The University of Minnesota Washington Update provides intelligence and analysis on recent federal activities. Faculty visiting Washington, D.C. are encouraged to contact Sarah Neimeyer, Director of Government Relations, at neimeyer@umn.edu. Contact Christina Laridaen, Lewis-Burke Associates LLC, at christina@lewis-burke.com with any questions or comments related to the Update’s content.

Congressional and Administration Updates

Appropriations Update: House Appropriations Subcommittee Advances FY 2022 Energy and Water Development Appropriations Bill

The House Energy and Water Appropriations Subcommittee advanced by voice vote the fiscal year (FY) 2022 Energy and Water Development appropriations bill on July 12. The bill’s jurisdiction includes civilian and defense-related programs of the Department of Energy (DOE), civil works projects of the Army Corps of Engineers, and other related programs.
Engineers, the Department of the Interior’s Bureau of Reclamation, and related independent agencies. The House Appropriations Committee plans to vote on the bill on July 16 and schedule a full House vote before the end of July. The Senate has not yet started consideration of FY 2022 appropriations bills, but the Senate Appropriations Committee plans to advance the Energy and Water bill by the end of July 2021. This analysis provides an overview of House funding priorities for major DOE programs since the House Appropriations Committee has not yet released detailed funding information.

The House Energy and Water bill would provide $45.1 billion for DOE, which is $3.2 billion, or 8 percent, above the FY 2021 enacted level, but $1.1 billion below the President’s budget request. The House Appropriations Committee would increase funding for all major programs. However, the Committee prioritized research, development, and demonstration of applied energy programs to decarbonize the electricity sector and help meet the President’s goal of net zero emissions economy-wide by 2050. The largest proposed increase—$906 million or 32 percent—is for renewable energy and energy efficiency projects. The majority of new funding is focused on grants for industry as well as assistance to state, local, and tribal governments to advance deployment of clean energy technologies and increase grid resilience and cybersecurity as opposed to early-stage research and development better suited for research universities and other research organizations. The Committee provided no funding to establish a new Advanced Research Projects Agency-Climate (ARPA-C) and instead increased funding to support Advanced Research Projects Agency-Energy (ARPA-E).

Despite a $294 million or four percent increase for the Office of Science, Democrats have expressed concern that this level of funding is not sufficient to support core research in the physical sciences, increase fundamental research in clean energy technologies, advance emerging technologies such as quantum and Artificial Intelligence, and accelerate construction of world-class science facilities to stay ahead of international competition. Even with the proposed increase, almost all major user facilities under construction would fall behind schedule and except for new climate change research, the Office of Science would not be able to advance new research initiatives.

Republicans have most heavily criticized proposed funding for the national security missions of the National Nuclear Security Administration (NNSA). While the bill proposes $15.5 billion for nuclear weapons activities—a $139 million increase and consistent with the President’s budget request—Republicans are concerned that the less than one percent increase is not sufficient to support nuclear weapons modernization activities, especially for the construction of new production facilities and new life extension programs for nuclear warheads. This criticism extends beyond funding for NNSA. Republicans want to negotiate higher funding levels for defense discretionary spending beyond the 1.7 percent increase proposed by the Biden Administration and House Democrats.

Sources:
- The House Appropriations Committee press release for the FY 2022 Energy and Water bill is available [here](#).
- The FY 2022 Energy and Water bill is available [here](#).

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**Appropriations Update: House Appropriations Committee Approves FY 2022 Homeland Security Bill**

On July 13, the House Appropriations Committee approved its version of the fiscal year (FY) 2022 Homeland Security spending bill on a party-line vote. The bill includes approximately $52.8 billion in discretionary funding for the Department of Homeland Security (DHS), which represents a slight 1.8 percent increase above
the FY 2021 enacted level and 0.7 percent increase above the President’s Budget Request. For the DHS Science and Technology Directorate (S&T), the House bill would provide $830.4 million, which would add $7.5 million to the already strong allocation proposed in the President’s budget request and $64.8 million over the FY 2021 enacted level. The House bill would provide a $9 million increase to the Office of University Programs (OUP), which includes the university-based Centers of Excellence (COE) program. The bill also includes over $151.9 million for Community Project Funding, or earmarks, mostly in support of local emergency and disaster resiliency efforts.

This legislation is one of the most contentious of the annual appropriations measures, largely due to partisan disagreement over how to address immigration-related issues at the southern border. Of note, the bill would restrict several of the previous Administration’s most controversial proposals, including cutting new funding for the proposed wall along the southern border and significant reductions for Customs and Border Protection (CBP). The bill would also provide investments in ongoing bipartisan priorities, including huge increases of nearly $400 million above the enacted level and $288 million above the budget request for DHS’s main cybersecurity office, the Cybersecurity and Infrastructure Security Agency (CISA). Given the strong partisan divisions over the immigration-related provisions, however, it will be challenging for the bill to pass both chambers as written.

As it relates to research, the bill would provide nearly $48.8 million for the COE program, which is the same as the budget request amount and $6.5 million above the enacted level, as well as an increase of $2.5 million above the budget request amount for the Minority Serving Institutions (MSI) Program. The bill encourages DHS to continue to support challenges faced by the Coast Guard in the Arctic, which could refer to the sunsetting of the Arctic Domain Awareness Center (ADAC) proposed in the budget request, as well as to expand operations of the current COE on Cross-Border Threat Screening and Supply Chain Defense to include research on mitigating risks to the food and agricultural supply chains. Also, the Subcommittee report language notes Congress’ support for emeritus COEs and directs DHS to report on S&T’s efforts to leverage emeritus COEs to address homeland security challenges. The explanatory report further encourages S&T to partner with universities to support research in priority areas, all of which were listed in the Committee’s FY 2021 bill, including maritime security, cross-border threat screening, unmanned systems, counterterrorism, emerging analytics, cybersecurity, first responder safety, disaster-driven displacement, and critical infrastructure.

The bill also lists the following research and development (R&D) priorities for S&T, several of which are repeated from the FY 2021 House bill report. Those in italics are new focus areas for FY 2022.

- **Advanced research using “high resolution magnification to improve the detection of potential structural defects in emerging semiconductor technologies (including microchips, light emitting diodes, batteries, and processors) that could allow the unintended manipulation of hardware.”**
- **Collaborations with CISA and other organizations to support research on voting technologies and election procedures. Congress had previously encouraged DHS to fund an entire COE on this topic in the final FY 2021 appropriations bill.**
- **Collaborations with research universities to develop a Water Security Test Bed that advances a “national testing capacity to assess vulnerabilities and mitigate biological risks, including COVID–19, in building air and water handling systems, multibuilding facilities, and wastewater systems.”**
- **Develop advanced sensors for first responder technologies and continue to expand the First Responder Interagency Working Group to include nonprofits with histories of partnering with interagency organizations.**

UMN Washington Update
Prepared by Lewis-Burke Associates LLC
July 16, 2021
• Continue the “Bi-National Cooperation Pilot,” which promotes “cooperative efforts on border security, maritime security, biometrics, cybersecurity, and video analytics.”
• Continue support for academic partnerships to advance threat detection using canines and associated technologies.
• Develop secure composite shipping containers that improve sensor integration and reduce costs.
• Enable Unmanned Aerial Systems (UAS) testing and technology evaluations at DHS’s designated UAS test site.
• Continue partnerships between S&T, the Army Corps of Engineers and an “academic sedimentation lab that has experience in cooperative research with the U.S. Department of Agriculture’s Natural Resources Conservation Service” to “develop capabilities for maintaining and improving the integrity of our nation’s existing levee and dam systems.”
• Research and develop wind and solar powered unmanned vessels with surface and subsurface capabilities to assist in port and coastal surveillance and oceanographic research.
• Establish a Maritime/Port Resiliency & Security research program to “support the design and development of tactics, techniques, and procedures for effectively responding to critical maritime infrastructure threats.”
• Enhance support for ongoing programs used to train bomb squads and technicians.
• Leverage predictive analytics, such as “advanced artificial intelligence and machine learning, and new data collection methodologies, such as crowd sourcing,” to identify high-risk ignition locations for wildfires.
• Forge a new collaboration between the Homeland Security Investigations (HSI) office, S&T, and external academic partners to leverage forensic science research to combat “transnational crime, particularly regarding wildlife, narcotics, weapons, and human trafficking.”

The bill also encourages the DHS Secretary to enhance research partnerships with MSIs throughout S&T initiatives. Finally, as with previous years, the manager’s amendment to the bill includes language that laments the termination of the Homeland Security Academic Advisory Council (HSAAC) under the previous Administration and notes that more needs to be done to facilitate discussions between universities and DHS on a range of issues from immigration and foreign influence to cybersecurity. The bill would direct the Secretary to reconstitute the HSAAC as soon as possible.

### FY 2022 Homeland Security Appropriations

(\textit{In thousands})

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<th></th>
<th>FY 2021 Enacted</th>
<th>FY 2022 Request</th>
<th>FY 2022 House</th>
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<th>House vs. FY 2022 Request</th>
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*Total discretionary appropriations minus disaster response allocations and other fees from page 3 of the explanatory report.

Sources and Additional Information:

UMN Washington Update
Prepared by Lewis-Burke Associates LLC
July 16, 2021
The draft explanatory report can be found at https://docs.house.gov/meetings/AP/AP00/20210713/112896/HMKP-117-AP00-20210713-SD002.pdf.


Appropriations Update: House Appropriations Committee Approves FY 2022 Defense Bill
On July 13, the House Appropriations Committee (HAC) approved its fiscal year (FY) 2022 Department of Defense (DOD) appropriations bill with a vote of 33 to 23, along party lines. The bill would provide $706.5 billion, an increase of $9.978 billion above the FY 2021 enacted level and a decrease of $258 million below the FY 2022 President’s budget request (PBR). House appropriators sought to reorient DOD’s focus from counterterrorism to great power competition with well-equipped peer or near-peer adversaries.

The bill would provide $110.4 billion for research, development, test, and evaluation (RDT&E), a 2.7 percent increase from the FY 2021 enacted level and a 1.4 percent decrease from the FY 2022 PBR. Despite the decrease relative to the PBR, this still would be the largest defense RDT&E budget ever.

Total basic research (6.1) would be cut 7 percent from the FY 2021 enacted level to $2.4 billion, which is a 6.9 percent increase from the requested level of $2.3 billion. Overall science and technology (S&T) funding, which includes basic (6.1), applied (6.2), and advanced technology development (6.3) research accounts, would be cut by 4.8 percent compared to FY 2021 enacted amounts but increased by 9 percent compared to the FY 2022 PBR. HAC would restore funding to S&T programs cut in the PBR, but levels would remain lower than enacted in FY 2021.

Cuts in procurement of ships, aircraft, and other high-dollar items plus the elimination of the Overseas Contingency Operations account enabled growth of the RDT&E appropriation. HAC would cut 6.4 and higher accounts that received plus-ups in the PBR. The report identified emerging challenges like combatting climate change, growing support for domestic industrial manufacturing, and sustained research in Industries of the Future like hypersonics and artificial intelligence (AI).

Highlights from HAC’s recommended defense RDT&E appropriations include:

- $3.5 billion for the Defense Advanced Research Projects Agency (DARPA)
- $211.7 million for the Defense Manufacturing Science & Technology program, a $77.6 million increase from the PBR
- $186.6 million unrestricted RDT&E funding for the Joint Artificial Intelligence Center (JAIC)
- $122 million increase to the Air Force Manufacturing Technology Program, including $6 million for partnerships in materials and manufacturing and $10 million for semiconductor research
$81.9 million for the Strategic Environmental Research and Development Program (SERDP), a $30 million increase from the PBR, and $91.4 million for the Environmental Security Technology Certification Program (ESTCP), a $20 million increase from the PBR

$60.5 million for the DOD Manufacturing Technology Program, a $23 million increase from the PBR, which includes $8 million for supply chain readiness and sustainment

$53.9 million for Historically Black Colleges and Universities (HBCUs) in unrestricted 6.1 funding

$25 million for academic partnerships in innovative undersea research for the Navy

$10 million for the Defense University Research Instrumentation Program (DURIP)

$8 million for the Minerva social sciences research program

$5 million for Defense Established Program to Stimulate Competitive Research (DEPSCoR)

$5 million for the NavalX Tech Bridges

$4 million for the National Defense Education Program, including $2 million for civics education

The bill included these relevant adds to Operations and Maintenance (O&M) and Procurement:

$426.3 million for the Defense Logistics Agency (DLA), an increase of $23.4 million over the PBR

$160 million for the Readiness and Environmental Protection Integration (REPI) program for conservation activities on land buffering military installations

$127.3 million for youth STEM training and engagement programs (e.g. Starbase)

$53.9 million for the Space Development Agency (SDA), sustained from the PBR

$40 million for rare earth supply chain activities and acceleration of commercial rare earth separation and processing initiatives

$25 million for the Defense Manufacturing Community Support Program

$18 million for environmental and climate remediation initiatives

Defense health research and development would be funded at $1.8 billion, a 23 percent decrease compared to the FY 2021 enacted level. Traditionally, the House bill does not include the Peer Reviewed Medical Research Program (PRMRP), which is reflected in the seemingly large decrease. As in the past, the PRMRP is expected to be included in the Senate’s bill. Otherwise, the House bill would continue funding most of the FY 2021 Congressionally Directed Medical Research Program’s (CDMRP) research topics but would not include orthotics and prosthetics outcomes, scleroderma, and chronic pain management. The Gulf War Illness Research Program would transition to the $30 million Peer-Reviewed Toxic Exposures Research program to scale treatments, prevention, and comorbidities assessments. HAC would continue funding all existing cancer research programs, adding Von Hippel-Lindau cancer to the list of eligible topics in the Peer-Reviewed Cancer Research Program.

In addition, the House would provide $60 million for brain injury and disease prevention research, focusing on the link between traumatic brain injury and neurodegenerative diseases and ways to address progression. In response to COVID-19, HAC would fund a $14 million pilot program to improve civilian-military surge capacity and interoperability for the National Disaster Medical System. Other priorities include antiviral development; collaborations with Hispanic-Serving Institutions (HSIs), HBCUs, and other Minority-Serving Institutions (MSIs); and refocusing the Combat Readiness Medical and Joint Warfighter Medical Research Programs to rapidly scale and deploy existing technological investments rather than starting new research programs.

HAC would appropriate over $28.5 million for defense “Community Project Funding”—the first time earmarks have been included in the appropriations process in over a decade. Projects supported include defense manufacturing and machining, next-generation explosives and propellants, cybersecurity methodologies and manufacturing, trauma research, and warfighter performance optimization. The Senate
Appropriations Defense Subcommittee will propose congressionally directed spending requests, as well. The two chambers will negotiate on which earmarks make it into a final appropriations bill.

The HAC report included several notable recommendations with no new associated funding. These included public-private partnerships for professional military education in geo-economics, innovation, and national security; a congressionally directed study of DOD STEM programs; the creation of a STEM Education and Workforce Pipeline Strategy; collaboration with colleges and universities to recruit cyber-focused students who can be granted security clearances; recycling of industrial waste streams to recover rare earth elements and critical minerals of national security importance and academic research on new approaches of such; provisions for domestic sourcing and stockpiling of critical rare earth minerals and pharmaceuticals; supply chain risk management; and training and education for the defense industrial base workforce in digital engineering.

The bill could be considered on the House floor by the end of the month. The Senate has scheduled a closed markup for their version of the defense appropriations bill on July 21, but indications point to September before it could advance, thus increasing the likelihood of a continuing resolution required to fund the federal government on October 1st.

Sources and Additional Information:
- The House Defense Appropriations Committee report is available at https://docs.house.gov/meetings/AP/AP00/20210713/112896/HMKP-117-AP00-20210713-SD003.pdf.

FY 2022 Appropriations Update: House Appropriations Committee Approves State and Foreign Operations and Related Programs Funding Bill

The House Appropriations Committee approved the fiscal year (FY) 2022 State, Foreign Operations, and Related Programs funding bill on 32-25 vote on July 1. The legislation funds the Department of State (DOS), the United States Agency for International Development (USAID), and other international programs and activities. In total, the bill would provide $62.24 billion, an increase of $6.737 billion above the FY 2021 enacted level and $279.8 million above the President’s request. Generally, the bill includes proposed increased funding across most program areas compared to both the FY 2021 enacted level and the FY 2022 request, with global health security and climate change receiving much of the proposed increase.

The bill reaffirms Congressional commitment to regain American leadership status and global influence with an emphasis on increased international engagement to support: foreign assistance, especially in countries in need of humanitarian assistance; strengthening of global health systems, pandemic preparedness, and global health security; and actions to combat climate change. The bill also includes several elements aligned with the Biden Administrations promotion of diversity equity and inclusion, including by stipulating an increase in funding, authority, and guidance to equip the Secretary of State and USAID Administrator to increase diversity and inclusion in the nation’s diplomatic and development workforce.
While much of the bill has bipartisan support, some Republican subcommittee members noted concerns over the proposed 12 percent increase in the topline funding level relative to FY 2021. In addition, members were also concerned about support for multilateral organizations including the Green Climate Fund to address the global climate crisis, support for women’s reproductive rights, and the inability to keep up with military investments relative to inflation with the proposed FY 2022 funding levels.

Specific funding measures of interest to the academic and broader research community include the following proposals:

- $750 million for **educational and cultural exchange programs**, $9.7 million above the fiscal year 2021 enacted level and $8.7 million above the President’s budget request. Within these funds, the Committee recommended that DOS support critical language programs and exchange programs for U.S. students with countries of national security importance. In addition, the Committee also directed that no less than $2 million be provided “to expand two-way international academic and professional and cultural exchanges for individuals of African descent, including the development of partnerships with Historically Black Colleges and Universities (HBCU).” As a part of USAID development assistance, the Committee would direct USAID to establish **educational programming** in the Western Hemisphere, with priority on educational opportunities at post-secondary institutions for underserved populations in Latin America and the Caribbean.

- $4.56 billion to support USAID’s **global health programming**, $1.3 billion above the fiscal year 2021 enacted level and $440 million above the President’s budget request. This includes $1 billion for Global Health Security, an $810 million increase above the fiscal year 2021 enacted level. Within these funds, the Committee would direct USAID to make funds available in support of global health surveillance programs and research on zoonotic disease. Further, the Committee requests that the Department of State collaborate with international partners to “understand the landscape of potential pandemic pathogen research internationally, and to develop international norms, model standards, and model review mechanisms for the oversight of research.” The committee also directs USAID to continue supporting research and development on: best practices for nutrition intervention programs; vaccine development for malaria and HIV/AIDS; and new global health technologies with a focus on tuberculosis treatment tools and affordable contraceptives.

- $1.1 billion to support **food security and agriculture development programs**, including $150 million to support research initiatives in USAID’s Bureau of Resilience and Food Security, which is equivalent to the FY 2021 enacted level. Of this amount, the Committee recommends $58 million for the Feed the Future (FtF) Innovation Labs, a $3 million (5.4 percent increase) relative to the FY 2021. The report includes language encouraging a future FtF program on the “use of irrigation and agricultural intensification to support small holder farmers in simple, affordable scalable technology production, financing, and repair,” to be further specified in FY 2023.

- The Committee recommends over $3 billion to support **climate change and other environmental programming**, which includes support for both bilateral programming at DOS and USAID, as well as U.S. contributions to multilateral institutions. The recommended amount is about $500 million more than requested in the President’s budget request. Most of these funds would be utilized to support U.S. contributions to multilateral institutions, and remaining funds are not likely to be research focused. Notable focus areas include:
$400 million for **biodiversity programming**, $80 million more than the fiscal year 2021 enacted level and $182.3 million above the President’s budget request;

An envelope of $675 million for **climate change programs**, with: $202.5 million for sustainable landscapes, $67.5 million above the fiscal year 2021 enacted level and $29.8 million below the President’s budget request; $294.2 million for adaptation programs, $117.2 million above the fiscal year 2021 enacted level and $179 million for renewable energy programs, same as the fiscal year 2020 enacted level and not included in the President’s budget request.

- The Committee includes report language to support research and cooperation efforts in **non-proliferation, anti-terrorism, and related activities**. The Committee recommends that the Department of State support international cooperation in science through provision of funding for international scientific and technological facilities that “foster a mutual understanding and tolerance through international cooperation in science, including in the Middle East.” In addition, the committee instructs the Bureau of Arms Control, Verification, and Compliance to support additional research in multi-actor deterrence.

### U.S Department of State & U.S Agency for International Development

*In thousands*

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<th>FY 2021 Enacted</th>
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<th>House vs. FY 2021 Enacted</th>
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A summary of the bill is available [here](#), the full bill is available [here](#), and the report language is available [here](#). The full fiscal year 2022 Congressional Budget Justification is available [here](#).

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Appropriations Update: House Appropriations Committee Approves FY 2022 Labor, Health and Human Services, and Education Funding Bill

On July 15, the House Appropriations Committee amended and approved the fiscal year (FY) 2022 Labor, Health and Human Services, and Education (Labor-HHS-ED) spending bill by a vote of 33-25. The bill would provide a total of $237 billion in discretionary funding for the Departments of Labor, Health and Human Services, Education, and related agencies. During the full Appropriations Committee’s mark-up, Labor-HHS-ED Subcommittee Chairwoman Rosa DeLauro (D-CT) offered a Manager's Amendment that made several technical changes to the Subcommittee’s bill approved on July 12. Additionally, despite objections by several Republicans during the mark-up over federal support for abortion, the final bill advanced without the Hyde Amendment.

The bill would provide $120 billion for the Department of Health and Human Services (HHS), which is a $30 billion increase above the FY 2021 enacted level. Of this amount, the bill would provide $49.4 billion for the National Institutes of Health (NIH), an increase of $6.5 billion above the FY 2021 enacted level, with $3 billion to be included to establish the Advanced Research Project Agency for Health (ARPA-H), provided that Congress enacts legislation to authorize the new agency. Additionally, within HHS, the Centers for Disease Control and Prevention (CDC) would receive $10.6 billion, a $2.7 billion increase above the FY 2021 level, and the Health Resources and Services Administration’s (HRSA) Title VII Health Professions programs and Title VIII Nursing Workforce Development Programs would receive $980 billion, a $225 million increase above the FY 2021 enacted level. The bill would also provide $6,895 for the maximum Pell Grant award, an increase of $400 above the FY 2021 enacted level and would allow DREAMERS and students with temporary protected status to be eligible for Pell Grants and other federal student aid. Additionally, the bill would provide $285 million for Department of Labor (DOL) Registered Apprenticeships, an increase of $100 million above the FY 2021 enacted level and the same as the President’s budget request.

House leadership aims to bring the Labor-HHS-ED bill to the floor for consideration, along with six other appropriations bills in a “minibus” package, during the week of July 26.

National Institutes of Health (NIH)

The bill would provide $49.4 billion for the National Institutes of Health (NIH), an increase of $6.5 billion (15.1 percent) above the FY 2021 enacted level. Of this amount, $3.5 billion would be directed to the NIH’s base budget, which would support an increase of at least five percent for each NIH Institute and Center (IC). The remaining $3 billion would be used to establish the Advanced Research Projects Agency for Health (ARPA-H), provided that Congress enacts legislation to authorize the new agency. If Congress chooses to authorize this new initiative, the Committee would make this $3 billion in funding available for use through FY 2024.

ARPA-H, the Biden Administration’s signature biomedical research policy initiative, would focus on accelerating the pace of biomedical innovation by using nontraditional methods (e.g. time-limited and milestone-based contracts; significant program manager autonomy in project selection) to support advanced research and development. In the report accompanying its bill, the Committee notes its strong support of the ARPA-H proposal and that, for the new agency to be successful, it must be a distinct Institute within NIH that fosters a unique culture and approach to selecting and funding projects. The Committee encourages NIH to focus on the development of treatments and cures for cancer, Alzheimer’s disease, diabetes, and amyotrophic lateral sclerosis (ALS), but notes that other ongoing NIH research activities may be aligned with ARPA-H’s mission. Recognizing this potential overlap between ARPA-H and other NIH research, the Committee encourages NIH to review any “duplication or misalignment of programs” once ARPA-H is established and report on any proposed shifts or reorganization to address such issues.
The bill includes $496 million for specific initiatives in the NIH Innovation Account authorized in the 21st Century Cures Act (Cures), consistent with the spending levels enacted in the 2016 Cures legislation. The Committee recommends $194 million for the Cancer Moonshot program; $541 million for the All of Us Precision Medicine Program ($150 million of this total from Cures); and $612 million for the Brain Research through Application of Innovative Neurotechnologies (BRAIN) Initiative ($152 million of this total from Cures).

In addition to ARPA-H, several other Biden Administration research priorities for NIH are included in the Committee’s bill. These include $110 million, an increase of $100 million above the FY 2021 enacted level, for research on the impacts of climate change on human health at the National Institute of Environmental Health Sciences (NIEHS); $25 million for firearm injury prevention research, an increase of $12.5 million over the FY 2021 enacted level; and $30 million for research on maternal health through the Implementing a Maternal Health and Pregnancy Outcomes Vision for Everyone (IMPROVE) Initiative. The bill would provide $330 million in new funding for health disparities research across several ICs, including $250 million at National Institute on Minority Health and Health Disparities (NIMHD); $50 million at the National Heart, Lung, and Blood Institute (NHLBI); $20 million at the National Institute of Nursing Research (NINR); and $10 million at the Fogarty International Center (FIC). Beyond this dedicated funding, the Committee emphasizes the importance of research on health disparities across NIH and encourages several ICs to bolster their efforts in this area in FY 2022.

The bill would provide an increase of $20 million for programs at the National Institute of General Medical Sciences (NIGMS) that are designed to enhance diversity in the biomedical research workforce, including the Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC), Minority Access to Research Careers (MARC), Bridges to the Baccalaureate, and Undergraduate Research Training Initiative for Student Enhancement (U-RISE) programs.

As in past years, the Committee continues to prioritize support for Alzheimer’s Disease and Related Dementias (ADRD) and would provide $3.4 billion for such research in FY 2022, an increase of $200 million above the anticipated FY 2021 level. In addition, the Committee continues to support NIH’s efforts to combat the opioid public health crisis and would provide $810.8 million for the Helping to End Addiction Long-Term (HEAL) Initiative, for research related to opioid addiction, the development of non-addictive opioid alternatives, pain management, and addiction treatment at the National Institute on Drug Abuse (NIDA) and the National Institute of Neurological Disorders and Stroke (NINDS).

The Committee would provide $415 million for the Institutional Development Award (IDeA) program, an increase of $18.4 million above the FY 2021 enacted level. IDeA supports research capacity building in states that have historically low levels of NIH funding. The bill would provide $616.2 million for the Clinical and Translational Science Awards (CTSA) program at the National Center for Advancing Translational Sciences (NCATS), an increase of $29.3 million above the FY 2021 enacted level. In its report accompanying the appropriations bill, the Committee notes that the CTSA program was a driving force behind the effort to develop COVID-19 diagnostics, treatments, and vaccines and reiterates previous guidance that NCATS notify the Committee of any planned changes in the CTSA program’s scale, scope, or size of individual awards.

The bill would provide $250 million, an increase of $30 million above the FY 2021 enacted level, for basic, translational, and clinical research to develop a universal influenza vaccine. Of note, the Committee would provide $50 million to support research and development of rapid vaccine development platforms for emerging infectious diseases. The bill would provide $15 million, an increase of $2.5 million above the FY
2021 enacted level, to grow the Emerging Centers of Excellence in Genomic Sciences program at the National Human Genome Research Institute (NHGRI).

Within the NIH Office of the Director, the Committee would provide $49.8 million for the Office of Behavioral and Social Sciences Research (OBSSR), an increase of $20 million above the FY 2021 enacted level. The Committee notes that it strongly supports the continued strengthening of NIH’s social and behavioral sciences research enterprise. The bill would also provide an increase of $17.5 million for the Office of Research on Women’s Health (ORWH), bringing funding for ORWH to $61.5 million in FY 2022.

The bill would provide $50 million for biomedical research facilities grants to expand, remodel, or renovate research infrastructure (awarded using NIH’s C06 grant mechanism). The Committee urges NIH to make awards large enough to support a significant portion of construction costs. Of note, the bill would retain the investigator salary cap at Executive Level II ($199,300).

### National Institutes of Health
*(in thousands of $)*

<table>
<thead>
<tr>
<th>NIH, Total</th>
<th>FY 2021 Enacted</th>
<th>FY 2022 Request</th>
<th>FY 2022 House</th>
<th>House vs. FY 2021 Enacted</th>
<th>House vs. FY 2022 Request</th>
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<tbody>
<tr>
<td>NIH, Total</td>
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<td>Agency Name</td>
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<td>FY 2020 Budget</td>
<td>FY 2021 Budget</td>
<td>Change in Budget</td>
<td>% Change</td>
</tr>
<tr>
<td>----------------------------------------------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
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<td>National Eye Institute (NEI)</td>
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<td>646,295</td>
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<td>185,295</td>
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<td>2,237,259</td>
<td>2,667,385</td>
<td>2,667,385</td>
<td>(19.2%)</td>
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</tbody>
</table>
Other Department of Health and Human Services (HHS)

The bill would provide around $120 billion for the Department of Health and Human Services (HHS), which is a $30 billion increase above the FY 2021 enacted level. Within HHS, roughly $10.6 billion would be allocated to the Centers for Disease Control and Prevention (CDC), a $2.7 billion increase above the FY 2021 level; $980 billion for Title VII Health Professions programs and Title VIII Nursing Workforce Development Programs within the Health Resources and Services Administration (HRSA), a $225 million increase above the FY 2021 enacted level; and $9.2 billion would go to the Substance Abuse and Mental Health Services Administration (SAMHSA), an increase of about $3 billion over the FY 2021 enacted level. Other priority areas in the bill include additional support for public health infrastructure, diversity pipeline efforts, mental health and substance use disorder programs, and rural health initiatives.

The Health Resources and Services Administration (HRSA) would receive $8.7 billion, which is a $1.5 billion increase over the FY 2021 enacted level. The bill would provide the Bureau of Health Workforce within HRSA with $1.3 billion in funding, a $340 million increase over the FY 2021 enacted level. Of interest to academic health centers, Title VII Health Professions programs would receive $665 million and Title VIII Nursing Workforce Development Programs would receive $980 million or a 30 percent increase above the FY 2021 enacted level. Notably, the bill would further support:

- **Several health professions diversity pipeline programs**, including $20.5 million for the Health Careers Opportunity Program (HCOP), a $5.5 million increase; $62 million for the Scholarships for Disadvantaged Students (SDS) program, a $10.5 million increase; and $31 million for the Centers of Excellence (COEs), an $8 million increase above the FY 2021 enacted level, to provide grants to health professions schools and other institutions to serve as a resource for recruitment and training of underrepresented minority students and faculty.

- **Mental health and substance use disorder workforce programs**, including $181 million for the Behavioral Health Workforce Education and Training (BHWET) program, a $69 million increase; $34 million for the Mental and Substance Use Disorder Workforce Training Demonstration program, a $4 million increase; and $28 million for the Substance Use Disorder Treatment and Recovery (STAR) Loan Repayment Program, a $12 million increase above the FY 2021 enacted level.

- **Geriatrics workforce programs**, including $52 million for the Geriatrics Workforce Enhancement Program (GWEP), a $10 million increase above the FY 2021 enacted level, which supports training that integrates geriatrics and primary care and develops academic-primary care-community based partnerships.

- **Nursing programs**, including $82 million for Advanced Nursing Education, a $6.5 million increase; $108 million for Nurse Corps Scholarship and Loan Repayment, a $20 million increase; and $52 million for the Nursing Education, Practice, Quality, and Retention (NEPQR) program, a $5 million increase above the FY 2021 enacted level.

Other areas of support in the bill would include $185 million for National Health Service Corps (NHSC), an increase of $65 million; $190 million within the Ryan White HIV/AIDS program for the Ending the HIV Epidemic Initiative, an $85 million increase; $868 million for the Maternal and Child Health (MCH) Block Grant, a $156
million increase; and $75 million to support Medical Student Education, a $25 million increase above the FY 2021 enacted level. The funding would support colleges of medicine at public universities located in the “top quintiles of States projected to have a primary care provider shortage,” with a preference given to academic institutions located in states with a large number of federally recognized Tribes and public universities with a “demonstrated public-private partnership.”

The bill would also provide support for several rural health programs, including $140 million to continue the Rural Communities Opioids Response program, a $30 million increase; $12.7 million for the Rural Health Residency Program, an increase of $2.2 million; and $7.5 million for the Telehealth Centers of Excellence (COE) program, an increase of $1 million above the FY 2021 enacted level. The COE program aims to promote the adoption of telehealth programs through establishing training protocols and providing resources to States to integrate telehealth into provider networks with the additional funding aimed at expansion of telemental health services. The bill would further encourage HRSA to “establish a pilot program to expand academic health system telehealth programs aimed at addressing the health inequities of urban populations.” The bill would also include $367 million in funding for Community Project Funding within the HRSA account, to finance health-related activities through one-time grants. A full list of these projects can be viewed here.

For FY 2022, the Centers for Disease Control and Prevention (CDC) would receive an increase of $2.7 billion over the FY 2021 enacted level for a total $10.6 billion. This funding level is $1 billion above the President’s budget request. For the nation’s public health infrastructure and capacity, the Committee included a new $1 billion funding line. According to the Committee, the COVID–19 pandemic exposed the inadequacies of the current public health ecosystem and that “flexible, sustainable investments in public health are critical.” This funding is intended to provide CDC with a stable source of non-disease specific funding for state, local, territorial, and federal public health agencies. Additionally, the Public Health Preparedness and Response account would receive an increase of $20 million for a total of $862.2 million. Within the total, the Committee recommended $715 million for Public Health Emergency Preparedness Cooperative Agreements, $8.2 million for Academic Centers for Public Health Preparedness, and $139 million for CDC Preparedness and Response.

Key public health initiatives also receiving additional funding:

- Opioid overdose prevention and surveillance would receive $663 million, an increase of $188 million above the FY 2021 enacted level.
- The Racial and Ethnic Approach to Community Health (REACH) program would receive $74 million, an increase of $10 million above the FY 2021 enacted level.
- $110 million was included for the CDC Climate and Health program. This was an increase of $100 million above the FY 2021 enacted level and in line with the budget request. The program assists states and territories with identifying potential health effects associated with climate change and implement plans.
- $153 million was included for programs focused on the social determinants of health. This was an increase of $150 million above the FY 2021 enacted level.
- $75 million, an increase of $10 million above the FY 2020 enacted level, would be provided for food safety.
- $115 million, an increase of $100 million above the FY 2021 enacted level, would be provided for community and youth violence prevention.
- The Committee includes an increase of $4.5 million that would support provisions of the Building Our Largest Dementia (BOLD) Infrastructure for Alzheimer’s Act (P.L. 115–406), for the implementation of the Road Map Series, expanding the number of Centers of Excellence, and building a robust public health infrastructure across the country for Alzheimer’s Disease and other dementias.
• With regard to HIV/AIDS, Hepatitis, sexually transmitted diseases, and tuberculosis, the bill would provide $1.5 billion, a $187.5 million increase from the FY 2021 level. The majority of the funding ($1.08 billion) would go to domestic HIV/AIDS prevention and research.

• The Committee would provide CDC with an additional $12.5 million to expand its firearm injury and mortality prevention research, using a public health approach in collecting data on firearm injury and deaths.

• Public health workforce initiatives would receive $106 million, a $50 million increase above the FY 2021 enacted level.

• CDC’s Prevention Research Centers program would receive an increase of $5 million to expand the national network of centers.

The Committee calls on the CDC to engage providers, health care, stakeholders, educators, community organizations, and parents/guardians about the importance of ensuring children receive recommended vaccinations. The Committee is requesting a report within 90 days of enactment detailing a strategy and plan for a public awareness campaign to increase childhood and adult vaccination rates and reduce barriers to routine vaccinations, including vaccine hesitancy. Health data programs would also receive increased funding. The National Center for Health Statistics would receive $190 million, $15 million over the FY 2021 enacted level, and the public health data surveillance and analytics programs for CDC and state and local health departments would receive $150 million, an increase of $100 million above the FY 2021 enacted level. The Committee also includes a significant increase for emerging and zoonotic infectious disease prevention. Overall, the Committee recommended $726 million, a $78 million increase from the FY 2021 level. The majority of the funding would be allocated to the Antibiotic Resistance Initiative at $176 million and Emerging Infectious Diseases prevention at $194.9 million.

For the National Institute for Occupational Safety and Health (NIOSH), the Committee recommends $360.3 million, a $15 million increase from the FY 2021 enacted level. Of the total, the Committee is calling for $123 million to be allocated to the National Occupational Research Agenda. The Committee is calling the CDC to study the impact of COVID-19 exposure to workers, particularly those in healthcare, first responders, meat and poultry, corrections, grocery, corrections, and transit industries. The Committee is asking the agency to include in the report a comparative analysis of the higher risk occupations and the rate of COVID–19 deaths in the general population.

The Committee would provide an increase of $56.5 million for activities related to infectious diseases and the opioid epidemic. The Committee is seeking to have the CDC expand its activities targeting infectious disease and injection drug use, including the implementation of a nationwide syringe services program. The Committee would also provide the CDC with increased funding for its global health programs. Under the bill, the CDC would receive $842.8 million, an increase of $250 million from the FY 2021 enacted level, to work with international organizations to prevent and contain diseases and environmental health issues. The CDC is also directed to develop health promotion activities. This funding increase is in addition to the $750 million provided under the American Rescue Plan (P.L. 117-2) for global disease detection and emergency response.

For the Substance Abuse and Mental Health Services Administration (SAMHSA), the Committee is recommending $9.2 billion, an increase of $3.1 billion from the FY 2021 enacted level and $572.2 million less than the President’s Budget Request. For mental health programs of national significance, the Committee is recommending $3.2 billion, an increase of $1.4 billion over the FY 2021 enacted level. The Committee is also recommending $1.6 billion, an $825 million increase, for the Mental Health Block Grant (MHBG). This funding for the MHBG is in addition to the $1.5 billion provided by the American Rescue Plan (P.L. 117-2).
Key mental health programs that would receive increases:

- Project AWARE, which provides mental health resources for children and youth would receive $155.5 million, an increase of $48.5 million above the FY 2021 enacted level.
- The National Child Traumatic Stress Initiative would receive $100 million, an increase of $28.1 million above the FY 2021 enacted level.
- The Zero Suicide Program would receive $26.2 million, an increase of $5 million above the FY 2021 enacted level. The Suicide Lifeline would receive $113.6 million, an increase of $89.6 million above the FY 2021 enacted level, to support the implementation of the Lifeline’s new 988 number.
- The bill would create a new Mental Health Crisis Response Partnership Pilot Program, which would provide $100 million to help communities create mobile crisis response teams.

The Committee calls on SAMHSA to place a greater emphasis on mental health disparities and addressing health care disparities experienced by racial and ethnic minorities should be a priority in programs funded by Federal agencies, including programs funded by the Community Mental Health Services Block Grant. The Committee also directs SAMHSA to require states to report receiving funds under the block grants to detail which services are being received by and the outcomes, individuals from racial and ethnic minority groups. The bill also directs SAMHSA to focus on the impact of COVID–19 on the mental health of older Americans. Older adults, who were more susceptible to the virus, experienced increased isolation during the pandemic, which is linked to higher rates of loneliness, depression, suicidal thoughts, and other mental health issues. In disbursing MHBG funds, the Committee is encouraging SAMHSA to work with states to address the impact of increased isolation of seniors. The Committee also encourages SAMHSA to establish a center of excellence program focused on comprehensive mental health treatments, and the development, evaluation, and distribution of evidence-based resources regarding comprehensive treatment recommendations for mental health patients that include supportive services, wrap-around services, and social determinants of health.

The Committee would place a greater emphasis on substance use prevention and treatment programs including:

- $2.8 billion, an increase of $1 billion over the FY 2021 enacted level, for the Substance Abuse Prevention and Treatment Block Grant (SABG).
- $2 billion for State Opioid Response Grants, an increase of $500 million over the FY 2021 enacted level.
- $136.5 million, an increase of $56.5 million over the FY 2021 enacted level, for Medication Assisted Treatment.
- $243.5 million, an increase of $35 million above the FY 2021 enacted level for substance abuse prevention.
- Comprehensive Opioid Recovery Centers, as authorized by section 7121 of the SUPPORT Act (P.L. 115–271), would receive an increase of $2 million.
- An increase of $35.4 million for Criminal Justice activities, $35 million of which is directed to Drug Court activities.
- An increase of $2.7 million for communities to strengthen their infrastructure for peer recovery support services.

For the Office of Minority Health (OMH), the Committee would recommend $75.8 million, which is $14 million above the FY 2021 enacted level and President’s budget request. To continue its work at the Center for Indigenous Innovation and Health Equity, the Committee would provide $3 million, an increase of $1 million from FY 2021, and is urging HHS to consider partnering with universities with a focus on Indigenous health research and policy among Native Americans and Alaska Natives, as well as universities with a focus on
Indigenous health policy and innovation among Native Hawaiians/Pacific Islanders. The Committee directs OMH to establish a public health pilot program to address structural racism in public health and included $10 million to fund 20 eligible applicants. Applicants could include public and non-profit entities, including community-based organizations, to build and strengthen coalitions. The Committee expressed concern that current grants to advance health equity and reduce disparities are not as targeted as necessary to address structural racism in public health and promote policies and practices that counter the disparate impact on the health and well-being of communities of color.

The Committee directs the Advisory Committee on Minority Health to issue a report advising HHS on the best efforts to create pipeline programs that start with pre-med students in underserved areas and end in more graduate medical education training programs in those underserved areas. The Committee requests a study by the Advisory Committee on Minority Health with recommendations that can help HHS address vaccine and testing equity in the Hispanic and immigrant communities during the COVID–19 pandemic, not only due to barriers to COVID-19 vaccination and testing, but also lack of reliable information in their languages, misinformation, and fear of deportation. Of note, the Committee praised OMH but expressed concern over its ability to properly address antiracism in healthcare, given its broad mission. The Committee directed the Secretary of HHS to create a report on potentially establishing a National Center on Antiracism and Health Equity within HHS.

For the Centers for Medicare and Medicaid Services (CMS), the bill primarily would provide grant funding to states for their Medicaid programs, and payments to the health care trust funds and programs.

**Key CMS discretionary funding recommendations:**

- For grants to states for Medicaid, the bill would provide $368.7 billion, an increase of $55.8 billion from the FY 2021 enacted level.
- For payments to the health care trust funds, the Committee would provide $487.8 billion, an increase of $48.3 billion from the FY 2021 enacted level. Of note, this account includes the general fund subsidy to the Federal Supplementary Medical Insurance Trust Fund for Medicare Part B benefits, and Medicare drug benefits and administration. It also includes reimbursements to the Federal Hospital Insurance Trust Fund for benefits and administrative costs, which have not been financed by payroll taxes or premium contributions.
- The Committee includes $4.3 billion for program operations, which is $646 million more than the FY 2021 enacted level. This amount includes $25.4 million for Research, Demonstration and Evaluation, which was previously funded on its own budget line.

Several additional agencies and programs within HHS would also receive increases, including the Agency for Healthcare Research and Quality (AHRQ) which would receive $380 million in discretionary funding, a $35 million increase over the FY 2021 enacted level. Priority areas highlighted in the bill would include no less than $10 million to support efforts to combat antimicrobial resistance; an increase of $3 million to support investigator-initiated research grants focused on health equity and an additional $1 million in related research supplements; and $5 million to expand research related to opioid use and misuse. Additionally, the Administration for Community Living (ACL) would receive $2.9 billion, an $840 million increase above the FY 2021 enacted level. Within ACL, the bill would provide $34 million for the Alzheimer’s disease program which would expand competitive matching grants to states to encourage innovation and coordination across Alzheimer’s related programs and services. The bill would also provide $47 million to support University Centers for Excellence in Development Disabilities, a $5 million increase above the FY 2021 enacted level. Additionally, the National Institute on Disability, Independent Living, and Rehabilitation Research
(NIDILRR) would receive $128 million to enhance knowledge-generation programs that support individuals with disabilities. This is almost a $12 million increase over the FY 2021 enacted level. The Administration for Children and Families (ACF) would receive about $47 billion a $6.4 billion increase above the FY 2021 level. Notably, the Early Childhood Education programs would receive about $20 million, including $7.4 billion for the Child Care and Development Block Grant, $12.2 billion for Head Start, and $450 million for Preschool Development grants. The bill would also provide $450 million for the Refugee Support Services (RSS) program, $243 million above the FY 2021 enacted level and $3.4 billion for the Unaccompanied Children Program (UCP), which is over $2 billion above the FY 2021 enacted level.

### Department of Health and Human Services (Other)

*In millions of $*

<table>
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<tr>
<th></th>
<th>FY 2021 Enacted</th>
<th>FY 2022 Request</th>
<th>FY 2022 House</th>
<th>House vs. FY 2021 Enacted</th>
<th>House vs. FY 2022 Request</th>
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<td>314</td>
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<td>-897 (14%)</td>
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<td>Substance Abuse Prevention</td>
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<td>217</td>
<td>244</td>
<td>36 (17.3%)</td>
<td>27 (12.4%)</td>
</tr>
<tr>
<td><strong>Agency for Healthcare Research and Quality (AHRQ)</strong></td>
<td>338</td>
<td>380</td>
<td>380</td>
<td>42 (12.4%)</td>
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<tr>
<td><strong>Centers for Disease Control and Prevention (CDC)</strong></td>
<td>7,875</td>
<td>9,553</td>
<td>10,571</td>
<td>2,696 (34.2%)</td>
<td>1,018 (10.7%)</td>
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<tr>
<td>Chronic Disease Prevention and Health Promotion</td>
<td>1,277</td>
<td>1,453</td>
<td>1,557</td>
<td>280 (21.9%)</td>
<td>104 (7.2%)</td>
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<tr>
<td>National Institute for Occupational Safety and Health (NIOSH)</td>
<td>345</td>
<td>345</td>
<td>360</td>
<td>15 (4.3%)</td>
<td>15 (4.3%)</td>
</tr>
<tr>
<td>Environmental Health</td>
<td>223</td>
<td>333</td>
<td>343</td>
<td>120 (53.8%)</td>
<td>10 (3%)</td>
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<tr>
<td><strong>Administration on Community Living (ACL)</strong></td>
<td>2,206</td>
<td>2,954</td>
<td>3,047</td>
<td>841 (38.1%)</td>
<td>93 (3.1%)</td>
</tr>
<tr>
<td>National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)</td>
<td>113</td>
<td>119</td>
<td>125</td>
<td>12 (10.6%)</td>
<td>6 (5%)</td>
</tr>
</tbody>
</table>
Department of Education (ED)
The Department of Education (ED) would receive more than $102 billion in appropriations, which matches what is proposed in the President’s budget request and is $29.2 billion more than in Fiscal Year 2021. Programs receiving significant increases include Title I for K-12, the Pell Grant program, the Federal Work-Study program, and programs for Minority-Serving Institutions (MSIs), among other programs. At the K-12 level, the Title I program, which supports schools serving students from low-income backgrounds, would increase by $19.5 billion compared to FY 2021. Other K-12 provisions include:

- $2.2 billion, an increase of $150 million when compared to FY 2021 for Title II professional development programs for educators;
- $254 million, an increase of $60 million compared to FY 2021 for the Education Innovation and Research (EIR) program, including $112 million for social and emotional learning (SEL) and an encouragement for ED to use EIR to improve educator preparation;
- $90 million, an increase of $10 million compared to FY 2021 for the Supporting Effective Educator Development (SEED) program, with a direction for ED to support projects that increase the number of teachers with computer science certifications and projects that support professional development to help teachers incorporate SEL into their classrooms;
- $96 million for the Promise Neighborhoods program, which is $15 million more than FY 2021 funding, with a directive for ED to include support for planning grants;
- $1 billion for the Mental Health Services Professional Demonstration Grants program, which would support the hiring of school counselors, social workers, psychologists, or other mental health professionals qualified to provide school-based mental health services;
- $250 million for the Personnel Preparation program, which is almost $160 million more in FY 2021, to address the shortage of teachers for students with disabilities; and
- $443 million, a $413 million increase compared to FY 2021, for full-service community schools.

For Pell Grants, the bill would provide $6,895 for the maximum individual Pell Grant award for the 2022-2023 school year, a $400 discretionary increase over the current maximum award level, which reflects the budget request. The bill would also extend Pell Grant eligibility to DACA eligible recipients. Contrasting with the President’s proposed flat budgets for the Supplemental Education Opportunity Grants (SEOG) program and Federal Work-Study (FWS) program, the bill would support increases for the programs, providing $1.03 billion and of $1.43 billion, respectively. Similarly, the TRIO Programs would be provided an increase of $200 million over current levels, up to $1.3 billion and the Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) would receive $408 million, a $40 million increase over the FY 2021 enacted level.

The bill proposes a $15 million increase for the Title VI International Education and Foreign Language Studies programs, for a total of $93 million and calls for support of a Native American Language Resource Center. The bill would also increase by $2 million funding for the Graduate Assistance in Areas of National Need (GAANN)
program at a level of $25.5 million, and the Committee report encourages ED to integrate the humanities and computer science in the next GAANN grant competition. The bill would substantially increase funding for the Child Care Access Means Parents in School (CCAMPIS) program to $95 million, an increase of $40 million above the FY 2021 enacted level.

Reflecting President Biden’s priority to support Minority-Serving Institutions and Historically Black Colleges and Universities (HBCUs), the House bill would provide significant increases for those institutional programs. The Title V Developing Hispanic Serving Institutions (Developing HSIs) program would see a $88 million or 60 percent increase above the FY 2021 enacted level and the Promoting Post-Baccalaureate Opportunities for Hispanic Americans (PPOHA) program would see a $15 million or 108 percent increase above the enacted level. Additionally, the Strengthening Institutions Program (SIP) would see an $100 million increase over FY 2021 enacted to a funding level of $209 million and the Strengthening Asian American and Native American Pacific-Islander-Serving Institutions (AANAPI) program would receive $20 million, a $15 million increase. The bill would provide $130 million for the Teacher Quality Partnerships grant program, in line with President Biden’s budget request and $80 million over the FY 2021 enacted level. New this year, the bill calls for $20 million for the Augustus F. Hawkins Centers of Excellence program for HBCUs and MSIs to establish centers supporting diverse teacher preparation programs.

The Committee bill would also increase funding for the Institute of Education Sciences (IES), the Department’s education research arm, providing $762 million for the Institute, a $120 million increase above the FY 2021 enacted levels and $25 million over the budget request. In addition to sizable increases to research and demonstration, the Committee report notes inclusion of $25 million to conduct the 2024 NAEP Civics assessment to ensure “a sufficient sample size to provide State-level data for each State to better understand student performance in civics.”

Under the Fund for the Improvement of Postsecondary Education (FIPSE) account, which would be provided $168 million in total, the Committee bill would provide $15 million to support the Centers of Excellence for Student Veteran Success program that had been restarted in the FY 2020 appropriations after a hiatus. Under FIPSE, the bill would also continue funding of $12 million to support the Open Textbook Pilot program. Additionally, the report notes funding of $10 million for the Modeling and Simulation education training program, $1 million for the Transitioning Gang-Involved Youth to Higher Education program, and $8 million for the Basic Needs of Students grant program. Newly proposed grant programs under the bill include: $5 million for a Center of Excellence in Spatial Computing designation, $5 million for a Menstrual Products access program, $5 million for a Distributed Higher Education Digital Infrastructure Pilot to support MSIs with digital infrastructure. FIPSE is also the placeholder account under the bill for $92 million in higher education related community project funding requests from Members of Congress.

Career and Technical Education (CTE) would see a $158 million increase when compared to FY 2021 and would be funded at $1.5 billion. $115 million would support CTE national programs, which would support the Biden Administration’s proposals for the Innovation and Modernization grants. These grants would support K-12 school districts focused on youth work-based learning and industry credential attainment efforts.

ED would also be directed to respond to several policy directives. These include updating Congress on the impact of COVID-19 on the ability of applicants to qualify for the Public Service Loan Forgiveness Program. ED would also be directed to coordinate with the Department of Labor, the Department of Defense, and other federal agencies to establish a Defense Education and Workforce Pipeline Strategy. The Committee also noted
concern with the staffing shortages at the National Center for Education Statistics. The Government Accountability Office would also be directed to provide a report on the infrastructure needs of HSIs.

### Department of Education

*(in thousands of $)*

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<thead>
<tr>
<th></th>
<th>FY 2021 Enacted</th>
<th>FY 2022 Request</th>
<th>FY 2022 House</th>
<th>House vs. FY 2021 Enacted</th>
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<tr>
<td><strong>Elementary and Secondary Education</strong></td>
<td></td>
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<tr>
<td>Promise Neighborhoods</td>
<td>81,000</td>
<td>91,000</td>
<td>96,000</td>
<td>15,000 (18.5%)</td>
<td>5,000 (5.5%)</td>
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<td>Education Innovation and Research</td>
<td>194,000</td>
<td>194,000</td>
<td>254,000</td>
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<td>60,000 (30.9%)</td>
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<td>Personnel Preparation</td>
<td>90,200</td>
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<td>250,000</td>
<td>159,800 (177.2%)</td>
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<td>CTE National programs</td>
<td>7,421</td>
<td>115,421</td>
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<td><strong>Student Financial Assistance</strong></td>
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<td>Pell Grant*</td>
<td>6,495</td>
<td>6,895</td>
<td>6,895</td>
<td>400 (6.2%)</td>
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<td>SEDG</td>
<td>880,000</td>
<td>880,000</td>
<td>1,028,000</td>
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<td>148,000 (16.8%)</td>
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<td>Federal Work-Study</td>
<td>1,190,000</td>
<td>1,190,000</td>
<td>1,434,000</td>
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<td>244,000 (20.5%)</td>
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<td><strong>Higher Education</strong></td>
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<td>Title V Aid for Developing HSIs*</td>
<td>148,732</td>
<td>236,732</td>
<td>236,732</td>
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<td>Promoting Post-Baccalaureate Opportunities for Hispanic Americans</td>
<td>13,845</td>
<td>28,845</td>
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<td>Strengthening Institutions</td>
<td>109,007</td>
<td>209,007</td>
<td>209,007</td>
<td>100,000 (91.7%)</td>
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<td>Strengthening Historically Black Colleges (HBCUs)</td>
<td>337,619</td>
<td>402,619</td>
<td>402,619</td>
<td>65,000 (19.3%)</td>
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<tr>
<td>Strengthening Asian American- and Native American Pacific Islander-serving Institutions (AANAPISI)</td>
<td>5,120</td>
<td>20,120</td>
<td>20,120</td>
<td>15,000 (293.0%)</td>
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<tr>
<td>Strengthening Native American-Serving Nontribal Institutions*</td>
<td>5,120</td>
<td>12,120</td>
<td>12,120</td>
<td>7,000 (136.7%)</td>
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<td>Title VI International Education and Foreign Language Studies</td>
<td>78,164</td>
<td>78,164</td>
<td>93,164</td>
<td>15,000 (19.2%)</td>
<td>15,000 (19.2%)</td>
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<tr>
<td>TRIO Programs</td>
<td>1,097,000</td>
<td>1,297,761</td>
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<td>GEAR UP</td>
<td>368,000</td>
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<td>FY 2023</td>
<td>FY 2024</td>
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<tr>
<td>GAANN</td>
<td>23,547</td>
<td>23,547</td>
<td>25,547</td>
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<tr>
<td>Teacher Quality Partnerships</td>
<td>52,092</td>
<td>132,092</td>
<td>132,092</td>
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<tr>
<td>Child Care Access Means Parents in Schools</td>
<td>55,000</td>
<td>95,000</td>
<td>95,000</td>
<td>40,000</td>
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<tr>
<td>Institute of Education Sciences</td>
<td>642,462</td>
<td>737,465</td>
<td>762,465</td>
<td>120,003</td>
<td>25,000</td>
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<td>Research, Development and Dissemination</td>
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<td>267,880</td>
<td>260,880</td>
<td>63,003</td>
<td>-7,000</td>
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<td>Research in Special Education</td>
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<td>58,500</td>
<td>59,500</td>
<td>1,000</td>
<td>1,000</td>
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<td>Regional Education Laboratories</td>
<td>57,022</td>
<td>57,022</td>
<td>59,022</td>
<td>2,000</td>
<td>2,000</td>
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<tr>
<td>Statewide Data Systems</td>
<td>33,500</td>
<td>33,500</td>
<td>34,500</td>
<td>1,000</td>
<td>1,000</td>
</tr>
</tbody>
</table>

* Categories included for ease of reading the chart.
† The Pell Grant is listed as the total maximum grant award an individual could receive, including mandatory and discretionary funding. It is not listed in thousands of dollars.

Source: The House Appropriations Committee Labor, Health, and Human Services appropriations draft bill is available at [https://docs.house.gov/meetings/AP/AP00/20210715/113908/BILLS-117--AP--AP00-FY2022LHSSubcommitteeAppropriationsBill.pdf](https://docs.house.gov/meetings/AP/AP00/20210715/113908/BILLS-117--AP--AP00-FY2022LHSSubcommitteeAppropriationsBill.pdf) and the related Committee report can be found at [https://docs.house.gov/meetings/AP/AP00/20210715/113908/HMKP-117-AP00-20210715-SD003.pdf](https://docs.house.gov/meetings/AP/AP00/20210715/113908/HMKP-117-AP00-20210715-SD003.pdf).

**Department of Labor (DOL)**

The Department of Labor (DOL) would receive $14.7 billion in funding, which is $2.1 billion more than in FY 2021. The bill would support increased investments in several programs that support workforce development efforts of interest to education entities.

Programs that would receive support include:

- **$435.8 million for the Dislocated Workers National Reserve**, which is $155 million more than FY 2021 funding. $100 million of this funding would support the **Strengthening Community College Training Grants**, an increase of $55 million compared to the FY 2021 enacted level. $100 million would go to support a new **POWER grant** program, which is aimed assisting communities experiencing dislocations occurring in fossil fuel and other energy related industries;

- **$5 million to create an Automation Impacted Industries Pilot Program** to support demonstration and pilot projects relating to the training needs of workers who are or are likely to be dislocated workers as a result of automation;

- **$150 million for Reintegration of Ex-Offenders programs**, and increase of almost $50 million compared to FY 2021;

- **$7 million for the Workforce Data Quality Initiative**, which is $1.2 million above the FY 2021 level;

- **$285 million for Registered Apprenticeships (RA) grants**, which is $100 million more than the FY 2021 level. DOL would be directed to continue working with intermediaries, support apprenticeships in cybersecurity, advanced manufacturing, arts, and entertainment, and increase the participation of women in apprenticeships. DOL would also be directed to prioritize apprenticeships in the clean energy sector;

- **$20 million for a Veterans’ Clean Energy Training Program**, which would support a competitive grant program to prepare veterans and their spouses for careers in clean energy; and
• $6.7 million for the Women in Apprenticeship and Nontraditional Occupations (WANTO) program, which is $5 million more than the funding provided in FY 2021.

DOL would also be directed to develop and pilot programs that facilitate education and training programs in the field of advanced manufacturing.

### Department of Labor

**(in thousands of $)**

<table>
<thead>
<tr>
<th></th>
<th>FY 2021 Enacted</th>
<th>FY 2022 Request</th>
<th>FY 2022 House</th>
<th>House vs. FY 2021 Enacted</th>
<th>House vs. FY 2022 Request</th>
</tr>
</thead>
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<tr>
<td><strong>Training and Employment Services</strong></td>
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<tr>
<td>Adult Employment and Training Activities</td>
<td>862,649</td>
<td>899,987</td>
<td>923,174</td>
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<tr>
<td>Youth Activities</td>
<td>921,130</td>
<td>963,837</td>
<td>988,604</td>
<td>67,474 (7.3%)</td>
<td>24,767 (2.6%)</td>
</tr>
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<td>National Dislocated Workers Grants</td>
<td>280,859</td>
<td>380,859</td>
<td>435,859</td>
<td>155,000 (55.1%)</td>
<td>55,000 (14.4%)</td>
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<td>Apprenticeship Program</td>
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<td>285,000</td>
<td>285,000</td>
<td>100,000 (54.1%)</td>
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<tr>
<td>Workforce Data Quality Initiative</td>
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<td>6,000</td>
<td>7,250</td>
<td>1,250 (20.8%)</td>
<td>--</td>
</tr>
<tr>
<td>National Youth Employment Program</td>
<td>--</td>
<td>50,000</td>
<td>50,000</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Veterans’ Clean Energy Training Program</td>
<td>--</td>
<td>20,000</td>
<td>20,000</td>
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</tr>
</tbody>
</table>

### Institute of Museum and Library Services (IMLS)

The **Institute of Museum and Library Services** would receive $282 million in FY 2022 under the bill, an increase of $25 million over FY 2021 levels and $17 million over the budget request. The accompanying report notes inclusion of $4.5 million for IMLS’ activities in “policy, research, and data collection, including functions formerly conducted by the National Commission on Libraries and Information Science.” In addition, the report encourages IMLS to support initiatives to preserve and honor the “living memories of Holocaust survivors in an interactive format, which can help educate future generations about the atrocities of the Holocaust.”

**Sources and Additional Information:**

- Full Labor-HHS-ED Committee print of the bill:  
  [https://docs.house.gov/meetings/AP/AP00/20210715/113908/BILLS-117--AP--AP00-FY2022LHHSSubcommitteeAppropriationsBill.pdf](https://docs.house.gov/meetings/AP/AP00/20210715/113908/BILLS-117--AP--AP00-FY2022LHHSSubcommitteeAppropriationsBill.pdf)
- Committee Report accompanying the bill:  
  [https://docs.house.gov/meetings/AP/AP00/20210715/113908/HMKP-117-AP00-20210715-SD003.pdf](https://docs.house.gov/meetings/AP/AP00/20210715/113908/HMKP-117-AP00-20210715-SD003.pdf)

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Funding Opportunities and Agency Updates

Agency Update: DOE Fossil Energy and Carbon Management Priorities

The Department of Energy (DOE) has proposed a $140 million or 19 percent increase in fiscal year (FY) 2022 for fossil energy and carbon management research, development, deployment, and demonstration activities. If funded, the budget for these activities would grow to $890 million in FY 2022. While congressional appropriations will determine final funding levels, DOE still plans to advance new program priorities. The most significant shift is new investments focused on decarbonizing the power and industrial sectors primarily through carbon capture, utilization, and storage while reducing research and development activities for more traditional fossil combustion efforts. DOE notes that it will no longer fund any research and development activities that support fossil combustion, traditional fossil-fueled power generation, or increased production of fossil fuels.

New initiatives and funding opportunities proposed for FY 2022 include:

- **$69 million to reduce methane emissions**: DOE plans to fund the development and deployment of new technologies to monitor and reduce methane emissions primarily for natural gas production, but also includes coal and oil fuel production. DOE proposes an additional $16 million to support research that addresses the environmental impacts of oil and natural gas development including wellbore integrity, oil spill prevention, and produced water treatment and reuse technologies; $41 million to mitigate emissions throughout the natural gas supply chain, from reducing flaring in production fields to detecting and mitigating legacy infrastructure, including the development of advanced materials, data management tools, in-pipe inspection and repair technologies, dynamic compressor research and development, new advanced remote detection technologies, and the development of modular remediation materials and solutions; and $12 million for the development of direct and remote measurement sensor technologies for the collection, dissemination, and analysis of emissions data, including from orphan wells.

- **$30 million to accelerate carbon-neutral hydrogen using natural gas infrastructure**: DOE proposes a new natural gas hydrogen research program to offer an emissions-free fuel for power generation, industrial applications, and the transportation sector. The focus is on developing technologies that leverage natural gas infrastructure for hydrogen production, transportation, storage, and use coupled to carbon management. Specifically, DOE plans to support technologies for carbon-neutral hydrogen production as well as hydrogen (and ammonia) transportation, and geologic storage technologies that leverage existing natural gas infrastructure. Hydrogen research would focus on improving carbon neutral natural gas steam methane reforming, blending hydrogen with natural gas, and leveraging existing transportation and storage infrastructure. DOE also plans to support the development of new analytical tools and models that can evaluate potential advanced technologies, technology performance metrics, technoeconomic and lifecycle analyses, and resource evaluations.

- **$23 million for carbon dioxide removal (CDR)**: CDR refers to approaches that remove carbon dioxide from the atmosphere and store it in geologic formations, products, terrestrial sinks, or in the ocean. DOE’s three research and development priorities include direct air capture, bioenergy with carbon capture and storage, and mineralization. DOE plans to prioritize research and development in carbon mineralization which has the potential to use reactive rocks and minerals, including materials such as mine tailings and wastes, to react with carbon dioxide and permanently store it as a solid material. DOE also plans to field test bioenergy with carbon capture and storage for both gasification and combustion.

- **$16 million for Big Data and Artificial Intelligence (AI)**: DOE plans to fund research university and national lab projects that use AI and machine learning applications to improve plant operations, technology testing, systems analysis, and technology transfer to industry. DOE is focused on using AI,
machine learning, and data analysis to create learning algorithms within large datasets to help discover new materials, optimize processes, and run autonomous systems. Priority areas include passive sensor platforms, data management and systems, and tools that employ AI to help adapt varying pipeline conditions and additional fluids, optimize dedicated carbon dioxide storage, and apply remediation technologies to detect and fix methane leakage from legacy fossil infrastructure.

- **$15 million for carbon utilization**: DOE will continue to fund novel approaches to recycle carbon oxide emissions, principally carbon dioxide, into value-added products. Potential feedstocks include flue gas from power generation, industrial point sources, captured/concentrated carbon dioxide, mixed gas streams, or the atmosphere. These carbon sources could then be converted through a bio-mediated, catalytic, mineralization, or hybrid pathway. DOE’s priority areas include the catalytic conversion to higher value products such as fuels, chemicals, polymers, and nutraceuticals; mineralization to building products; generation of solid carbon products; and algal systems designed to integrate carbon dioxide. Most new funding proposed in FY 2022 would support research into catalysts made from low-cost materials and improved reactor designs to lower the cost of the conversion process. New funding would also support the development of at least one, fully integrated carbon dioxide utilization field-test system.

- **$10 million for critical minerals**: DOE is focused on the extraction of critical minerals and rare-earth elements from coal to meet demand for magnets, catalysts, and batteries for clean energy applications. New funding in FY 2022 would expand research and development in support of pre-front end engineering and design studies for large-scale pilot projects to produce large quantities of high purity, commercial grade rare earth elements and other critical minerals. In particular, research and development would expand current efforts to include extraction of alkaline minerals from coal waste to serve as a feedstock to react with and permanently store carbon dioxide to form a synthetic aggregate for mine land reclamation or a feedstock for roads and concrete.

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**Funding Opportunity: NOAA Releases FY 2022 Climate Program Office Competitions**

The National Oceanic and Atmospheric Administration (NOAA) Climate Program Office (CPO) has released its fiscal year (FY) 2022 solicitation for approximately 90 new awards with a total of $15 million in available funds. This annual series of competitions supports research through the CPO’s four programs including Earth System Science and Modeling (ESSM); Climate and Societal Interactions (CSI); National Integrated Drought Information System (NIDIS); and Communication, Education and Engagement (CEE). The FY 2022 competitions will be centered around the four high-priority risk areas which were developed in FY 2020: (1) Coastal Inundation, (2) Marine Ecosystems, (3) Water Resources, and (4) Extreme Heat. While in past years there has been some overlap in the competition topics, this year, all of the programs are brand new. The eight competitions for FY 2022 are:

1. **Fire and Smoke at the Wildland-Urban Interface**
   - This competition invites proposals that will utilize existing NOAA wildfire, atmospheric, and satellite data to develop data management practices, discover new uses for existing tools (FIREX-AQ, GOES and JPSS satellites, etc.), assess fire and smoke impacts on urban areas, and examine emission factors of fires. Applicants with National Environmental Satellite, Data, and Information Service (NESDIS) collaborators will be most relevant.
   - Proposals should budget for up to $750,000 over 3 years, 7-9 awards are anticipated.

2. **Joint Competition to Advance Process Understanding and Representation of Precipitation in Models**
This competition seeks projects to improve the “understanding, diagnosing and modeling of key processes for improving the simulation of subseasonal to seasonal (S2S) precipitation in weather and climate models.” The program’s goals are to determine patterns between weather and climate processes associated with precipitation. There are two focus areas for this competition:

A. “Identifying and understanding key processes that influence model biases and systematic errors in the simulation of precipitation at the S2S timescale.”
B. “Research to advance NOAA’s Unified Forecast System (UFS) prototype operational system for S2S prediction.”

Proposals for focus area A should budget up to $900,000 over 3 years with 5-7 awards expected. Focus Area B should budget up to $750,000 over 2-3 years with 4-6 awards expected.

   - This competition seeks observations or modeling projects to help improve understandings of equatorial Pacific Climate Systems.
   - Proposals should budget up to $900,000 over up to three years. Approximately 4-8 projects may be funded.

4. **Improving Climate Understanding and Information For Marine Sanctuary Management Planning.**
   - This competition will focus on understanding climate considerations for Sanctuary reports and management planning. This may also include ecosystem management practices that provide additional adaptation and mitigation benefits for coastal communities and ecosystems. There are two competition types for this program (1) a research track and (2) a task force convening track.
   - Proposals for type 1 should budget up to $175,000 per year for up to three years. Proposals for type 2 proposals should budget up to $250,000 for the project.

5. **Atmospheric Aerosols and Their Potential Roles in Solar Climate Intervention Methods**
   - This competition seeks projects to improve observations of stratospheric conditions and the impact of aerosols on weather, climate, and other Earth systems.
   - Proposals should budget up to $750,000 over 3 years with 4-6 awards expected.

6. **Climate-Smart Communities Initiative (CSCI)**
   - The selected project for this four-year cooperative agreement will work closely with NOAA’s U.S. Climate Resilience Toolkit (USCRT) Team to develop approaches to equitable and sustainable community resilience.
   - In addition to displaying exceptional expertise in climate services and resilience sciences, applicants should also be able to manage diverse teams and partners. The project will be expected to develop hazard assessments and resilience plans for around 300 communities with at least one in each state.
   - The program anticipates providing $4 million in the first year followed by approximately $10 million to $15 million per year, or a total of up to $49 million for the entire four-year period.

7. **Ecological Drought**
   - This competition is specifically seeking research on the impacts of drought on terrestrial and aquatic ecosystems and resulting feedback loops. This differs from traditional drought research in that it is not intended to focus on human systems such as agriculture, water access, and hydrologic impacts.
   - Proposals should budget up to $600,000 over 2 years with 6-7 awards anticipated.

8. **Building Tribal Drought Resilience**
This competition aims to bridge the gap between the management plans that have already been developed by tribal nations and the next steps of implementation. Funds should primarily be used to develop, improve, and/or carry out drought resilience plans for one or more tribal communities.

Applications should be developed directly by or in full partnership with one or more tribal nations.

Proposals should budget up to $500,000 over 2 years with 6-7 awards anticipated.

**Deadlines:** Letters of Intent are due at 5:00 pm ET on **August 9, 2021** and full applications are due by **5:00 pm ET on October 18, 2021.**

**Award Information:** NOAA anticipates granting 90 awards across all eight competitions with a total of $15 million in funding with possible exceptions, pending budget appropriations. Notably, the budget for these competitions is significantly higher than the FY 2021 ($8 million) competitions.

**Eligibility:** Any U.S. institution of higher education, non-profit, or state and local government is eligible to apply; see each competition program page for specifics. There is no cost-sharing requirement.

**Sources and Additional Information:**
- The CPO overview and notice of funding opportunity as well as brief descriptions and information sheets for each competition are available at [https://cpo.noaa.gov/Funding-Opportunities/2022-Notice-of-Funding-Opportunity](https://cpo.noaa.gov/Funding-Opportunities/2022-Notice-of-Funding-Opportunity).

**Funding Opportunity: NIH Releases Second Solicitation for FIRST Cohort Awards**
The National Institutes of Health (NIH) has released a second solicitation for FIRST Cohort awards as part of its Faculty Institutional Recruitment for Sustainable Transformation (FIRST) Program through the Common Fund. FIRST Cohorts aim to address the existing needs and gaps in diversity within the current scientific workforce through the recruitment, training, and mentoring of tenure-track faculty to create cultures of “inclusive excellence” at awardee institutions. This opportunity was first competed last year and the release of a second round of funding for the program highlights NIH’s continued commitment to increasing diversity and inclusion within the biomedical research workforce.

NIH intends to commit up to $70.5 million in total funding over five years to support a total of four awards in fiscal year 2022. Applications are due on **September 24.**

**Engagement Opportunity: BARDA Accepting Lightning Talk Applications**
The Biomedical Advanced Research and Development Authority (BARDA), within the Office of the Assistant Secretary for Preparedness and Response in the U.S. Department of Health and Human Services, is currently seeking applications for virtual Lightning Talks for industry and academia to present their ideas and technologies during BARDA Industry Day on November 3 and 4, 2021. Applications to present a Lightning Talk are due by **11:59 PM EST on Monday, August 9, 2021.**
BARDA Industry Day provides an opportunity for stakeholders to hear from BARDA leadership and program managers on recent successes and future priorities, as well as a chance for public and private entities to foster collaboration on health security solutions. This year’s theme is “Strengthening Partnerships, Advancing Innovation.” More information on the BARDA Lighting Talks and the virtual event can be found here.

Agency Update: DOE Launches Energy Earthshots to Accelerate Clean Energy Technology Development and Deployment

The Department of Energy (DOE) is organizing major crosscutting and multi-disciplinary research activities around eight Earthshots. The goals of the “Energy Earthshots” are to accelerate breakthroughs, address technological challenges, and reduce costs of clean energy technologies over the next decade that will help provide 100% clean energy electricity by 2035 and net-zero carbon emissions economy-wide by 2050. The Earthshots are also designed to coordinate activities and pool resources across DOE’s science and applied energy offices and leverage diverse expertise and talent at research universities, industry, and national laboratories. DOE plans to hold various stakeholder engagement events for each one, including workshops and summits. Based on prior Climate Innovation Working Group priorities, the Earthshots will likely include investments in:

- carbon-free hydrogen;
- energy storage at one-tenth the cost of today’s alternatives;
- zero net carbon buildings at zero net cost, including carbon-neutral construction materials;
- advanced energy system management tools to plan for and operate a grid powered by zero carbon power plants;
- very low-cost zero carbon on-road vehicles and transit systems;
- new, sustainable fuels for aircraft and ships, as well as improvements in broader aircraft and ship efficiency and transportation management;
- affordable refrigeration, air conditioning, and heat pumps made without refrigerants that warm the planet;
- carbon-free heat and industrial processes that capture emissions for making steel, concrete, chemicals, and other important industrial products;
- innovative soil management, plant biology, and agricultural techniques to remove carbon dioxide from the air and store it in the ground; and
- direct air capture systems and retrofits to existing industrial and power plant exhausts to capture carbon dioxide and use it to make alternative products or permanently sequester it deep underground.

DOE recently announced two Earthshots and plans to announce the others within the next six months. This analysis provides more detailed information on the announced Earthshots and will be updated as DOE makes additional announcements.

Hydrogen Shot

On June 7, 2021, DOE released the first Energy Earthshot—the Hydrogen Shot—to reduce the cost of clean hydrogen by 80 percent to $1 per 1 kilogram in 1 decade (“1 1 1”). DOE is currently planning a Hydrogen Shot Summit for Fall 2021 to engage stakeholders and help guide future investments. While subject to congressional appropriations, DOE proposed growing hydrogen research, development, and demonstration funding from $285 million in fiscal year (FY) 2021 to $400 million—a 40 percent increase—in FY 2022. Research priorities are laid out in DOE’s Hydrogen Program Plan and planned funding opportunities include:
• **Office of Science**: Hydrogen research and development as a likely topic in the Fall Energy Frontier Research Center competition with a likely focus on solar hydrogen production; novel materials for hydrogen storage; membranes for separations; chemical processes for production and use of hydrogen such as nanoscale catalysts; and bio-inspired materials and processes.

• **Renewable energy programs**: New research thrusts planned for offshore wind for hydrogen production ($5 million), solar and thermochemical hydrogen production ($4 million), the production of sustainable aviation fuels/synfuels using hydrogen ($20 million), thermal integration/hybrid systems including nuclear energy for green hydrogen production ($20 million), and manufacturing of hydrogen and fuel cell systems ($15 million).

• **Fossil energy and carbon management**: New research thrusts in gasification, including gasification of waste feedstocks such as plastics and available biomass with carbon capture, utilization and sequestration; advanced approaches beyond steam methane reforming, such as pyrolysis; advanced pre-combustion capture systems coupled with gasification systems to eliminate CO2 emissions ($24 million). This also includes reversible solid oxide fuel cells focused on natural gas and co-producing hydrogen ($10 million).

• **ARPA-E**: DOE is exploring new technology programs related to hydrogen that would advance innovative concepts such as alkaline membranes, ammonia production and utilization, energy storage, medium temperature fuel cells, fuel cell hybridization, and advanced hydrogen production and conversion technologies.

**Long Duration Storage Shot**
On July 14, 2021, DOE released the second Energy Earthshot—the Long Duration Storage Shot—to reduce the cost of grid-scale energy storage by 90 percent within the next decade for systems with more than 10 hours of duration. DOE is interested in developing and deploying cheaper and more efficient storage to make it easier to capture and store renewable clean energy for use when energy generation is unavailable or lower than demand. This effort will support all types of energy storage technologies, including electrochemical, mechanical, thermal, chemical carriers, or any combination that has the potential to meet the necessary duration and cost targets for grid flexibility. DOE is currently planning a Long Duration Storage Shot Summit for September 22, 2021, to engage stakeholders and help guide future investments. DOE will be releasing additional information on the summit later this summer here.

• In FY 2022, DOE plans to release a $45 million funding opportunity to support development and demonstration of innovative, late-stage long-duration energy storage technologies. If Congress approves the creation of a new Office of Clean Energy Demonstration, DOE would also issue a competitive solicitation in FY 2022 to support commercial-scale energy storage demonstrations with a focus on long duration storage. The FY 2022 House Energy and Water Appropriations bill would provide $200 million to support this effort. The Senate has not yet advanced its appropriations bills.