

Appropriations Update: Senate Appropriations Committee Releases FY 2022 Commerce, Justice, Science Appropriations Bill

Lewis-Burke Associates LLC – October 22, 2021

On October 18, the Senate Appropriations Committee released its fiscal year (FY) 2022 Commerce, Justice, Science, and Related Agencies (CJS) appropriations bill. The bill would provide a total of \$79.7 billion in discretionary funding for the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), National Institute of Standards and Technology (NIST), Economic Development Administration (EDA), and Department of Justice (DOJ), among other programs. The total amount provided in the CJS bill is \$8.55 billion above the FY 2021 enacted amount but \$1.6 billion below the House bill. Research and development priorities remain consistent across the CJS bill, focusing on climate change, innovation, and workforce development. As with the House bill, the Senate would provide significant increases across the portfolio compared to FY 2021 funding levels, but in many cases, these increases fall short of the proposed growth in the President's FY 2022 budget request.

The top-level funding levels for agencies relevant to the research community are as follows:

- **NSF** would be funded at **\$9.49 billion**, \$1 billion or 11.8 percent above the FY 2021 enacted level but \$682 million less than the President's budget request and \$147 million below the House.
- **NASA** would be funded at **\$24.8 billion**, \$1.57 billion or 6.7 percent above the FY 2021 enacted level and \$36 million above the President's budget request but \$201 million below the House.
- **NOAA** would be funded at **\$6.276 billion**, \$846 million or 15.6 percent above the FY 2021 enacted level, but \$707.1 million less than the President's budget request and \$181.9 million below the House.
- **NIST** would be funded at **\$1.39 billion**, \$360.1 million or 34.8 percent above the FY 2021 enacted level and \$25 million above the House but \$103 million below the President's budget request.
- **EDA** would be funded at **\$395 million**, \$49 million or 14.2% above the FY 2021 enacted level but \$38 million below the President's budget request and the House.
- **DOJ** would be funded at **\$36.2 billion**, \$2.44 billion or 7.2 percent above the FY 2021 enacted level and \$216 million above the President's budget request but \$205 million below the House.

Congress needs to pass the FY 22 appropriations bills, or another continuing resolution (CR), before the current CR expires on December 3 or face a potential government shutdown. The Senate Appropriations Committee does not currently plan to advance the remaining bills through Committee or on the Senate floor, instead, the Committee plans to use the bills to go directly into negotiations with the House. The CJS bill was drafted in a bipartisan manner and includes republican priorities, however, Congress has not yet agreed on a topline funding number which could impact the final appropriations.

Below are additional details on the House CJS bill and the corresponding committee report. Specific funding information is available in the charts following the narrative.

National Science Foundation

The Senate CJS bill would provide NSF with \$9.487 billion, which is \$1 billion or 11.8 percent above the FY 2021 level but \$682 million less than the President's budget request. The Senate level would be \$147 million below what the House version would provide. The proposed NSF increase would be the biggest for the Agency in many years but would leave NSF unable to fulfill all of the requested growth proposed in the budget request.

The Senate bill would provide \$7.667 billion for **Research & Related Activities (R&RA)**, 11 percent above the FY 2021 level but \$473 million below the budget request and \$29 million below what the House would provide. Like the House bill, the Senate draft would approve the creation of the new Directorate for **Technology, Innovation, and Partnerships (TIP)**. The Senate draft provides more direction to NSF than the House bill, specifying up to \$865 million for TIP, the same as the budget request level. The explanatory statement notes that "TIP serves as a cross-cutting platform to advance science and engineering research leading to breakthrough technologies, to find solutions to national and societal challenges, to strengthen U.S. global competitiveness, and to provide training opportunities for the development of a diverse STEM workforce." The Senate bill would also provide up to \$200 million for the proposed **Regional Innovation Accelerators**, the same as the budget request. The explanatory statement notes the Committee's expectation that at least 20 percent of RIAs be awarded to institutions in EPSCoR jurisdictions.

The Senate explanatory statement notes the importance of the breadth of NSF research and education to advance "complex problems important to the Nation." The Committee encourages NSF to continue its efforts for increased partnership with industry, foundations, and non-profit organizations. Like the House bill and previous Senate committee reports, the Senate draft bill would encourage NSF to fully support U.S. scientific research facilities and instruments engaged in cutting edge research.

The Committee's explanatory statement discusses several of the administration's priority areas:

- Would support the administration's requested funding for the **U.S. Global Change Research Program (USGCRP)** and **clean energy technology**. NSF requested a 46 percent increase for the climate change related USGCRP and a 32 percent increase for clean energy technology above FY 2021 levels.
- Would provide up to the requested level of \$260 million for **quantum information science**, including \$50 million to support National Quantum Information Science Research Centers as set out in the *National Quantum Initiative Act*. The overall funding would be \$50 million above the FY 2021 level.
- Would provide up to the request level of \$734 million for **AI**, for which the explanatory statement commends NSF for its investments and notes its belief in the importance of U.S. leadership. The explanatory statement would encourage NSF to continue workforce efforts in AI, including focused outreach to community colleges and minority serving institutions as well as encouraging programs for non-computer science students and general data literacy.
- Highlights support for the **Spectrum Innovation Initiative** but notes that this program should ensure it does not harm radio astronomy in pursuing its goals.
- The Administration's other priority areas, including advanced manufacturing, advanced wireless, biotechnology, and microelectronics and semiconductors are not mentioned, in the Senate bill and unlike the House bill, the Senate explanatory statement does not comment on the total amount provided for Administration priority areas or the balance between priority areas and core NSF research activities.

Much of the Senate’s explanatory statement echoes themes from previous years, but there are several new research areas highlighted by the statement, which:

- Commends NSF for its commitment to the **Geography of Innovation** and directs NSF to review its large center programs to ensure that EPSCoR institutions, minority serving institutions, and emerging research institutions have the capacity to, and increasingly lead, awards under these programs. NSF should include specific plans for building this capacity in its FY 2023 budget request. As in past years, the explanatory statement also underscores the importance of the **Established Program to Stimulate Competitive Research (EPSCoR)** and would fund the program at no less than \$240 million, \$40 million above the FY 2021 level, equal to the request level and \$13 million above what the House would provide.
- Several items address the issue of misinformation and influence in social media. The explanatory statement encourages NSF to fund a National Academies study on the spread of **disinformation and misinformation** on the internet and social media platforms. Separately, the explanatory statement would direct NSF to implement the requirements of the *Identifying Outputs of Generative Adversarial Networks Act* (P.L. 116-258), which directs NSF to fund research that addresses the threat of **deep fakes**. Continuing from last year, the explanatory statement would also encourage NSF to support additional research into **online influence** in collaboration with other federal agencies and disparate scientific fields, to help protect against foreign influence from adversaries designed “to influence U.S. perspectives and undermine confidence in U.S. elections and institutions.”
- Encourages NSF to undertake a study to better understand the national **cyber workforce** building on the 2017 National Academies *Information Technology and the U.S. Workforce* report.
- Notes the Committee’s support of the **Prediction of and Resilience against Extreme Events (PREVENTS)** program and encourages research to fulfill the *National Landslide Preparedness Act* (P.L. 116-323), which authorizes NSF to fund research on causes of and resilience towards landslides.
- Directs NSF to consider transferring remote, under-utilized monitoring stations in the **USArray Transportable Array** to NOAA and its observation programs as appropriate.

The report contains many provisions that echo guidance provided in previous years, specifically:

- Fully funding the **Mid-Scale Research Infrastructure** program, recommending NSF make at least two awards in an EPSCoR State. *Note that only the smaller Mid-Scale Research Infrastructure R-1 competition is funded under R&RA.*
- Recognizing NSF’s critical role in technology transfer and innovation through programs such as **Innovation Corps (I-Corps)**. The report would provide \$45 million for I-Corps, \$5 million above the budget request, the FY 2021 level, and the House proposal. Similar to previous years, the explanatory statement would encourage NSF to, “facilitate greater participation in the program from academic institutions in States that have not previously received awards.”
- Providing \$34 million for the **Historically Black Colleges and Universities (HBCU) Excellence in Research Program**, equal to the budget request and the House proposal and 66 percent above the FY 2021 level.
- Encourages NSF to continue planning and early-stage investments related to the 2019 Brightest Light Initiative Workshop on **intense, ultrafast lasers**.
- Encourages NSF to engage in several facets of research related to **re-engineering plastics**. These include solutions to eliminate single-use plastics as well as better understanding of microplastic fibers and their impacts on aquatic environments and human health. Overall, the explanatory statement encourages NSF “to take a comprehensive and coordinated approach to support research in plastics, microplastics, and microfibers to address significant challenges in the transport and

migration of such materials, waste management disposal and reuse, and development of alternative materials.”

- Directs NSF to develop a plan for implementing a program on **sustainable chemistry research** as authorized in the 2016 *American Innovation and Competitiveness Act (AICA)* and the *FY 2021 National Defense Authorization Act* (P.L. 116-283, Title II, Subtitle E), which authorizes interagency activities and support for partnerships between academic institutions and industry on sustainable chemistry issues.
- Highlighting support for the **Rules of Life**, and specifically “NSF's funding for research in plant genomics and directs NSF to continue to advance the ongoing plant genomics research program, further its work in crop-based genomics research, and to maintain a focus on research related to crops of economic importance.”
- Urging NSF to utilize regional expertise in designing new research programs within the **Navigating the New Arctic** Big Idea and encourages the initiative encompasses research, coordination, observation infrastructure, and workforce investments.
- Expecting NSF to continue to support “world-class scientific research facilities and instrumentation” in **U.S. astronomy** to “maximize its investments in research while preliminarily preparing for facility upgrades and activities associated with supporting the next Astrophysics decadal.” As in previous years, there are several additional astronomy language items related to continued access and operations of the Green Bank Observatory and the Dunn Solar Telescope, as well as new language related to the Committee’s expectations for NSF’s response to the Astro2020 decadal and preliminary investments in facilities such as the Cosmic Microwave Background Stage 4 (CMB-S4).
- Commending NSF for its continued investment in **high performance computing** and data analysis capabilities, whilst stating the need to invest in additional high-end computational systems.
- Recognizing the importance of NSF’s **Mathematical Sciences Institutes**.
- Highlighting NSF and NOAA collaborations associated with the **Vortex-SE** program focused on devastating tornadoes in the southeastern U.S.; NSF would be directed to include funding plans for Vortex-SE research and instrumentation in future budget requests and ensure collaboration with the **PREEVENTS** program.
- Encouraging NSF to continue support for research on the **domestic steel manufacturing** industry.

Education and Human Resources (EHR) would be supported at \$1.1 billion, \$132 million or 13.6 percent above the FY 2021 level, but \$187 million below the budget request proposal and \$174 million below what the House would provide. Note that the \$132 million increase for EHR includes the NSF-proposed consolidation of the Graduate Research Fellowship Program (GRFP) within EHR, a shift of \$142 million from Research and Related Activities. Currently, EHR funds 50 percent of the program while R&RA funds the other 50 percent. Without this transfer of funds, EHR would be cut by \$10 million or 1 percent below FY 2021 levels. Within the amount that would be provided, the Committee makes a number of recommendations across all levels of education in science, technology, engineering, and mathematics (STEM) at NSF. In new language for FY 2022, the explanatory statement would:

- Encourage NSF to support the development of hands-on learning opportunities, including after-school activities.
- Encourages collaboration with the Department of Education on transformational education innovation and translation. The committee notes that these activities may include large-scale digital learning platforms, research that can address the learning loss associated with the COVID-19 pandemic, and consider learning needs of under-resourced and under-represented students.

As in previous years, the explanatory statement would provide specific amounts for many education and workforce programs within EHR:

- Approving the proposed 12 percent increase of the **Graduate Research Fellowship Program** to \$318.5 million.
- Approving many of the large increases proposed in the budget request for existing programs to broaden participation in STEM fields supported through the **Division on Human Resource Development**. The Committee recommends \$51.5 million for the **Hispanic Serving Institutions** program, “to build capacity at institutions of higher education that typically do not receive high levels of NSF funding,” this compares to \$56 million in the budget request and House bill but still \$5 million above the FY 2021 enacted level; \$21 million for the **Tribal Colleges and Universities Program** (TCUP), \$4.5 million above the FY 2021 enacted level and even with the budget request and House proposal; \$46.5 million for the **HBCU Undergraduate Program** (HBCU-UP), \$10 million above the FY 2021 level and equal to the budget request and House proposal; \$12 million for the **Alliance for Graduate Education and the Professoriate** (AGEP), \$4 million above the FY 2021 enacted level and even with the budget request and House proposal; \$69.5 million for the **Louis Stokes Alliances for Minority Participation** (LSAMP), \$20 million above the FY 2021 enacted level and equal to the budget request and House proposal; and \$34 million for the **Centers for Research Excellence in Science and Technology** (CREST), \$5 million below the House proposal and budget request but still \$10 million above the FY 2021 level.
- \$46.5 million for the **Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science** (INCLUDES) initiative, equal to the budget request, \$1 million more than the House would provide, and \$26.5 million more than the FY 2021 level.
- \$75 million for the **Advanced Technological Education** program, equal to the FY 2022 budget request and the FY 2021 enacted level.
- \$67 million for the **Robert Noyce Scholarship Program**, the same as the FY 2021 enacted level, the budget request, and the House proposal.
- At least \$70 million for the **CyberCorps: Scholarships for Service (SFS)** of which, at least \$7.5 million would support continued activity with “community colleges that have been designated as a Center of Academic Excellence in Information Assurance 2-Year Education [CAE2Y] by the National Security Agency and the Department of Homeland Security.” Overall funding for CyberCorps would be \$10 million above the FY 2021 enacted level and equal to the budget request and House proposal.
- Continued support for informal science education; the Committee would provide \$70 million to support the **Advancing Informal STEM Learning** (AISL) program, equal to the budget request and \$7.5 million over the FY 2021 enacted level.

The **Major Research Equipment and Facilities Construction (MREFC)** account would be funded at \$249 million, \$8.0 million or 3 percent above the FY 2021 level and even with the budget request and House proposal. The explanatory statement would fully fund at the budget request level all projects in the MREFC pipeline, including **Antarctic Infrastructure Modernization, HL-LHC Upgrade, Regional Class Research Vessels**, and the **Vera C. Rubin Observatory**. The explanatory statement would provide \$76 million for **Mid-scale research infrastructure**, the same as the budget request, FY 2021 level, and House-proposed level and encourages NSF to fund at least one mid-scale project led by an institution in an EPSCoR state (*note only the larger midscale research infrastructure (Mid-Scale RI-2) awards are funded under MREFC*). The explanatory statement encourages NSF to continue planning for future major facilities needed for U.S. scientific leadership and as in past years would encourage GAO to continue its annual review of MREFC projects.

National Science Foundation

(In millions of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021	Senate vs. Request	Senate vs. House
NSF, total	8,486.76	9,634.04	9,486.76	1,000.00 (11.8%)	-682.54 (6.7%)	-147.28 (1.5%)
Research & Related Activities	6,909.77	7,695.73	7,667.10	757.33 (11.0%)	-472.61 (5.8%)	-28.63 (0.4%)
Education & Human Resources	968.00	1,274.27	1,100.00	132.00 (13.6%)	-187.27 (14.5%)	-174.27 (13.7%)
MREFC	241.00	249.00	249.00	8.00 (3.3%)	--	--
Agency Operations and Award Management	345.64	390.02	445.46	100.00 (28.9%)	-22.66 (4.8%)	55.62 (14.3%)
NSB	4.50	4.60	4.60	0.10 (2.2%)	--	--
Office of Inspector General	17.85	20.42	20.42	2.57 (14.4%)	--	--

National Aeronautics and Space Administration

NASA would receive \$24.8 billion, an increase of \$1.57 billion or 6.7 percent above the FY 2021 enacted level and \$240 million, or 0.8 percent, below the House.

The **Science Mission Directorate (SMD)** would receive \$7.9 billion, an increase of \$600.1 million above the FY 2021 enacted level but \$30 million below the budget request and \$68 million below the House mark. Every division within SMD would see increases above current funding levels, although – with the exception of heliophysics – they also would receive flat or decreased funding relative to NASA’s FY 2022 request.

The Senate would provide \$2.23 billion for SMD’s **Earth Science Division (ESD)**, or \$20 million lower than both the request and the House mark. The legislation does not specify the source of this funding discrepancy, and all major missions and programs currently under development would continue at levels requested by NASA. The Senate voiced strong support for and provided a slight increase (\$12.2 million) above NASA’s \$137.8 million request for *Earth System Explorers* missions. This is a new class of competed, PI-led missions that address “Targeted Observables” prioritized in 2017 *Earth Science and Applications from Space Decadal Survey*, and for which NASA intends to release a draft Announcement of Opportunity in December 2021.

The **Astrophysics Division (APD)** would receive \$1.4 billion, a \$44 million increase above FY 2021 and in line with the request, but also \$46.1 million less than the House. The House would restore funding for the SOFIA mission at the expense of cuts to the Astrophysics Research and Astrophysics Explorers programs. The Senate meanwhile would reverse those cuts while allowing NASA to terminate SOFIA, as requested.

The Senate would provide \$3.161 billion to the **Planetary Science Division (PSD)**, an increase of \$461.2 million above FY 2021, but \$39 million and \$73.8 million below the budget request and House mark,

respectively. The bill would maintain funding for major PSD programs at NASA's requested amounts, including planetary defense missions under development, the Lunar Discovery and Exploration and Commercial Lunar Payload Services programs, New Frontiers and Discovery competitive mission lines, and the Mars Sample Return mission. The bill does not identify the funding discrepancy relative to the FY 2022 request, nor does it explicitly mention the Europa Clipper mission.

The **Heliophysics Division (HPD)** would be funded at \$825.7 million, an increase of \$75 million, or 10 percent, above the FY 2021 enacted level, \$53 million or 6.8 percent over the House mark, and \$29 million above the request. The bill is consistent with the House and NASA's request to fully fund the Solar Terrestrial Probes, Interstellar Mapping and Acceleration Probe (IMAP), the Dynamic Neutral Atmosphere-Ionosphere Coupling (DYNAMIC), and Small and Mid-sized Explorer mission programs. Heliophysics Research would receive \$235.5 million, an 11.8 percent increase above the requested \$210.6 million, of which \$77 million would be allocated to the Research and Analysis program. The Senate affirms HPD's proposal to establish a new, standalone Heliophysics Technology program at the requested level. In response to the *National Space Weather Strategy and Action Plan* and the decadal survey, the Senate would provide \$25 million for Space Weather Science and Applications to support "innovation in observations capabilities and advance research-to-operations, operations-to-research, and computations aspects of space weather mitigation" and provides \$1 million to initiate a new multidisciplinary center for space weather research and development.

The bill would provide \$940 million for the **Aeronautics Research Mission Directorate (ARMD)**, \$5 million above the House, \$111.3 million above FY 2021, and \$25.2 million above the request. Senate appropriators reemphasized their support for ongoing ARMD programs including the Low Boom Flight Demonstrator, University Leadership Initiative, Unmanned Traffic Management, and Electric Air Flight. The Senate would provide \$60 million for Hypersonics Technology, \$10 million more than the House. The bill would provide \$7 million above the request for university-led aeronautics materials research and \$32 million for the High-Rate Composite Aircraft Manufacturing (HiCAM) project with direction for the project to leverage academic expertise.

The **Space Technology Research Directorate (STMD)** would receive \$1.25 billion, a \$150 million increase from FY 2021 appropriations but \$175 million below the request and \$30 million below the House. The Senate is consistent with the House and reaffirms support for STMD's status as a standalone directorate that funds research to advance cross-cutting technologies. The Senate would fully fund the Small Business Innovation Research (SBIR) program with an increased focus on awarding firms with fewer than 50 employees. Other investments in STMD include:

- \$27 million for the Flight Opportunities Program (\$30 million in the House mark);
- \$5 million to advanced large scale production and use of innovative nanomaterials, including carbon nanotubes and carbon/carbon composites
- \$8.75 million On-surface Manufacturing Capabilities, in partnership with universities;
- \$227 million for On-Orbit Servicing, Assembly, and Manufacturing; (equal to the House mark); and
- \$110 million for Nuclear Thermal Production, of which \$80 million is to enable a flight demonstration (equal to the House mark).

The bill would provide \$6.96 billion for **Exploration**, an increase of \$442.8 million above FY 2021 and \$79.8 million above the FY 2022 request, but \$319.1 million less than the House. The House allocated \$150 million above the requested \$1.195 billion for the Human Landing System (HLS) and did not direct

NASA to select a second provider. Meanwhile, the Senate would provide \$50 million less than the House and direct NASA to utilize two HLS providers. Other key departures from NASA’s request include an increase for Orion (\$20 million) and Exploration Ground Systems (\$100 million). The Exploration Research and Development account would receive \$40 million less than the request, however, this is a result of the agency’s human exploration re-structure announced last month and the corresponding transfer of the Human Research Program’s (\$130.9 million) to the Space Operations Directorate.

The bill would provide \$147 million for **Science, Technology, Engineering, and Math (STEM) Engagement**, an increase of \$20 million above FY 2021 and equal to the request. The increase includes \$57 million for the Space Grant program, versus the \$60 million in the House mark. The Senate would direct no less than \$850 million in base funding for each Space Grant state consortium to award competitive grants that address local, regional, and national STEM needs.

National Aeronautics and Space Administration

(In thousands of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021 Enacted	Senate vs Request	Senate vs. House
NASA, total	23,271,300	25,038,400	24,837,336	1,566,030 (6.7%)	35,830 (0.15%)	-201,070 (0.8%)
Science	7,300,800	7,969,500	7,901,400	600,600 (8.2%)	-30,000 (0.4%)	-68,100 (0.85%)
Earth Science	2,000,000	2,250,000	2,230,000	230,000 (11.5%)	-20,000 (.9%)	-20,000 (.9%)
Planetary Science	2,699,800	3,234,800	3,161,000	461,200 (17%)	-39,000 (1.2%)	-73,800 (2.3%)
Astrophysics	1,356,200	1,446,300	1,400,200	44,000 (3.2%)	--	-46,100 (3.3%)
James Webb Space Telescope	414,700	175,400	175,400	-239,300 (57.7%)	--	--
Heliophysics	751,000	773,000	825,700	74,700 (9.9%)	29,000 (3.6%)	52,700 (6.8%)
Aeronautics	828,700	935,000	940,000	111,300 (13.4%)	25,200 (2.75%)	5,000 (0.5%)
Space Technology	1,100,000	1,280,000	1,250,000	150,000 (13.6%)	-175,000 (12.3%)	-30,000 (2.3%)
Exploration	6,517,400	7,279,300	6,960,200	442,800 (6.8%)	79,800 (1.2%)	-319,100 (4.4%)
Space Operations	4,017,400	3,961,300	4,128,246	110,846 (2.8%)	110,846 (2.8%)	166,946 (4.2%)
STEM Engagement	127,000	147,000	147,000	20,000 (15.7%)	--	--
Space Grant	51,000	60,000	57,000	6,000 (11.7%)	--	-3,000 (5%)
EPSCoR	26,000	26,000	26,000	--	--	--
Minority University Research and Education Program (MUREP)	38,000	48,000	48,000	10,000 (26.3%)	--	--

Safety, Security, & Mission Services	2,936,000	3,030,000	3,064,200	128,200 (4.4%)	15,000 (0.5%)	34,200 (1.1%)
Construction and Environmental Compliance and Restoration	428,500	390,300	390,300	-38,200 (8.9%)	--	--
Office of Inspector General	41,200	46,000	46,000	4,800 (11.7%)	--	--

National Oceanic and Atmospheric Administration (NOAA)

The Senate CJS bill would provide NOAA with \$6.276 billion, an increase of \$846 million or 15.6 percent over the FY 2021 enacted level, a decrease of \$687.5 million or 10.1 percent below the budget request, and a decrease of \$181.9 million or 2.8 percent below the House bill. The **Operations, Research, and Facilities** account would receive \$4.45 billion, an increase of \$611.4 million or 15.9 percent above the FY 2021 enacted level and a decrease of \$237.7 million or 5.1 percent below the House bill. This would include \$64 million for the new NOAA Special Projects account, to which the House provided \$24 million. Consistent with the House, the Senate provides no mention of the proposed Advanced Research Projects Agency – Climate (ARPA-C). Most NOAA research offices and programs would receive an overall increase from FY 2021 enacted levels, but less than the House Appropriations Committee and the President’s Budget Request proposed.

The bill would provide \$680 million for the **Office of Oceanic and Atmospheric Research (OAR)**, a \$109.4 million or 19.2 percent increase over the FY 2021 enacted level and \$4.51 million or 5.1 percent below the House bill. The **Climate Research Program** would receive \$233 million, \$50.9 million greater than the FY 2021 enacted level, but \$20 less than the House bill. The climate laboratories and cooperative institutes (CIs) would receive \$106.9 million, an increase of \$30 million over the FY 2021 enacted level, to increase funding for greenhouse gas observing systems, and to develop a global high-resolution atmospheric model. Like the FY 2021 omnibus, this Senate bill once again encouraged NOAA to consider establishing a new CI for Coastal Resilience and Adaptation, but did not provide any funding directly for it. Consistent with the budget request and the House bill, the Senate bill would provide a \$10 million increase from FY 2021 for OAR’s Climate Adaptation Programs, formerly known as the **Regional Integrated Sciences and Assessments Program (RISA)**. However, the Senate deviates from the House by not providing specific funding for the newly initiated Climate-Smart Communities Initiative. The **Sea Grant College Program** would receive \$90 million, a \$15 million increase over the FY 2021 enacted level and \$5 million above the House bill and aligns with the House in prioritizing coastal resilience. The Senate goes beyond the House bill by directing NOAA’s Sea Grant Aquaculture Research program to collaborate with universities, especially Historically Black Colleges and Universities (HBCUs). The bill would provide \$45 million for **Ocean Exploration and Research**, \$2 million above the FY 2021 enacted level, and \$500,000 above the House bill for mapping the U.S. Exclusive Economic Zone.

The **National Ocean Service (NOS)** would receive \$705.8 million, an increase of \$86 million or 13.9 percent over the FY 2021 enacted level and a slight decrease of \$750,000 from the House bill. The Committee proposed \$88.5 million for **Coastal Zone Management Grants**, a \$6 million decrease from the House bill, and \$36 million for the **National Oceans and Coastal Security Fund**, a \$2 million increase over the FY 2021 enacted level but a \$2 million decrease compared to the House bill; both of these accounts fund extramural research and projects focused on coastal management and resilience. The Committee also directs \$1 million for NOAA to designate an additional joint ocean and coastal mapping

center co-located within an institution of higher education; there was no similar provision in the House bill. The bill would provide \$8 million to the **Geospatial Modeling Grants Program** and builds on a similar proposed funding level in the House bill by requesting all funding for this program be distributed externally. The bill would provide \$50 million for **National Centers for Coastal Ocean Science (NCCOS)** to advance coastal sustainability and resilience by harnessing coastal restoration, green infrastructure, and citizen science, and community adaptation efforts. The Committee rejected the House proposal to transfer funding to NCCOS from Coastal Science, Assessment, Response, and Restoration, opting instead to provide NCCOS with its own allocation and agenda, and encourages NCCOS to collaborate with the Hydrology and Water Resources CI on research activities.

The **National Marine Fisheries Service (NMFS)** would receive \$1.07 billion, an increase of \$109 million or 11.3 percent over the FY 2021 enacted level and an increase of \$29.4 million or 2.8 percent over the House bill. This Senate would include \$8 million to support new climate-ready fisheries, \$12 million less than the House provided. The bill would also provide \$1 million to NMFS to establish a workforce training pilot program for the seafood industry, and is encouraged to partner with minority-serving institutions (MSIs) to implement this program; no similar provision was included in the House bill.

The **National Weather Service (NWS)** would be funded at \$1.225 billion, an increase of \$124.2 million or 11.3 percent over the FY 2021 enacted level and a slight increase of \$6.9 million over the House bill. This would include \$182.5 million for the Office of Science and Technology Integration, a slight increase over the \$181 million proposed in the House bill. The **National Environmental Satellite, Data, and Information Service (NESDIS)** would receive \$1.37 billion, a \$148.1 million increase over the FY 2021 enacted level and a \$109.1 million decrease from the House bill.

The **Procurement, Acquisition, and Construction (PAC)** account would receive \$1.78 billion, \$244.2 million greater than the FY 2021 enacted level but \$221.3 million less than the House bill. \$65 million would be for NOAA construction, \$22 million more than proposed in the House. Consistent with the House bill, the Committee urges NOAA to accelerate the solicitation process for academic and non-profit institutions to co-locate NMFS laboratories given their state of disrepair.

National Oceanic and Atmospheric Administration

(In thousands of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021 Enacted	Senate vs. FY 2022 Request	Senate vs. House
NOAA, total	5,430,607	6,458,136	6,276,198	845,591 (15.6%)	-707,131 (10.1%)	-181,938 (2.8%)
Operations, Research, and Facilities (ORF)	3,840,300	4,689,458	4,451,783	611,483 (15.9%)	-237,598 (5.1%)	-237,675 (5.1%)
Oceanic and Atmospheric Research (OAR)	570,590	684,500	679,990	109,400 (19.2%)	-82,179 (10.8%)	-4,510 (0.66%)
Climate Research	180,652	253,000	232,920	52,268 (28.9%)	-60,793 (20.7%)	-20,080 (7.9%)

<i>Climate Competitive Research</i>	63,795	74,000	70,000	6,205 (9.7%)	-60,793 (46.5%)	-4,000 (5.4%)
<i>Ocean, Coastal and Great Lakes Research</i>	230,148	260,250	274,500	44,352 (19.3%)	-20,359 (6.9%)	14,250 (5.5%)
<i>Sea Grant and Marine Aquaculture Program</i>	87,950	99,500	105,000	17,050 (19.4%)	-23,818 (18.5%)	5,500 (5.5%)
<i>Ocean Exploration and Research (OER)</i>	42,639	44,500	45,000	2,361 (5.5%)	1,590 (3.7%)	500 (1.1%)
National Weather Service (NWS)	1,100,776	1,218,113	1,224,963	124,187 (11.3%)	8,378 (0.7%)	6,850 (0.56%)
National Ocean Service (NOS)	619,700	706,500	705,750	86,050 (13.9%)	-148,158 (17.4%)	-750 (0.11%)
Coastal Science and Assessment: Competitive Research	21,000	28,000	29,000	8,000 (38.1%)	-13,000 (31%)	1,000 (3.6%)
National Oceans and Coastal Security Fund	34,000	38,000	36,000	2,000 (5.9%)	-32,000 (47.1%)	-2,000 (5.3%)
National Marine Fisheries Service (NMFS)	964,862	1,044,590	1,073,950	109,268 (11.3%)	-25,377 (2.3%)	29,360 (2.8%)
Procurement, Acquisition, and Construction (PAC)	1,532,558	1,998,000	1,776,718	244,160 (15.9%)	-450,264 (20.2%)	-221,282 (11.1%)
National Environmental Satellite, Data, and Information Systems	1,224,924	1,482,066	1,372,989	148,065 (12.1%)	-304,330 (18.1%)	-109,077 (7.4%)

National Institute of Standards and Technology

The National Institute of Standards and Technology (NIST) would receive \$1.39 billion in the Senate CJS bill, an increase of \$360.1 million (34.8 percent) above the FY 2021 level, \$25 million (1.8 percent) above the House level but \$103 million (6.9 percent) below the President's budget request. NIST's **research programs** would receive \$913.1 million, which is \$125.1 million (15.9 percent) above the FY 2021 level but \$24.5 million (2.6 percent) below the House and \$2.5 million (0.3 percent) below the President's budget request. NIST's **industrial technology services**, which fund a majority of NIST's manufacturing activities, would be funded at \$213 million, \$46.5 million (27.9 percent) above the FY 2021 level but \$228.6 million (51.8 percent) below the President's budget request and \$118.5 million (35.7 percent) below the House level.

The bill would continue support for many of NIST's long-standing priorities including quantum information science (QIS), artificial intelligence (AI), cybersecurity and privacy standards, and advanced manufacturing.

- **QIS:** NIST would receive up to \$61.8 million for QIS research, which is \$15 million above the FY 2021 enacted level.
- **AI:** NIST would receive up to \$15 million above the FY 2021 level to expand AI research and measurement science. The bill would direct NIST to “develop resources for government, corporate, and academic uses of AI to train and test systems, model AI behavior, and compare systems.”
- **Cybersecurity:** NIST would receive \$10 million above the FY 2021 level for cybersecurity initiatives, noting that the Committee is “deeply about the number of cyberattacks affecting the Nation.” Of this amount, the Committee directs NIST to support National Initiative for Cybersecurity Education (NICE) cooperative agreements for cybersecurity workforce and education. The Senate bill also encourages NIST to establish a Cybersecurity and Privacy Technology Supply Chain Security and Integrity Partnership.
- **Forensic Sciences:** NIST would receive \$2 million above the FY 2021 level for forensic science research. Of this amount, at least \$3.15 million would support the Organization of Scientific Area Committees and \$1.2 million would support technical merit evaluations.
- **Regenerative Medicine Standards:** NIST would receive \$2.5 million to continue to “improve measurement assurance and standards coordination for regenerative therapies, including: completion of a regenerative medicine assay validation and innovation core, conducting inter-laboratory studies to improve measurement assurance and develop appropriate reference materials, and coordination of stakeholders for efficient development and implementation of relevant standards.”

Additional research areas supported by the Committee would include: Climate and Energy Measurement, Tools, and Testbeds; Forward-Looking Building Standards; Circular Economy; the Greenhouse Gas Program and Urban Dome Initiative; Wildfires and the Wildland-Urban Interface; Composites; Pyrrhotite in Concrete Aggregate; Graphene Research and Commercialization; Voluntary Voting System Guidelines; Public Health Risk to First Responders; and the Malcolm Baldrige Performance Excellence Program.

The Senate CJS bill would provide \$175 million for the **Manufacturing Extension Partnership (MEP)** program, an increase of \$25 million (16.7 percent) over FY 2021 but \$100 million (36.4 percent) below both the House level and President’s budget request. The **Manufacturing USA** program would receive \$38 million, an increase of \$21.5 million (130.3 percent) over FY 2021 but \$18.5 million (32.7 percent) below the House level and \$128.7 million (77.2 percent) below the President’s budget request. Of this amount, the Senate bill would provide \$20 million to support a new Manufacturing USA institute, unlike the House bill which does not specify if FY 2022 NIST funding is for a new institute. The Senate would also provide \$10 million to support the existing NIST-funded institute (the National Institute for Innovation in Manufacturing Biopharmaceuticals) and \$1.5 million that may be used to support the U.S. Food and Drug Administration participation in biomanufacturing innovation institutes.

The Committee would also provide \$5.1 million to support workforce diversity for scientists and engineers, including a new program for postdoctoral researchers that are underrepresented in STEM careers to work at NIST laboratories.

National Institutes of Standards and Technology

(In thousands of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021 Enacted	Senate vs. FY 2022 Request	Senate vs. House
NIST, total	1,034,000	1,369,070	1,394,133	360,133 (34.8%)	-103,067 (6.9%)	25,063 (1.8%)
Scientific and Technical Research and Services	788,000	937,570	913,070	125,070 (15.9%)	-2,530 (0.3%)	-24,500 (2.6)
Industrial Technology Services	166,500	331,500	213,000	46,500 (27.9%)	-228,600 (51.8%)	-118,500 (35.7%)
Hollings Manufacturing Extension Program	150,000	275,000	175,000	25,000 (16.7%)	-100,000 (36.4%)	-100,000 (36.4%)
Manufacturing USA	16,500	56,500	38,000	21,500 (130.3%)	-128,700 (77.2%)	-18,500 (32.7%)

Economic Development Administration

The Economic Development Administration (EDA) would receive \$395 million, an increase of 14.2 percent over the FY 2021 level but 8.8 percent below the President's FY 2022 budget request and the FY 2022 House bill. The Committee would focus on addressing challenges to rural economic development and providing support to diversify sectors and economies that are economically distressed.

The Committee would fund the **Regional Innovation Program** (RIP, rebranded by EDA as Build to Scale or B2S) at \$50 million, an increase of \$12 million above the FY 2021 enacted level and \$5 million above the President's budget request. Importantly, the Senate bill would follow the House and fund RIP at its authorized level of funding for the first time. Within the \$50 million, the Senate bill would set aside \$40 million for the B2S Venture Challenge that supports innovation and entrepreneurship capacity-building and \$8 million for the B2S Capital Challenge that provides seed funding support. It would also require EDA to submit justification for any funding provided to support a sector specific B2S Industry Challenge in FY 2022. The bill would further urge EDA to use funds from the RIP program to invest in high tech business incubators based at institutions of higher education to support technology commercialization, partnerships between federal labs and universities, and economic development in areas with persistently high unemployment. As with previous Senate bills, the FY 2022 measure calls on EDA to set aside 40 percent of RIP funds for grants to rural communities.

The **Public Works program** would receive \$124 million as requested, a 3.8 percent increase over the FY 2021 level and the same as the House companion bill. In comparison, the **Economic Adjustment Assistance program** would receive \$40 million, which would be \$2.5 million above the FY 2021 level but \$8 million below the President's FY 2022 request. These are EDA's most flexible programs and support initiatives that range from construction to workforce development initiatives and beyond. The Committee would direct EDA to prioritize funding projects through the Public Works and Economic Adjustment Assistance programs that support broadband infrastructure projects, with priority given to underserved areas.

The bill would provide \$5 million for the **STEM Apprenticeship program** as requested, which would be \$3 million over the FY 2021 enacted level and \$5 million less than the President’s budget request. The Committee would direct EDA to prioritize implementation grants through this program. It should be noted that four-year universities have been allowed to participate in recent competitions for this program. The bill would also provide \$55 million for **assistance to power plant closure communities**, including \$16.5 million for assistance to communities impacted by nuclear power plant closures, \$5 million for biomass plant power closure communities, and \$33.5 million for assistance to coal communities.

The Committee would encourage EDA to invest in public-private partnerships focused on diversifying locally distressed economies, to consider projects supporting outdoor recreation when consistent with a region’s development goals, and to prioritize companies who have already invested in those communities and are looking to expand their commitment. The bill would also direct EDA to increase outreach and technical assistance to potential grantees in high poverty urban areas, whom the Committee is concerned are often overlooked. It also recommends that EDA increase outreach to communities that have received disproportionately few pandemic-related EDA grants and to support projects to address health disparities and other challenges facing rural communities. Finally, the bill offers several recommendations on which groups EDA should offer technical assistance to, including: communities impacted by a decline in manufacturing; small communities; rural communities; and underserved communities.

Economic Development Administration

(in thousands of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021 Enacted	Senate vs. FY 2022 Request	Senate vs. FY 2022 House
Economic Development Administration (EDA)	346,000	433,110	395,000	49,000 (14.2%)	38,110 (8.8%)	38,110 (8.8%)
Regional Innovation Program	38,000	50,000	50,000	12,000 (31.6%)	5,000 (11.1%)	---
Public Works Program	119,500	124,000	124,000	4,500 (3.8%)	---	---
Economic Adjustment Assistance Program	37,500	42,500	40,000	2,500 (6.7%)	8,000 (16.7%)	2,500 (5.9%)
Research and Evaluation Program	1,500	2,000	2,500	1,000 (66.7%)	500 (25%)	500 (25%)
STEM Apprenticeship Program	2,000	10,000	5,000	3,000 (150%)	5,000 (50%)	5,000 (50%)

Department of Justice

The Department of Justice (DOJ) would receive around \$36.2 billion for FY 2022, which is an increase of about 7.2 percent over the enacted level and 0.6 percent below the House bill. Within this amount, the bill would provide \$86 million for **Research, Evaluation, and Statistics (RES)** within DOJ's Office of Justice Programs (OJP), 4.9 percent above the enacted level. RES includes the **National Institute of Justice (NIJ)**, DOJ's primary external research program that leverages university partnerships with the goal of strengthening science and enhancing justice. NIJ would receive \$41 million, which is in line with the budget request, and 10.9 percent above FY 2021 levels but 8.9 percent below the House level. Outside of the research portfolio, the bill notably proposes massive increases in funding for state and local community policing initiatives, the Office of Violence Against Women, and substance abuse programming.

As with the House bill, the Senate bill would prioritize research in the areas of preventing domestic radicalization, preventing school violence, and the development of a clearinghouse for online extremism. The Senate bill further encourages research in several other specific areas, including understanding the prevalence of human trafficking, models to reduce incarceration rates for minor parole violations, corrections reform and recidivism, abuse in youth organizations, and campus sexual assault among other topics. The bill would also provide funding for a number of potential university-supported partnerships, including the establishment of a Drug Data Research Center to combat opioid abuse; Wrongful Conviction Review grants to support post-conviction legal representation of innocence claims; and numerous community policing initiatives, including de-escalation training centers for law enforcement.

Finally, the Senate bill would re-establish OJP's **Science Advisory Board (SAB)**, a panel of relevant experts that provided input on research investments directly to agency leadership. According to the report, the reestablished board should be comprised of "scholars and practitioners in criminology, statistics, and sociology, as well as practitioners in the criminal and juvenile justice fields."

Department of Justice

(In thousands of \$)

	FY 2021 Enacted	FY 2022 House	FY 2022 Senate	Senate vs. FY 2021 Enacted	Senate vs. Request	Senate vs. House
DOJ, total	33,789,875	36,435,213	36,229,795	2,439,920 (7.2%)	216,241 (0.6%)	-205,418 (.6%)
Research, Evaluation, and Statistics	82,000	95,000	86,000	4,000 (4.9%)	--	-9,000 (9.5%)
<i>National Institute of Justice</i>	37,000	45,000	41,000	4,000 (10.9%)	--	-4,000 (8.9%)