

Federal Funding Outlook and Opportunities

Lewis-Burke Associates LLC
September 11, 2019

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

About Lewis-Burke

- Founded in 1992; located in Washington, DC
- In 2019, twenty-eight policy experts with range of expertise/backgrounds allow multi-layered issue teams with deep expertise in agencies and scientific/higher education areas
- Support federal relations activities to develop and implement federal strategies to pursue, shape, and create new sources of funding to increase and diversify research portfolio
- Able to engage on multiple levels:
 - Individual faculty (including early career faculty)
 - Teams of faculty
 - Associate Deans for Research
 - Deans and Center Directors
 - University leadership and campus-wide priorities/activities

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

SLU/Lewis-Burke Relationship

- Began working with SLU in July 2017
- Lewis-Burke works with the VPR office and the Medical School Dean's office to advise on strategic research development priorities
 - Work as a team with Ken Olliff, Vice President for Research and Jasmin Patel, Assistant Vice President for Research Development
 - Jasmin Patel serves as the liaison and primary point of contact for us on campus
- Work together with leadership to identify opportunities, support faculty, and develop strategies
- Lewis-Burke supports efforts by providing a suite of services to facilitate SLU's engagement with federal research funding agencies

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Types of Activities

Lewis-Burke can provide:

- Strategies for current program/projects to succeed in challenging and changing political environment
- Actionable intelligence on new and emerging federal priorities
- Foster relationships with federal scientists and program officials (e.g. coordinate trips to Washington for faculty to meet with agency and administration targets)
- Support for early career faculty and professional development
- Advice on research portfolio diversification
- Provide high-level surveys of federal funding trends to better understand agency priorities and the political landscape (e.g. as SLU assesses new areas for faculty recruiting or “big bets”)
- In-depth analysis of new funding opportunities

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Best Practices for Working Together

- Highly iterative relationship—engage regularly and keep up updated on what's happening on campus—the more we know about your research priorities, the more we can tailor intelligence and identify opportunities
 - Regular calls, communications, and campus visits
- Involve us early in strategic thinking—we can assess federal funding, competition, opportunities for growth
- Match us with groups that are eager, interested, and open minded
- Tell us when you are coming to DC—we can meet with you and/or set up meetings
- Provide services to SLU without a limit or cap on interactions

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Political Landscape

Federal S&T enterprise has enjoyed significant funding increases in recent years

- Consecutive bipartisan budget agreements enabled historic funding increases for research agencies in FY 2018-19 and moderate increases in FY 2020
- Trump Administration has identified priorities in artificial intelligence (AI), quantum, engineering biology, opioids, and STEM education and workforce development
 - OSTP Director Kelvin Droegemeier views universities as key stakeholders in U.S. innovation ecosystem

BUT challenges and vulnerabilities remain on the horizon

- 2020 presidential election is 15 months away—issues surrounding universities part of larger debates
- Congress and federal agencies taking actions to prevent foreign influence, protect intellectual property
 - Additional immigration and visa threats emerging or expected; increased reporting and disclosure rules
- Personnel shakeup continues to undermine federal agencies
 - Loss of career staff reduces capacity and responsiveness with lasting effects
 - Continued attempts to dismantle regulatory agencies
- Despite FY 2020 budget agreement and progress on appropriations, shutdown possibility still looms as end of fiscal year approaches

LEWIS–BURKE

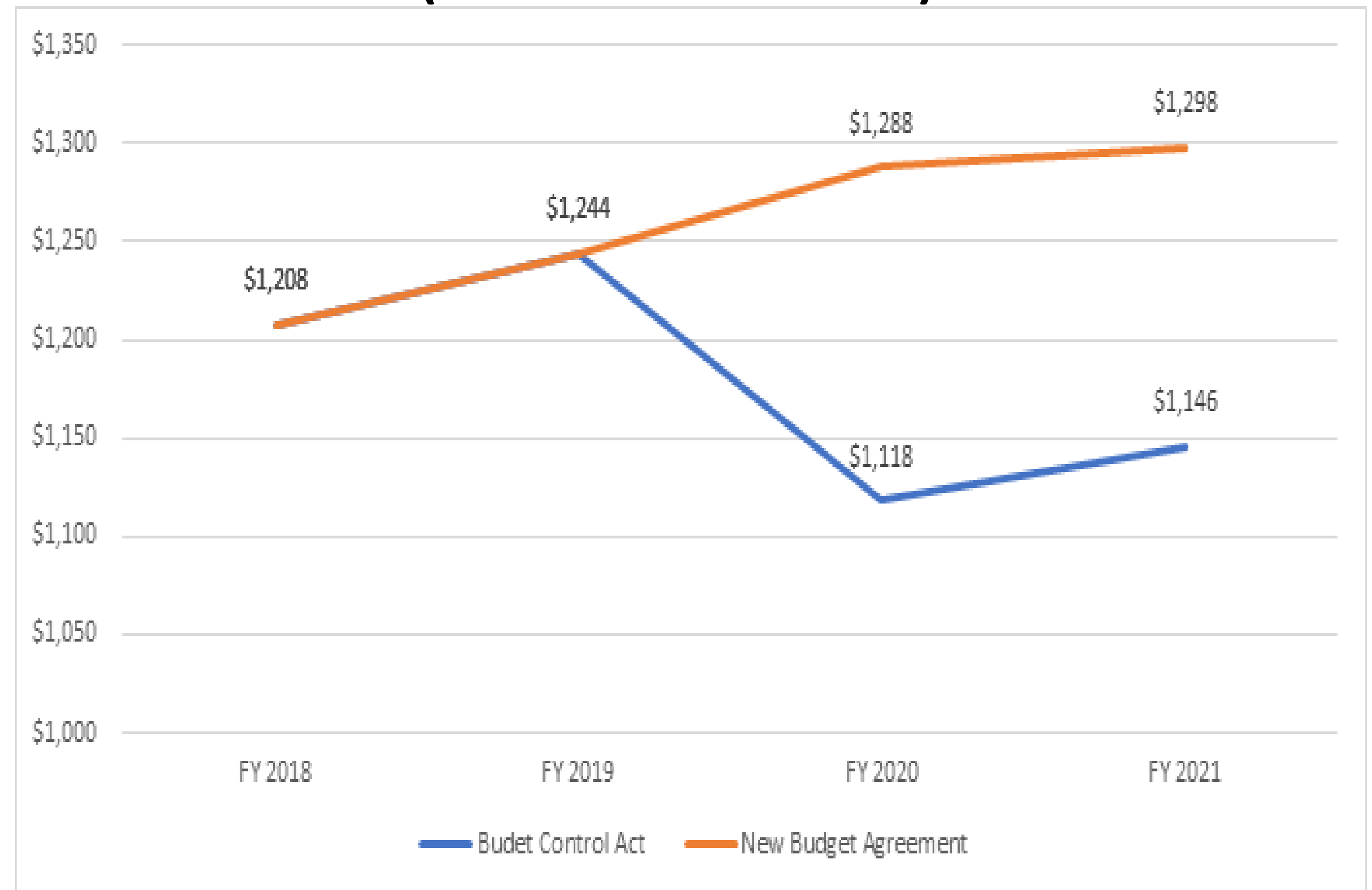
ASSOCIATES LLC

www.lewis-burke.com

Federal Funding Outlook

- New two-year bipartisan budget agreement raises discretionary spending by \$321 billion in FY 2020 and FY 2021
 - Avoids a \$126 billion cut in discretionary spending in FY 2020 compared to FY 2019 funding levels
 - Creates a path for Congress to complete FY 2020 spending bills
 - Likely outcome:
 - Some federal agencies will see boost in funding (NIH, DOE)
 - Others may see partial or full year Continuing Resolution at FY 2019 funding levels (NSF, NASA)

Comparison of Discretionary Spending between the Budget Control Act and the New Budget Agreement (in billions of dollars)



FY 2021 OSTP/OMB Priority Memo

Trump Administration Priorities in Science and Technology

While the FY 2020 president's budget request proposes significant cuts to science and technology programs across the federal government, increased investments are proposed in top research and development priorities, including:

- quantum information science,
- artificial intelligence and machine learning,
 - strategic computing,
 - autonomous systems,
- genomics and engineered biology,
- next-generation microelectronics,
 - space exploration, and
 - precision agriculture.

LEWIS-BURKE

ASSOCIATES LLC

Memo expands on FY 2020 priorities with an emphasis on a **"Second Bold Era in S&T"**: transformational leaps in science; grand challenges; free from unnecessary admin burdens

R&D Priority Areas

– **Security of the American People**

- Military capabilities – Nuclear and Space
- **NEW** focus on critical minerals
- Critical infrastructure resilience & semiconductors

– **Industries of the Future**

- AI, quantum science and computing
- Advanced communications and autonomy, including civil supersonic aircraft
- Advanced manufacturing

– **NEW Earth and Environmental Leadership**

- Nuclear energy R&D
- Oceans
- Earth systems predictability

– **Expanded Health and Bioeconomic Innovation**

- Biomedicine
- Veteran Health
- **NEW** Bioeconomy - advancing biotechnology

– **Space Exploration & Commercialization**

Cross-Cutting Priorities

- Educating and Training a Workforce for the 21st Century Economy – build R&D capacity in HBCU/MSI institutions
- **NEW**: Research environments that reflect American values
- **NEW**: Leveraging the power of data
- **NEW**: High Risk High Reward research
- Expand multi-sector partnerships

www.lewis-burke.com

New or Expanded Areas on the Horizon

- AI/Machine Learning
 - Ethics and bias
 - Workforce
 - Research
 - Healthcare (records, treatment, diagnosis)
- Autonomous systems
- Synthetic Biology / Engineered Biology
- Imaging
- 4D printing
- 5G Wireless
- Future of computing – edge, neuromorphic hardware
- Education technology
- Workforce agenda
 - Apprenticeships
 - Community colleges
- Aging (neuroscience to healthcare services)
- Mental Health
 - School safety and campus culture
- Diversity/Title IX/Harassment/Assault/Free Speech
- Social and Behavioral + X (relevance)
- Humanities / dialogue / democracy
- Intellectual property
- China (foreign influence in R&D ecosystem)

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com



Snapshot of Agency Priorities

LEWIS-BURKE
ASSOCIATES LLC

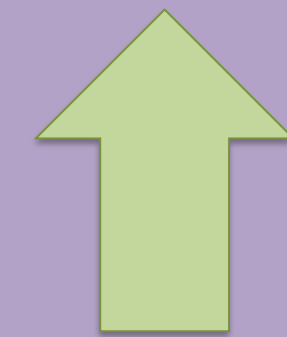
www.lewis-burke.com

National Institutes of Health



National Institutes
of Health

Funding Outlook: The House would fund NIH at \$41.1 billion in FY 2020; agency on track for a fifth consecutive increase; strong bipartisan support but may be reaching a growth limit



Areas of trans-agency focus:

- Aging and Alzheimer's Disease
- Opioids, addiction, pain management
- BRAIN Initiative
- Precision Medicine ("*All of Us*")
- Ending sexual harassment in science
- Combating foreign influence

Emerging Trends:

- "AI + X"—leveraging AI/ML to address programmatic priorities
- Next Generation Researchers Initiative (NGRI) —support for "at risk" investigators
- Favoring collaborative funding mechanisms (U awards) over program projects

Future Award opportunities:

- Research facilities and construction (C06)
- COEs on environmental health disparities
- Emerging COEs in genomic sciences
- Conte Centers for translational neuroscience and mental health
- Administrative supplements in areas of emphasis (e.g. opioids; aging; AI/ML)






LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Health and Human Services – Other

HHS agencies have received funding increases to address the opioid crisis, Alzheimer’s Disease, and other Administration and congressional priorities.

Agency	Mission/Focus Areas	Current Priorities	Funding Outlook
Health Resources and Services Administration (HRSA)	<ul style="list-style-type: none"> • Workforce Education/Training • Access to Care • Community Health • Health Disparities 	<ul style="list-style-type: none"> • Rural Health/Workforce • Maternal Health • Opioid Epidemic • Aging/Alzheimer’s Workforce 	
Agency for Healthcare Research and Quality (AHRQ)	<ul style="list-style-type: none"> • Healthcare Delivery • Safety and Quality Research • Best Practices/Evidence Base 	<ul style="list-style-type: none"> • Data/Predictive Analytics • Diagnostics/Diagnosis • Hospital-Acquired Infections 	
Substance Abuse and Mental Health Services Administration (SAMHSA)	<ul style="list-style-type: none"> • Behavioral Health • Substance Use Disorder (SUD) Prevention and Treatment 	<ul style="list-style-type: none"> • Opioid Epidemic • Serious Mental Illness (SMI) • SUD Support Services 	
Centers for Disease Control and Prevention (CDC)	<ul style="list-style-type: none"> • Infectious Diseases • Chronic Diseases • Public Health/Emergency Preparedness 	<ul style="list-style-type: none"> • HIV/AIDS • Data Analytics • Global Pandemics (Zika, Ebola) 	
Patient Centered Outcomes Research Institute (PCORI)	<ul style="list-style-type: none"> • Value-Based Care • Improving Outcomes • Dissemination/Implementation • PCOR Research Methods 	<ul style="list-style-type: none"> • System-wide Approaches • Health Disparities • Anxiety, PTSD, SUD Treatment • Shared Decision Making 	

Emerging Priorities: Social Determinants of Health, Rural Health and Telemedicine, Data and AI for Health,

LEWIS–BURKE

ASSOCIATES LLC

www.lewis-burke.com

National Science Foundation



Funding Outlook: In FY 2019, NSF received a 4.0% increase to \$8.075 billion

- House proposed \$8.64 billion for NSF in FY 2020 (6.9% increase), Senate proposal not yet known



Continued Focus on 10 Big Ideas for Future Investment

- Future of Work likely to compete center-scale planning awards in FY 2020
- Rules of Life expect new focused solicitations in FY 2020
- NSF actively planning future Big Ideas, NSF 2026 winners to be announced in September or October
- Convergence Accelerator next competition January 2020 – new topics likely

Emerging Priorities

- Continued interest in **partnerships** (Amazon and AI, Boeing and INCLUDES, NIFA and Smart Ag, Simons and Rules of Life)
- Growing focus on AI – potential for **AI institutes** solicitation fall 2019
- Emerging interest in **engineering biology** and synthetic biology – multiple Advisory Committees reviewing possibilities

News Directions Ahead – France Córdoba term as director ends March 2020

- Lots of Directorates in flux or preparing major changes (new CISE director search wrapping up, SBE program changes soon to be announced, ENG pursuing new visioning capability, BIO planning integration institutes)
- NSF Authorization bill on the horizon – Committees to start drafting in late 2019

Future of Work	NSF 2026
Growing Convergence Research	NSF INCLUDES
Harnessing the Data Revolution	Quantum Leap
Mid-Scale Research Infrastructure	Understanding the Rules of Life
Navigating the New Arctic	Windows on the Universe

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

NSF Graduate Research Fellowship



- GRFP is NSF's signature graduate support program, providing support for students in the early stages of their graduate or doctoral studies in science and engineering.
- Fellowships are awarded for graduate study leading to research-based masters or doctoral degrees in all fields supported by NSF, including in science, social science, engineering, mathematics, as well as STEM education.
- Fellowships provide three years of support. For each year of support, NSF provides a stipend of up to \$34,000 to the fellow and a cost-of-education allowance of \$12,000 to the degree-granting institution.
- Due Dates: Applications are due in the last two weeks of October annually with the exact date dependent on the field in which the student is applying.

LEWIS-BURKE

ASSOCIATES LLC

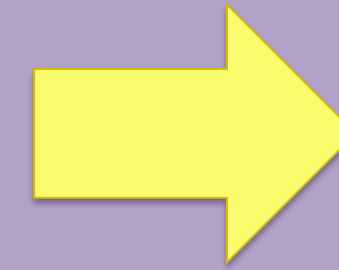
www.lewis-burke.com

Economic Development Administration



Funding Outlook: EDA was relatively flat funded: \$304 million in FY 2019

- The agency remains a target for elimination by the administration



Regional Innovation Strategies Program

- Promotes public-private partnerships focused on job creation, commercialization activities, and innovative research enterprises
- *Opportunities include:*
 - i6 Challenge
 - Proof-of-concept centers that encourage entrepreneurship and accelerate the commercialization of research
 - Seed Fund Support (SFS) Grants
 - Development of seed capital funds to help local startups commercialize new technologies

Public Works and Economic Adjustment Assistance

- Supports economic development in qualified distressed regions through construction, non-construction, technical assistance, and revolving loan fund projects.
- Opportunity Zones being considered as qualification for these programs

University Center awards stimulate economic growth through technical assistance, commercialization support, business consultation, and planning. The next competition in FY 2021 is for states covered by the EDA's Philadelphia (East coast) and Chicago (Midwest) regional offices.

LEWIS-BURKE

ASSOCIATES LLC

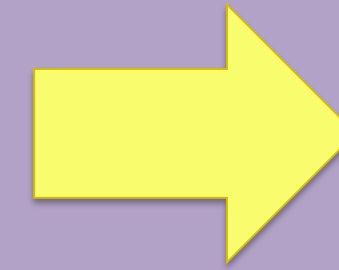
www.lewis-burke.com

Department of Education Research



Funding Outlook: Institute of Education Sciences received a small increase in FY 2019

- Trump Administration proposed a 15 percent cut in FY 2020, but Congress is likely to reject cuts



Agency Priorities

- IES has greater emphasize on career and technical education, workforce development, post-collegiate outcomes and general interest in “rethink” of education and teacher training
- IES Director Mark Schneider pushing new directions and changes to IES research, with greater emphasis on usability among practitioners

Emerging Priorities

- Recent NCER and NCSEER funding opportunities included changes :
 - Move from research goals to types of projects
 - New requirements for cost analyses for practitioners
 - new Standards for Excellence in Education Research (SEER)
- New targeted replication studies
- IES has current open call for feedback on revision and elimination of research topic areas for next year’s competition

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Department of Energy



Funding Outlook: DOE fully funded in FY 2019 at \$35.7 billion

- House bill would provide \$37.1 billion in FY 2020



Large-scale funding opportunities expected in FY 2020

- Energy Frontier Research Centers: primary focus on quantum, microelectronics and energy-water nexus
- Quantum science and technology centers: up to 5 centers each funded up to \$25 million a year over 5 years
- Computational Materials Science Centers: up to 3 centers each funded up to \$4 million a year over 4 years
- Solar Fuels Research Centers: \$20 million to fund two centers

Renewed focus: Technology transfer and commercialization

- XLab Innovation Expos: energy storage, grid technologies, AI/Machine Learning on October 2 in Chicago, and May 2020 on quantum in NYC
- Interest in 'rebooting' Regional Energy centers (interest in less top-down approach)

Office of Science

- Largest increases in growth: 25% growth over last two FYs
- Another 4% increase expected in FY 2020
- Top priorities: Quantum; AI; Microelectronics; Engineering/synthetic biology; Exascale and next generation high performance computing

ARPA-E

- Poised for future growth
- Future topics under consideration:
 - Carbon capture and storage systems
 - Energy-smart farms
 - Electric motors for aviation
 - Fusion energy technologies
 - Carbon-optimized bioconversion

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Arts and Humanities

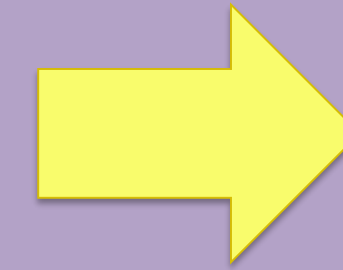


NATIONAL
ENDOWMENT
FOR THE
HUMANITIES

NATIONAL
ENDOWMENT
for the **ARTS**
arts.gov

Funding Outlook: Congress has rejected Trump Admin proposal to eliminate NEH and NEA

- Provided minor funding increases the last two fiscal years



National Endowment for the Humanities

- Chair Jon Parrish Peede has interest in greater civic education efforts and rural area support
 - Recent competitions include special emphasis for 250th anniversary of American independence, advancing civic education
 - Increased emphasis on connections with sciences, other institutions/organizations
- NEH has been investing in humanities infrastructure and capacity-building activities
- Continued focus on digital humanities and understanding the experience of war

National Endowment for the Arts

- Newly confirmed Chair Mary Anne Carter
 - No arts background before being appointed Deputy Chair
 - Interest in veterans arts programs and public access to arts
- Same grant programming on-going
- NEA Research office has interest in integration of arts and other fields, such as technology and medicine

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

U.S. Department of Agriculture



Funding Outlook: NIFA received a 4.5 percent increase: \$1.47 billion in FY 2019

- Agricultural research funding continues to enjoy broad congressional support



Leadership Changes

- Scott Hutchins confirmed as chief scientist

Ongoing Challenges

- NIFA/ERS Relocation
 - Attrition of institutional knowledge and leadership
 - Impacts on the dispersal of funds for grants and communication with program officers
- NBAF Transition

Agriculture and Food Research Initiative

- NIFA's extramural, solicited research
- Increased to \$415 million in FY 2019
 - Foundational and Applied Sciences (\$192.6 million)
 - Education and Workforce Development (\$29.1 million)
 - Sustainable Agricultural Systems (\$90 million)

Ongoing Priorities

Established in last farm bill:

- Plant Health and Production and Plant Products
- Animal Health and Production and Animal Products
- Agricultural Systems and Technology
- Agricultural Economics and Rural Communities
- Sustainable Energy
- Childhood Obesity
- Food Safety

Upcoming Opportunities

- Farm Bill implementation
 - AGARDA
 - Genome to Phenome
 - Next Generation Agriculture Technology Challenge
 - Urban AG Pilot Program
 - Research Equipment Competitive Grants

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Department of Defense



Funding Outlook: \$15.9 billion for S&T across Services (basic, applied, and advanced tech)

- Basic Research increased 8% in FY 2019 (\$2.5 billion across the Services)



- Trump Administration prioritizing *National Security Strategy* – modernize & invest in strategic weapons
- Under Secretary of Defense for Research and Engineering (USD(R&E)) Mike Griffin's top technology focus areas:
 - 5G
 - Hypersonics
 - Directed energy
 - Command, control, and communications
 - Space offense and defense
 - Cybersecurity
 - Artificial intelligence/machine learning
 - Missile defense
 - Quantum science and computing
 - Microelectronics
 - Autonomy
 - Biotechnology

FY 2020:

- President's budget request: S&T \$14.2 billion; basic research would receive \$2.3 billion
- HAC-D: S&T \$14.8 billion; basic research \$2.6 billion
- SAC-D: should provide increases with recent two-year budget agreement that lifted spending caps
- As budgets increase, emphasis continues to focus on prototyping and development rather than S&T
- Additional concerns with STEM education and DOD workforce pipeline from both Congress and DOD labs

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

DOD Medical Research Priorities



- **General mission** – Support the Service Members, Veterans, and their families to aid and promote national security and defense
- **Hemorrhage** – blood products (storage, transportation, in theater transfusions); extend blood platelet shelf life; improved pre-hospital treatments for critical patients; alternatives to using anti-biotics for post wound care
- **Combat casualty care** – surgical systems and procedures, surgical en-route care, neurotrauma, minimizing blast-related injury
- **Traumatic Brain Injury (TBI)** – classification of TBIs that can inform future technology and treatment strategies; biomarkers to replace CAT scans (affordability); development of chronic traumatic encephalopathy (CTE)
- **Mental Health** – PTSD, suicide prevention; substance abuse, rural healthcare/telemedicine
- **Pain Management** – Burn care, opioid use/misuse
- **Infectious Disease** – prevention, diagnostics, therapeutics; surveillance; warfighter v. civilian health
- **Health IT** – electronic health records, mobile health technology, telemedicine (in theater and at home)
- **Chemical, Biological, Radiological, and Nuclear (CBRN) Threats** – surveillance, prevention, detection, and treatment
- **Human Performance Optimization** – readiness, rehabilitation, fatigue/sleep, nutrition

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com

Lewis-Burke Associates LLC

Bill Ruch: bill@lewis-burke.com

Libby O'Hare: libby@lewis-burke.com

Jesse Poon: jesse@lewis-burke.com

(202) 289-7475

LEWIS-BURKE

ASSOCIATES LLC

www.lewis-burke.com