number of proposals per organization. Individuals can only participate as a PI or Co-PI on two Stage 1 proposals and one Stage 2 proposal under this solicitation.

Total Funding and Award Size: NSF plans to award 12 Stage 1 planning grants per track at $50,000 each for four months. NSF further intends to award up to four Stage 2 full proposal grants per track at $1 million each for 12 months. NSF estimates a total of $9 million will be made available under this solicitation.

Sources and additional information:

- The full solicitation is available at https://nsf.gov/pubs/2020/nsf20562/nsf20562.pdf.
- The program page for the CIVIC program is available at https://nsf.gov/funding/pgm_summ.jsp?pims_id=505728.
- The program page for the Smart and Connected Communities program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505364.

NSF Releases Solicitation for National Center for Wireless Spectrum Research (SII-Center)

Building on previous investments in spectrum wireless research, the National Science Foundation (NSF) has released a new crosscutting solicitation for the Spectrum Innovation Initiative: National Center for Wireless Spectrum Research (SII). The SII-Center, intended to be funded at up to $5 million per year over five years, is the first solicitation under the Spectrum Innovation Initiative that was proposed in NSF's fiscal year 2021 budget request. The center will serve as a hub to "develop, innovate and sustain new solutions that enable more efficient use of the electromagnetic spectrum." In addition to conducting sustained spectrum research, the center will also foster scientific collaboration and develop the necessary workforce to ensure US leadership in future wireless technologies, systems, and applications.

Center proposals should demonstrate awareness of ongoing developments in spectrum. In particular, the solicitation highlights the 2019 World Radiocommunications Conference (WRC-19) and numerous Federal Communications Commission activities since 2015. Additionally, proposals should include activities that respond to contemporary questions relevant to spectrum research, innovation, and workforce development. This could include items for study identified for the 2023 World Radiocommunications Conference (WRC-23) and the ongoing activities of the Networking and Information Technology Research and Development Program's Wireless Spectrum Research and Development (WSRD) Interagency Working Group.

[1] https://metrolabnetwork.org/

Specifically, the SII-Center calls for research in the following areas.

- **"Foundations:** Foundational spectrum research will focus on new methods and tools for interference mitigation, fast and accurate signal and image processing techniques, other communication theoretical approaches, medium-access and network protocols, innovative Machine Learning (ML) and/or Artificial Intelligence (AI) techniques tailored for efficient spectrum access and sharing, protection of passive users, the assessment of cumulative effects of electromagnetic (EM) exposure to humans, and socio-economic models.
- **Hardware:** Materials, devices, circuits, manufacturing, and algorithmic innovations that will be needed for large scale deployments of low-cost pervasive systems and/or sensors including reconfigurable and beam forming antennas, tunable filters, amplifiers etc., better control of undesired emissions, receiver technologies to enable tighter packing of applications, and fast, accurate and low-cost wideband RF sensing with high speed and low latency.
- **Networking; software and data:** This dimension focuses on software for managing the sensing data to allow robust and secure access to spectrum, as well as on developing software-defined wireless and network architectures that enable dynamic programmability across all layers of the network protocol stack. It also will focus on collecting and disseminating appropriately labeled datasets and semantic meta-data to help guide validation and assessment at-scale.
- **Security and privacy:** The spectrum research should address security and privacy considerations, and the tools and techniques for spectrum monitoring and enforcement.
- **Test and measurement:** The proposals should include a detailed plan for validation of theoretical models including new proposed designs or techniques. There currently exists a mismatch between theoretical evaluation and system performance in real-life scenarios, due for example to simplified assumptions in propagation models. The SII-Center should leverage existing theoretical models and experimentation platforms and develop new models and platforms as appropriate.
- **Spectrum Management:** Spectrum management encompasses several aspects, both technical and regulatory. Research in this dimension could address improvement in both areas.
- **Economic and social mechanisms:** Methods for allocating scarce spectrum resources across competing uses. Research in this dimension includes work in mechanism design, and may also address issues in regulatory policies."

To support these activities, proposals should include plans to engage with and develop partnerships or arrangements with other universities, colleges, or other institutions, such as national laboratories, private sector research laboratories, federal, state and local government laboratories, and international organizations. Proposals will be reviewed based on how well they advance both foundational and use-inspired research through an integrated and collaborative effort, implement training efforts for a future wireless workforce, and pull together a multidisciplinary group of researchers.

The solicitation will accept two types of proposals:

- SII-Center Planning Grant Proposals: a one-year, $300,000 grant support the development of proposals, NSF intends to award 12 and 15 planning grants during. Researchers are not required to receive a planning grant to submit a full proposal. Additionally, proposers should use planning grants to "develop networking and collaborations among potential partners to conduct

research addressing spectrum-related open questions." These proposals should foster partnerships across academia, industry, government, and non-profits, and clearly describe the organizational structure of the proposed SII-Center.

- SII-Center Proposals: Five-year center proposals that leverage partnerships across a broad array of stakeholders to serve as a national resource "addressing far-reaching spectrum research, innovation, and workforce development challenges." NSF intends to make one SII-Center award funded at up to $5 million per year.

Full proposals for the SII-Center program are due between March 1, 2021 and April 1, 2021 with a required letter of intent due on February 1, 2021. To support the development of proposals, NSF intends to award 12 and 15 planning grants. Researchers are not required to receive a planning grant to submit a full proposal.

NSF is planning several other investments as part of the Spectrum Innovation Initiative, including the development of National Radio Dynamic Zones, which can be used for testing of dynamic spectrum utilization techniques with minimal regulatory burden to speed innovation. NSF plans to leverage existing investments such as the Platforms for Advanced Wireless Research (PAWR) and its major facilities as part of the SII.

Due Date: Full proposals for the SII-Center program are due **between March 1, 2021 and April 1, 2021** with a required letter of intent due on February 1, 2021.

SII-Center Planning Grant Proposals are due by **June 12, 2020.**

Eligibility: There is no limit on the number of proposals per organization. However, individuals may be designated as PI, Co-PI on no more than two SII-Center Planning Grant Proposals to this solicitation. Individuals may be designated as PI, Co-PI on no more than one SII-Center proposal to this solicitation. The PI must be a full-time faculty member or staff member at an institution of higher education, or a member of a non-profit, non-academic organization, and have an established record of leading research teams.

Total Funding and Award Size: NSF anticipates availability of $30 million total funding for the SII-Center program. In FY 2020, NSF intends to award between 12 and 15 planning grants of up to $300,000. In FY 2021, NSF will award one SII-Center award funded at up to $5 million per year for five-years, with a possible five-year renewal.

Sources and Additional Information:

- The full solicitation is available at https://www.nsf.gov/pubs/2020/nsf20557/nsf20557.htm#pgm_intr_txt.
- The program page for the SII-Center program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505788.
- More information on WRC-19 can be found at https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/default.aspx.
- More information on WRC-23 can be found at https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/wrc-23-preliminary-studies.aspx.

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NSF Launches New Program on Sensor Systems for Precision Health

The National Science Foundation (NSF) has released a new cross-agency solicitation, Multimodal Sensor Systems for Precision Health Enabled by Data Harnessing, Artificial Intelligence, and Learning (SenSE). The SenSE program aims to bring together next-generation multimodal sensor systems with new advances in artificial intelligence, machine learning, and mathematical and statistical (AI/ML/MS) methods to process large volumes of health data and enable new diagnostics and personalized treatment.

Specifically, the SenSE solicitation calls for electrical, computer, chemical, biological and mechanical engineers to collaborate with computer science and mathematics researchers on multidisciplinary approaches to sensor-enabled precision health. The solicitation lays out three research themes to be addressed by applications to this program:

1. Design and fabrication of novel multimodal sensor system hardware: Focus on novel functional materials, devices, and circuits for sensing, imaging, communications, and computing. Seeks to enable next-generation sensor systems with continuous monitoring of biomarkers, enhanced reliability and validation, and improved data compatibility and consistency. Specific interests in miniaturized sensor microsystems, sensor systems with reduced power consumption, and synthesis of new biorecognition elements.
2. Integration of multimodal sensor systems with novel AI, ML and MS tools to build new predictive models for learning and decision-making: Focus on leveraging sensor system data, patient health records, laboratory-generated data, clinical trial databases, and existing literature for the detection, diagnosis, management and individualized treatment of diseases. Seeks to develop innovative algorithms to assist with real-time learning and decision-making. Specific interests in data collection, data formatting and processing, data use and patient privacy, and balancing computing and communications.
3. Characterization and validation of multimodal sensor systems for identification of biomarkers for precision health: Focus on identifying reliable biomarkers and minimizing interference of signals, as well as mitigating challenges due to sparse and irregular sampling, noise, or biofouling effects. Seeks to leverage AI/ML/MS methods to identify and quantify the set of biomarkers associated with and most relevant to a specific disease.

Applications to the SenSE program should address all three research themes. The solicitation notes that in future years, these themes may be addressed through a revised Smart and Connected Health program solicitation.

Due Date: Full proposals are due by **June 8, 2020**.

Eligibility: There is no limit on the number of proposals per organization. However, individuals may only be designated as PI or Co-PI on one proposal to this solicitation.

Total Funding and Award Size: NSF anticipates availability of $6.5 million total funding in fiscal year (FY) 2020 to support around eight to 10 awards. Awards will be funded at up to $750,000 for three years.

Sources and Additional Information:

- The full solicitation is available at https://www.nsf.gov/pubs/2020/nsf20556/nsf20556.htm.
- The program page for the SenSE program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505791&org=NSF.
- The program page for the Smart and Connected Health program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504739.

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NSF Releases DCL on Expanding the Network for Geoscience Opportunities for Leadership in Diversity

The National Science Foundation (NSF) has released a Dear Colleague Letter (DCL) with the intent of expanding diversity within the geosciences research community, titled, Geoscience Opportunities for Leadership in Diversity - Expanding the Network (GOLD-EN). The DCL notes that the rate of graduation of PhDs from racial and ethnic groups that have historically been excluded or underrepresented in the geosciences has not improved in four decades. The DCL looks to expand upon the Geoscience Opportunities for Leadership in Diversity (GOLD) program that NSF launched in 2016 that aimed to achieve "greater and more systemic diversity by creating a network of diversity and inclusion 'champions' who can generate greater implementation of evidence-based best practices and resources."

NSF found that there was high interest in the GOLD Program activities, with GOLD conferences in 2017 and 2018 quickly reaching capacity and unable to accommodate the level of interest from the geosciences community. The announcement of the GOLD-EN DCL follows a 2019 analysis of the GOLD program projects that also found that the program had more interest than expected and more demand than could be met with the existing structure.

Through this DCL, NSF seeks to further the impact of the existing GOLD investments, scale up diversity efforts, and advance unique and effective ways to improve diversity and inclusion in the geosciences. In the DCL, NSF suggests that there is no "one size fits all" set of strategies and welcomes a range of approaches to address these issues. The DCL announces opportunities through the following mechanisms, with further details available in the DCL:

1) Supplemental Funding Requests
2) Conference Proposals
3) Early-Concept Grants for Exploratory Research (EAGER) Proposals
4) Research Coordination Networks (RCNs)

This effort to expand diversity in the geosciences is consistent with discussions at NSF Geosciences Advisory Committee meetings as well as NSF's cross-agency priority to broaden participation in science and engineering. Efforts have included the INCLUDES program that has been a top priority for NSF Director France Córdova, whose six-year term leading the agency is coming to a close this year.

Funding: Supplemental Funding Requests must not exceed $100,000. Conference Proposals may be funded up to $100,000 for 12 months. EAGER Proposals have a $300,000 maximum and may last up to 24 months. RCNs have maximum funding of $400,000 and may last up to 48 months.

Due Dates: Funding requests are due **May 18, 2020** and must be received by NSF by 5 pm submitter's local time. The DCL strongly suggests that Principal Investigators reach out to the relevant Program Directors at NSF by May 1, 2020 to discuss funding request ideas before submission.

Sources and Additional Information:

- The Geoscience Opportunities for Leadership in Diversity - Expanding the Network (GOLD-EN) DCL can be found at https://www.nsf.gov/pubs/2020/nsf20058/nsf20058.jsp.
- The program page for the GOLD program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505271.
- More information on the analysis of the NSF-GOLD program can be found at https://cpaess.ucar.edu/gold/reports/advancing-inclusion-geosciences-overview-nsf-gold-program.
- Information on NSF's Broadening Participation portfolio can be found at https://www.nsf.gov/od/broadeningparticipation/bp_portfolio_dynamic.jsp.

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DOT Announces Competition for New Tier 1 UTCs

On March 30, the U.S. Department of Transportation's (DOT) Office of the Assistant Secretary for Research and Technology (OST-R) released a Notice of Funding Opportunity (NOFO) for four new Tier 1 University Transportation Centers (UTCs). The UTC program supports university consortia engaged in multidisciplinary transportation research and is the premier extramural research program at DOT. The solicitation is the result of $5 million in new funding for UTCs provided by appropriators in fiscal year (FY) 2020 and reflects congressional desire to expand opportunities in the highly competitive program.

As outlined in the NOFO, DOT plans to establish a Tier 1 center in each of the following topic areas: 1. Highly Automated Transportation Systems Research 2. Communications Technology and E-Commerce Effects on Travel Demand 3. Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities 4. Strategic Implications of Changing Public Transportation Travel Trends

The "Highly Automated Transportation Systems Research" UTC would be funded at $1.95 million over two years. This UTC would also support a new "Highly Automated Systems Safety Center of Excellence" created by Congress in the FY 2020 appropriations legislation located intramurally at DOT "to review, assess, and validate the safety of highly automated systems across all modes of transportation." The latter three topic areas would receive $1 million over 18 months.

The four Tier 1 UTCs were not included in the 2015 Fixing America's Surface Transportation Act (FAST Act) and are distinct from the 35 UTCs authorized and funded by the law. The FAST Act, which expires at the end of FY 2020, is also likely to be temporarily extended by Congress into FY 2021. Such an extension would delay re-competition of the 35 UTCs to mid-to-late 2021 at the earliest. The duration of the new Tier 1 awards creates an option for Congress to phase them into an expanded UTC program as it works to craft new surface transportation legislation. As such, successful proposals must demonstrate an ability to execute research in the selected topic area within the compressed timeframe.

Proposers must address the following criteria regardless of topic area: Research activities, capability, and resources; leadership; education and workforce development; technology transfer and collaboration; and program efficacy. "Diversity", a standalone criterion in the 2016 UTC competition, is not included in the NOFO. The previous competition required proposers to demonstrate a commitment to broadening participation among women and minorities in the transportation field, and no similar direction is provided in NOFO.

The solicitation also includes two new key considerations that proposers must address relative to the 2016 competition. Applicants should indicate whether they or a member of the consortium are located in a Qualified Opportunity Zone. Created by the Tax Cuts and Jobs Act of 2017, Opportunity Zones describe economically distressed communities where non-government investment is sought in exchange for preferred tax treatment. Another new key consideration is how a center – regardless of the topic area – would benefit rural transportation challenges. Applicants should be cognizant of DOT's growing emphasis on rural transportation issues through its ROUTES Initiative (information on which is included at the links below).

Eligibility: Only non-profit institutions of higher education are eligible to apply, which includes qualifying two-year institutions. Universities that lead a National or Regional UTC, or are members of a Tier 1 UTC consortium, would also be eligible. Institutions that currently lead a Tier 1 UTC are not eligible to apply, however they can join as part of a consortium led by an eligible institution.

Institutional Limit: There is no restriction on the number of proposals an institution can submit in response to the NOFO. DOT will make final award determinations should multiple proposals from an institution merit award.

Cost Sharing: Each of the four Tier 1 UTCs is required to provide a non-federal matching of at least 50 percent of the grant. A breakdown of these amounts by UTC topic area and eligible sources of nonfederal match can be found on pages five and six of the NOFO. Applicants have until the end of the grant to meet the full match requirement amounts.

Proposals are not permitted to include formal letters of match commitment from outside sources, such as state DOTs. Instead, it should be noted in the proposal whether such commitments have been made to the institution.

Deadlines: The submission deadline for the required Letter of Intent is **April 29, 2020**. The deadline for full applications is **May 29, 2020.**

Letters of Support: DOT has indicated that applicants should use the maximum allowable page length to respond to the NOFO's evaluation criteria. Applicants should not include letters of support from local, state, or federal government officials as part of their proposal.

Sources and Additional Information:

- The full Notice of Funding Opportunity is available at https://www.grants.gov/web/grants/view-opportunity.html?oppId=324816.
- More information about the UTC program is available at https://www.transportation.gov/utc/program-history.

- Information about Qualified Opportunity Zones, including links to a current list of eligible communities, is available at https://www.transportation.gov/opportunity-zones.
- Information about DOT's ROUTES Initiative can be found at https://www.transportation.gov/rural.
- The 2016 UTC Notice of Funding Opportunity is available at https://www.transportation.gov/sites/dot.gov/files/docs/UTC%20Competition%20Solicitation%20RFP%202-29-16_1.pdf.

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DOE Announces $4.5 million for Distributed Energy Resources Education & Training Materials

On April 6, the Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) announced $4.5 million in funding to provide workforce development and training resources for professionals in fields newly interacting with and adopting distributed energy resources (DER). The Educational Materials for Professional Organizations Working on Efficiency and Renewable Energy Developments (EMPOWERED) program seeks to create and integrate educational resources for fields adopting rapidly advancing distributed energy technologies such as distributed solar, electric vehicles, and energy efficient buildings. Specifically, the EMPOWERED program is seeking proposals in two topic areas that would benefit new users on the front lines of DER adoption: Emergency Response and Resilience Training; and Safe DER Building Integration: Building, Fire, and Safety Department Officials.

The EMPOWERED program is jointly funded through the Solar Energy Technologies Office (SETO), Building Technologies Office (BTO), and Vehicle Technologies Office (VTO). Approximately $4.5 million of federal funding is available, with up to two awards in each topic area ranging between $1 million and $2.25 million. The submission deadline for concept papers is **May 5, 2020 at 5:00 PM ET**. The submission deadline for full applications is **July 8, 2020 at 5:00 PM ET**.

Sources and Additional Information:

- The DOE Office of Energy Efficiency and Renewable Energy announcement of the funding opportunity is available at https://www.energy.gov/eere/solar/funding-opportunity-announcement-education-materials-professional-organizations-working.
- The full solicitation can be found at https://eere-exchange.energy.gov/FileContent.aspx?FileID=316f4481-49dc-46c8-a99d-d7a227b071bb.

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DOE Issues Solicitation for Research in FAIR Data and Models to Support AI Research

The U.S. Department of Energy (DOE) Office of Advanced Scientific Computing Research (ASCR) has issued an $8.5 million Funding Opportunity Announcement (FOA) to advance findable, accessible, interoperable, and reusable (FAIR) research data and artificial intelligence (AI) models. Specifically, the FOA is seeking proposals in the following two categories:

- **FAIR Benchmark Data** – ASCR intends to support research that would make scientific data publicly available to the AI research community, thereby strengthening efforts to develop algorithms, tools, and techniques capable of exploiting data to derive scientific value.

- **FAIR Frameworks for Data and AI Models** – ASCR is seeking to support research that will lead to the development of theoretical frameworks that improve relationship between data and models. The FOA notes that proposals may focus on "specific disciplines or sub-disciplines" being explored by the six programs offices within the Office of Science, or in "particular aspects or sub-areas of AI."

These topics directly reflect the contents of the March 2020 *AI for Science* report which Lewis-Burke analyzed in an earlier summary included below. In particular, Chapter 12: Data Life Cycle and Infrastructure, identifies two grand challenges relevant to this FOA: "Automate the large-scale creation of FAIR scientific data"; and "Integrate data and theory to create converged knowledge repositories". This is the first call to be issued in this area, though these topics are expected to be an ongoing priority for DOE as FAIR data becomes increasingly important to driving advances in AI.

Award Information: ASCR intends to provide a total of $8.5 million to support between three and seven cooperative agreements awarded under this FOA and its companion National Laboratory Announcement (NLA). Award size will range between $150,000 and $750,000 over a two- or three-year performance period.

Eligibility: This FOA is open to all applicants with the exception of Federally Funded Research and Development Center (FFRDC) contractors. National Laboratories may apply through the companion NLA. Institutions are limited to submitting three proposals for each principal investigator.

Important Deadlines:

FOA Issue Date:	**April 2, 2020**
Submission Deadline for Letters of Intent:	**April 17, 2020 at 5:00 PM Eastern Time** **A Letter of Intent is required**
Submission Deadline for Applications:	**May 15, 2020 at 5:00 PM Eastern Time**

Sources and Additional Information:

- The full FOA is available at https://science.osti.gov/-/media/grants/pdf/foas/2020/SC_FOA_0002306.pdf.
- The *AI for Science* report is available at https://anl.app.box.com/s/f7m53y8beml6hs270h4yzh9l6cnmukph.

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DOE Issues Solicitations for Basic and Applied Research in Direct Air Capture

The U.S. Department of Energy (DOE) plans to provide $22 million to support research and development in direct air capture (DAC). This funding will be divided between the Office of Science (SC) and the Office of Fossil Energy (FE), which have issued individual solicitations worth $12 million and $10 million, respectively. Additional details on both competitions follows below.

These funding calls are consistent with congressional guidance in the final FY 2020 Energy and Water Appropriations bill. For the first time, Congress appropriated funding for research and development of

negative emissions technologies, including DAC. The final bill provided "not less than $20,000,000 for research and development of negative emissions technologies, including not less than $10,000,000 for [DAC]" for the Office of Fossil Energy and "not less than $20,000,000 in Basic Energy Sciences and Biological and Environmental Research for research and development of negative emissions technologies, including not less than $5,000,000 for [DAC]" in the Office of Science.

Congress provided specific guidance and funding in response to the October 2018 National Academies of Sciences, Engineering, and Medicine (NASEM) report, **Negative Emissions Technologies and Reliable Sequestration: A Research Agenda**, which examined the state of carbon removal technology and recommended that the federal government triple investments to at least $8 billion over the next decade in carbon removal-related research, development, and demonstration projects. This was then followed by another joint report from the Bipartisan Policy Center and Energy Futures Initiative which found that historical federal investments in carbon removal technologies are falling far short of the funding levels NASEM recommended to drive technology advances to meet international emissions reduction targets and avoid the worst effects of climate change.

Office of Science

The SC Office of Basic Energy Sciences (BES) has issued a national lab funding solicitation calling for foundational materials and chemical sciences research "at the electronic, molecular, and atomic levels" relevant to direct air capture of carbon dioxide. National labs are strongly encouraged to partner with research universities in multi-disciplinary teams. Specifically, successful proposals will center on the following topic areas:

- Designing High Selectivity, Capacity, and Throughput Separations
- Data Science Driven Synthesis and Assembly of Materials for Direct Air Capture
- Understanding Temporal Changes that Occur during Separations

BES intends that research funded under this solicitation will be both experimental and computational in nature. Further, it is expected that these efforts will be executed synergistically with those being supported by FE (additional details below) and the Flexible Carbon Capture Storage (FLECCS) program at the Advanced Research Projects Agency-Energy (ARPA-E). DOE views this provision as being critical to supporting a more seamless transition between foundational research and technology development.

Eligibility: Only National Laboratories may submit proposals as the lead organization. However, the solicitation explicitly encourages proposals featuring multi-institutional teams from universities and other external organizations.

Award Information: BES expects to provide $4 million in FY 2020 with a total of $12 million over three years for between three and five awards ranging in size from $750,000 to $1.5 million annually.

Deadlines: Proposals must be submitted by **May 11, 2020**.

Sources and Additional Information:

- The full solicitation is available at https://science.osti.gov/-/media/grants/pdf/lab-announcements/2020/LAB_20-2303.pdf.

Office of Fossil Energy

Following on the basic research-focused solicitation released by BES, FE is seeking proposals for applied research on DAC technologies across two Areas of Interest (AOI). These include the following:

- Development of Novel Materials for Direct Capture of CO_2 – Specific materials of interest include, but are not limited to, solvents, membranes, and sorbents, with proposed research activities centering on "proof-of-concept and validation in laboratory environment."
- Field Testing of Direct Air Capture – For this AOI, research should focus on testing "existing DAC materials in integrated field units that capture CO_2 and produce a concentrated CO_2 stream of at least 95% purity." The solicitation defines success in this AOI as achieving a technology readiness level of 5 (system validation in a relevant environment).

Eligibility: Academic institutions, private companies, or other external entities are eligible to apply as the prime award recipient. DOE National Laboratories and other Federally Funded Research and Development Centers may only apply as subrecipients.

Award Information: FE intends to provide $10 million for awards funded under this solicitation, with the total divided evenly between the two AOIs. FE will provide up to 80 percent of the award value, with recipients being expected to provide a cost share of 20 percent. For AOI-1, FE will provide no more than $800,000 for up to seven awards each over a performance period of 12-18 months. For AOI-2, FE will provide no more than $2.5 million for up to two awards each over a performance period of three years.

Deadlines: Proposals must be submitted by **May 29, 2020**.

Sources and Additional Information:

- The full solicitation is available at https://www.fedconnect.net/FedConnect/default.aspx?ReturnUrl=%2fFedConnect%2f%3fdoc%3dDE-FOA-0002188%26agency%3dDOE&doc=DE-FOA-0002188&agency=DOE.
- The NASEM report, "**Negative Emissions Technologies and Reliable Sequestration: A Research Agenda," is available at** https://www.nap.edu/catalog/25259/negative-emissions-technologies-and-reliable-sequestration-a-research-agenda.
- The joint Bipartisan Policy Center and Energy Futures Initiative report, "Carbon Removal: Comparing Historical Federal Research Investments with the National Academies' Recommended Future Funding Levels" is available at https://bipartisanpolicy.org/report/carbon-removal-comparing-historical-federal-research-investments-with-the-national-academies-recommended-future-funding-levels/.

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AFOSR Releases FY 2021 Young Investigator Program (YIP) BAA

The Air Force Office of Scientific Research (AFOSR) released its fiscal year (FY) 2021 broad agency announcement (BAA) for the Young Investigator Program (YIP). This popular program, which is also offered by other Department of Defense (DOD) branches such as the Army Research Office (ARO) and the Office of Naval Research (ONR), provides early career university faculty a path into the Air Force's research enterprise through multi-year research grants. With this program, AFOSR identifies promising

young tenure-track faculty who demonstrate the ability to deliver innovative research aligned with AFOSR's research priorities.

Proposals should address research interests outlined in AFOSR's general BAA. Proposals may be submitted for only one research area. AFOSR's four general research interests are:

1. Engineering and Complex Systems (RTA1)
2. Information and Networks (RTA2)
3. Physical Sciences (RTB1)
4. Chemistry and Biological Sciences (RTB2)

Due Dates: Pre-proposal inquiries and questions are due no later than **April 14, 2020**. White papers, which are strongly encouraged, are due no later than **May 14, 2020**. Proposals should be submitted no later than **July 14, 2020 at 11:59 PM EST.** Applicants are strongly encouraged to contact the program officer in their technical area to discuss their research ideas before submitting a proposal. The projected YIP award start date is **January 1, 2021** but is determined at the time of the award.

Total Funding and Award Size: Individual awards will be funded at a maximum of $450,000 for a three-year base period, with a limit of $150,000 funding annually. AFOSR anticipates making 36 awards in the form of grants, cooperative agreements, or contracts.

Eligibility and Limitations: This BAA is open to faculty who have received their PhD on or after April 1, 2013. U.S. institutions of higher education, U.S. nonprofit research organizations, industrial laboratories, and for-profit businesses may submit proposals. Note that AFOSR makes awards to institutions, not individuals. Additional eligibility and submission instructions can be found in the full BAA.

Sources and Additional Information:

- The full FOA is available at www.grants.gov under solicitation number "FOA-AFRL-AFOSR-2020-0003."
- A complete list of AFOSR research interests and program officers can be found at www.grants.gov under solicitation number "FA9550-19-S-0003."

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DOD Announces Newton Award for Transformative Ideas During the COVID-19 Pandemic

The Basic Research Office within the Office of the Under Secretary of Defense for Research and Engineering announced a one-time Funding Opportunity Announcement (FOA) on April 3 for the "Newton Award for Transformative Ideas during the COVID-19 Pandemic." The new award is intended to "help stimulate scientific thought and encourage efforts and advancements in the spirit of Sir Isaac [Newton]," who had developed the basis for calculus and foundational theories in gravitation, motion, and optics during the period of isolation prompted by the Great Plague of London from 1665 to 1666.

The Newton Award will be presented to individual investigators or teams of up to two investigators to develop a "transformative idea" to resolve challenges, advance frontiers, and set new paradigms in

areas of immense potential benefit to the Department of Defense (DOD) and the nation at large. Proposed research does not have to related to the COVID-19 pandemic. DOD notes that proposals should aim to "produce novel conceptual frameworks or theory-based approaches that present disruptive ways of thinking about fundamental scientific problems that have evaded resolution, propose new, paradigm-shifting scientific directions, and/or address fundamental and important questions that are argued to be undervalued by the scientific community." Suggested approaches include analytical reasoning, calculations, simulations, and thought experiments, but due to current restrictions on in-laboratory research across the country during the COVID-19 pandemic, DOD requires that all supporting data should be generated without the use of laboratory-based experimentation or instrumentation.

Findings must be submitted as pre-publication material in open archives and disseminated through open publication in a journal. Award winners will brief the Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E)) leadership at the end of the award period of performance, and may be asked to design and chair a DOD Future Directions Workshop on the topic of their findings. In addition, OUSD(R&E) will support winners with successful projects in finding pathways to continue the funding of their transformative ideas.

DOD anticipates that a total of $500,000 will be available for up to 10 awards. Individual awards will be funded at up to $50,000 for a single investigator and $100,000 for a two-person team. The opportunity is open to affiliated researchers at degree-issuing institutions of higher education accredited in, and having a campus located in the United States, its territories, and possessions. Proposals are due by **May 15, 2020 at 4:00 p.m. ET**, and the six-month period of performance is expected to start on June 30, 2020.

Sources and Additional Information:

- More information is available at www.grants.gov under "BRO-20-NEWTON" or at https://www.grants.gov/web/grants/view-opportunity.html?oppId=326034.

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USMA Releases BAA on Research Topics Related to Army Technologies

The U.S. Military Academy (USMA) released a broad agency announcement (BAA) April 1 seeking research proposals than can enable new and significant improvements to Army capabilities and technologies. White papers are expected to focus on basic knowledge and understanding of research topics rather than specific devices or components. The BAA includes topics of interest to the USMA departments, directorate, and research centers and institutes.

White papers are encouraged to address the following research topics identified by USMA as they relate to Army technologies and operational capabilities:

- Socio-Cultural;
- Information Technology;
- Ballistics, Weapons, and Protections;
- Energy and Sustainability;
- Materials, Measurements, and Facilities;
- Unmanned Systems and Space;

- Human Support Systems; and
- Artificial Intelligence, Machine Learning, and Quantum Technologies.

Additional subtopics can be found in the full BAA. Although USMA funds are limited, this BAA presents a unique opportunity to better understand problems and challenges of interest to the Army and build relationships with current and future Army leaders. Applicants are highly encouraged to contact the research topic's Technical Point of Contact (listed in the full BAA) before submitting white papers. Higher education institutions, state and local governments, nonprofit organizations, foreign organizations, foreign public entities, and for-profit organizations are eligible to apply. The Army also encourages Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MSI) to apply or participate as part of a consortium proposal. This BAA is a continuously open announcement and will be closed **March 31, 2025**.

Sources and Additional Information:

- The full BAA can be found on www.grants.gov under solicitation number "W911NF-20-S-0008."

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DARPA BTO Releases BAA on Advanced Acclimation and Protection Tool for Environmental Readiness (ADAPTER)

The Defense Advanced Research Projects Agency (DARPA) Biological Technologies Office (BTO) released a broad agency announcement (BAA) on April 2 for its Advanced Acclimation and Protection Tool for Environmental Readiness (ADAPTER) program. The ADAPTER program aims to develop bioelectronic travel adapters for the human body that would provide warfighters control over their own physiology. Proposals should focus on the development of "hybrid technology" (bioelectronics and synthetic biology) and "enable revolutionary advances in science, devices, or systems." Proposals should only address one application track (Circadian Rhythm Management or Decontamination) and should address both of the BAA's technical areas (TAs), which can be found in the full BAA.

DARPA anticipates making multiple awards. Abstracts are strongly encouraged and are due **April 29, 2020 at 4:00 PM ET**. Full proposals are due **June 18, 2020 at 4:00 PM ET**. Additionally, DARPA will host a Proposers Day webinar in support of the ADAPTER program **April 15, 2020** to provide further information to potential proposers. Interested applicants must apply to participate in the Proposers Day by **April 10, 2020 at 12:00 ET**.

Sources and Additional Information:

- Registration for the Proposers' Day webinar is available at https://events.sa-meetings.com/ehome/index.php?eventid=531650&.
- The full BAA and more information on the Proposers' Day can be found on www.grants.gov under solicitation number "HR001120S0041."

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DOD U.S. Army Contracting Command Releases FOA for STEM Educational Outreach Programs

The Department of Defense (DOD) U.S. Army Contracting Command released on April 2 a funding opportunity announcement (FOA) for Science, Technology, Engineering, and Mathematics (STEM)

Educational Outreach Programs. The FOA is seeking applicants that can engage and improve STEM skills in grades K-12 and beyond to increase STEM professional development to meet long-term national defense needs. Specifically, applicants should be able to provide "in person training, support, assessment, and evaluation services sponsored by the DOD and other federal agencies in partnership with local DoD laboratories, STEM education organizations, professional societies, and local education activities." DOD aims to carry out the following STEM activities through this FOA:

- "STEM K-12 Plus events, such as activities, scholastic competitions, academic contests, in person educator training workshops, evaluation projects, in person training at various national locations, and other STEM activities;
- STEM faculty events, such as activities, in person educator training workshops, evaluation projects, in person training at various national locations and other STEM activities;
- Materials, supplies, equipment for local curricular and extracurricular outreach STEM activities;
- Logistical support for sponsored local STEM events, such as workshops, training, and follow-up activities (to include the conduct of surveys, interviews, etc. on the local STEM events);
- Recognition of participation/achievement to include monetary awards, certificates, and/or prizes for faculty/students who participate in or facilitate STEM events; and
- Stipends for faculty, staff, and interns to facilitate the STEM events."

DOD anticipates issuing one award of $25 million for a performance period of 5 years. Only institutions of higher education and and U.S. non-profit organizations are eligible to apply. Applications are due on **May 18, 2020 at 4:00pm ET** and should be submitted through www.grants.gov. Of note, this FOA was previously posted in February but taken down shortly thereafter and has since been re-released.

Sources and Additional Information:

- The full FOA can be found at www.grants.gov under solicitation number "W15QKN-20-R- 0ANX."

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Army Seeks Solutions for Scalable Power, Vehicle Materials at AUSA Innovation Combine

On March 9, the Department of Defense (DOD) Department of the Army published a special notice for U.S. based companies or organizations to participate in the "Innovation Combine" at the Association of the United States Army (AUSA) Futures Conference. The Innovation Combine will be held on June 24, 2020 in Austin, TX and is an opportunity for entities to collaborate with the Army and earn prize money for addressing important Army research thrusts. Specifically, the Army seeks solutions within two topic areas at the Combine:

- **Scalable power and energy solutions** to assist with the Army's need for "lighter, energy dense, safe rechargeable batteries" with the potential for "on the move" charging; and
- **Novel materials for weight reduction and survivability** to enable the Army's need for affordable Vehicle materials "that are resilient to high loading rate events" and can absorb large amounts of energy.

The competition will feature three phases, including a request for white papers, request for prototype proposals, and final presentations. Prize money for selected participants will be awarded through the

Army xTech Vector Program. Funding opportunities will be available through the Ground Vehicle Systems Other Transaction Agreement. White papers (phase one) are due by **April 15, 2020**, and the Army may select up to 28 winners to advance to prototype proposals (phase two.)

Sources and Additional Information:

- The Ground Systems Other Transaction Agreement is available at https://beta.sam.gov/opp/056f133e2e9ea1b203d86ed4a6d45627/view?keywords=W15QKN-14-9-1002&sort=-relevance&index=&is_active=true&page=1.
- Registration for the Combine is available at https://usg.valideval.com/teams/innovation_combine/signup.
- The full special notice detailing the response process can be found at https://beta.sam.gov/opp/839590ce73ac4831951908a47ba008a3/view.

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NOAA Releases Earth Prediction Innovation Center (EPIC) Solicitation

The National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR) and the Office of Weather and Air Quality (OWAQ) have released a request for proposals (RFP) for an Earth Prediction Innovation Center (EPIC). EPIC is central to NOAA's charge to assert the United States' role as a global leader in weather modeling and forecasting. As such, NOAA intends for this center to advance the science and engineering needed to create the "world's most accurate and reliable operational weather forecast model." Its creation can be traced to the *Weather Research and Forecasting Innovation Act of 2017* (P.L. 115-25) that directed NOAA to improve numerical weather prediction and forecasting and the *National Integrated Drought Information System Reauthorization Act of 2018* (P.L. 115-423) that authorized EPIC and outlined the congressional vision for the Center. The Trump Administration also called for improved earth system prediction capabilities in the fiscal year (FY) 2021 Research and Development Budget Priorities Memorandum.

EPIC is intended to increase collaboration across the United States' "weather enterprise," including federal agencies, the private sector, and academia. This collaboration would result in advanced cloud computing-based weather modeling and improvements to the Unified Forecast System (UFS), a community earth system model. The UFS currently supports a wide range of weather prediction services including short and medium range weather, hurricane, space weather, and coastal storm prediction as well as the tracking of air quality patterns.

The Draft Strategic Plan and Governance Principles for EPIC were released three days before the RFP and address the structure, objectives, and outcomes of the program. The Center's success will be determined by its ability to coordinate existing expertise and models into a functioning hub for weather and earth systems prediction in addition to increasing the capabilities of current models.

The establishment of EPIC will be conducted in phases over the award term. Two of these phases have been outlined in the Draft EPIC Strategic Plan:

- Phase 1 (1-2 years) will consist of improving the UFS by incorporating work from the external research and modeling enterprise and establishing software infrastructure for coordination;

- Phase 2 (3-5 years) will expand earth system modeling using tools such as convective allowing (high resolution) models and fully coupled forecast systems. The expansion of these tools includes user support and any necessary software infrastructure improvements. This phase will also address a key aim of EPIC, which is to transition research advancements into operational modeling and forecasting improvements.

While future phases have not been described in the Strategic Plan, it is likely that EPIC will remain a long term priority.

A successful awardee will be expected to continuously offer observational data and tools, a code repository, and a cloud development environment. Applicants should also demonstrate the capability to serve as a national organizer of weather and prediction models by engaging with community members and offering support whenever necessary.

Deadline: Applications are due on **May 11, 2020**.

Award Information: Only one award will be granted totaling no more than $45 million. The award will be an Indefinite-Delivery Indefinite Quantity (IDIQ) Contract and the Period of Performance will include a five-year ordering period.

Eligibility: The RFP does not constrain eligibility and notes that NOAA will execute a full and open competition.

Sources and Additional Information:

- The full solicitation is available at https://beta.sam.gov/opp/6b54b55cc282464597320df962b2740f/view, and additional details are particularly outlined in the Statement of Objective available at https://beta.sam.gov/api/prod/opps/v3/opportunities/resources/files/e9ec9e3f2d684fe8a50f65f2b350af6e.
- The solicitation synopsis can be found at https://beta.sam.gov/api/prod/opps/v3/opportunities/resources/files/eac30b7d49d845809472659bf6ab56cb/download?api_key=null&token=.
- The Draft EPIC Strategic plan is available at https://owaq.noaa.gov/EPIC-Strategic-Plan-2020.
- A draft of EPIC's Governance Principles can be found at https://owaq.noaa.gov/Portals/0/Draft%20EPIC%20Governance%20Principles%202020-0319.pdf?ver=2020-03-20-094702-973.
- Frequently asked questions are addressed by NOAA at https://owaq.noaa.gov/EPIC-FAQs.
- The *Weather Research and Forecasting Innovation Act of 2017* (P.L. 115-25) can be found at https://www.congress.gov/115/plaws/publ25/PLAW-115publ25.pdf.
- The *National Integrated Drought Information System Reauthorization Act of 2018* (P.L. 115-423) can be found at https://www.congress.gov/bill/115th-congress/senate-bill/2200
- The President's Fiscal Year 2021 Administration Research and Development Budget Priorities document is available at https://www.whitehouse.gov/wp-content/uploads/2019/08/FY-21-RD-Budget-Priorities.pdf.

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