

Congressional Update: Endless Frontier Act

Lewis-Burke Associates LLC – April 22, 2021

After much anticipation, Senator Schumer (D-NY) and Senator Young (R-IN) have introduced the new version of the *Endless Frontier Act* (EFA). The driver of the bill is to protect the U.S. position as the global leader in scientific and technological innovation to strengthen economic and national security. The bill would establish a new Directorate for Technology and Innovation at the National Science Foundation (NSF), would establish a regional technology hub program led by the Department of Commerce (DOC), and would aim to address issues related to economic security, science, research, innovation, manufacturing, and job creation, to establish a critical supply chain resiliency program. The original version of the bill was introduced in the fall of 2020.

The bill would **authorize \$100 billion for a new Directorate for Technology and Innovation at NSF over five years**. The new Directorate would focus on use-inspired basic research and commercialization in initial key technology areas including Artificial Intelligence (AI), High-Performance Computing (HPC), Semiconductors, Quantum, Robotics, Advanced Manufacturing, Climate Change, Advanced Communications, Biotechnology, Cybersecurity, Advanced Energy, and Advanced Materials. It would also facilitate innovation activities to accelerate the translation of research. The new Directorate would be staffed similarly to the Defense Advanced Research Projects Agency (DARPA) and awards would be assessed on intellectual merit and broader impacts. While the funding would all be directed to the new Directorate, the bill would enable partnerships with other parts of NSF to pursue basic research related to natural, human, and physical phenomena that could help advance key technology areas and allows the new Directorate to also provide funds to other Federal agencies for research activities. Of the funding authorized for the new Directorate, no less than 20 percent is designated to support research in key technology focus areas through the Established Program to Stimulate Competitive Research (EPSCoR). EFA would establish new **NSF University Technology Centers** to support basic and translational research, accelerate innovation, broaden participation, contribute to U.S. manufacturing capabilities, job creation, and facilitate entrepreneurship. The University Technology Centers would require collaboration with industry partners and must include partnership with Minority Serving Institutions (MSIs), emerging institutions, or institutions that participate in EPSCoR. EFA would create a new program to establish and operate **test beds and fabrication facilities**, in coordination with other facilities already supported by NSF and Manufacturing USA, to accelerate innovation of the key technology areas. The new Directorate would also be able to award scholarships, fellowships, and other student support, including programs to increase the participation of underrepresented populations.

The bill would create 10-15 new **Regional Technology Hubs** led by DOC and funded at around \$10 billion. The hubs would support regional economic development investments to advance research, development, workforce training, entrepreneurship, and manufacturing across a range of technology and innovation sectors. Composition of the hubs would have to include institutions of higher education, local and state government, economic development organizations, industry, labor organizations, and workforce development boards. Eligible consortia may also include National Laboratories, Manufacturing USA Institutes, and other organizations. Selection of the hubs will be made by the Secretary of Commerce's office with support from an interagency working group. The process would prioritize regional diversity with at least three hubs supporting small and rural communities and five hubs featuring at least one partner from an EPSCoR state. In making awards, the Secretary of Commerce would be required to consider the ability of a consortium to advance efforts in a key technology focus area, engage with Federal research entities, engage the private sector, carry out

workforce development, improve STEM education, and the likelihood of the consortium becoming a global technology hub, among other considerations. Further, the Office of Science and Technology Policy (OSTP) and the Office of Management and Budget (OMB) would be charged with working with federal research agencies to set goals to at least double the amount of federally funded research for selected regions served by the hubs.

The bill would also create a comprehensive **Regional Technology Strategy grant program** that would provide funding to consortia that would largely meet the same eligibility criteria as the Regional Technology Hubs with a particular emphasis on inclusion of small, medium, and large metropolitan communities. Funding would support efforts to address gaps in a regional economic ecosystems and develop plans to make a region more competitive through a comprehensive strategy. Federal agencies would be allowed to provide technical assistance to grantees as needed. The bill would authorize \$100 million for fiscal years (FY) 2022 and 2023 and \$125 million for FY 2024 through 2026.

EFA would increase funding for **Manufacturing USA and the National Institute of Standards and Technology (NIST)**. The bill would authorize \$2.4 billion through FY 2026 to support and expand the Manufacturing USA program, including \$1.19 billion to establish **new manufacturing institutes** and \$725 million to support existing institutes. The bill would also create an advisory council for the Manufacturing USA program and would authorize \$100 million to support programming for commercialization, workforce training, and supply chain investment across the Manufacturing USA network. As noted above, in collaboration with NIST, NSF would create a competitive award program for institutions of higher education or consortia to operate **test beds and fabrication facilities** to advance the operation, integration, deployment, and, as appropriate, manufacturing of new, innovative technologies in the key technology focus areas, which may include hardware or software. The bill would also create a new program focused on increasing the resiliency of **supply chains** for critical technologies.

In addition to EFA, **several other bills and proposals** also include recommendations for a new technology Directorate at NSF. These are summarized below.

- The House Science ***NSF for the Future Act*** (reauthorization bill) would create a new Directorate for Science and Engineering Solutions (SES) at NSF funded at \$1 billion in FY 2022 up to \$5 billion in FY 2026.
- The **President's budget request for NSF for FY 2022** proposes a 20 percent increase for NSF including a new Directorate for Technology, Innovation, and Partnership, to strengthen U.S. leadership in emerging technology areas, including AI, HPC, disaster response and resilience, quantum information systems, robotics, advanced communications technologies, biotechnology, and cybersecurity.
- President Biden's **American Jobs Plan** proposed \$50 Billion for NSF to establish a new technology directorate in support of collaborative, use-inspired, and translational research in emerging technology areas. The proposal highlights investments in semiconductors, next-generation computing, advanced communications, clean energy technologies, and biotechnology.

The **path forward for EFA** is not straight forward. Senator Schumer would like to move aggressively to pass the *Endless Frontier Act*, which as an authorization bill, would still have to be funded. A Senate-passed bill that can then be conferenced with a House version, like the *NSF for the Future Act*, has a greater likelihood of being included in an infrastructure package or a stand-alone innovation bill.

A broader innovation bill could also include funding to support research, development, and manufacturing of semiconductors that were authorized into law in December 2020 in the *CHIPS for America Act*. There is also growing interest in including funding for the Department of Energy (DOE) and the national laboratories to support emerging technologies and commercialization activities. While there is bipartisan support for research and development (R&D) investments and competing with China on science and technology innovation, many Republicans are concerned at the growing price tag for these efforts, which could limit their support for these bills.

Additional Resources:

- The full text of EFA is available at <https://www.democrats.senate.gov/imo/media/doc/Endless%20Frontier%20Act%20FINAL%2017th.pdf>.
- A summary of the EFA bill is available at <https://www.democrats.senate.gov/imo/media/doc/Endless%20Frontier%20Act%20Summary.pdf>.
- The NSF statement on the President's budget request for FY 2022 is available at https://www.nsf.gov/news/news_summ.jsp?cntn_id=302463&org=NSF&from=news.
- The Lewis-Burke analysis of House Science Committee NSF for the Future Act is available at https://old.lewis-burke.com/sites/default/files/hsst_nsf_for_the_future_act_march_2021_0.pdf
- The Lewis-Burke analysis of President Biden's American Jobs Plan is available at https://old.lewis-burke.com/sites/default/files/policy_update_biden_administration_announces_2.25_trillion_infrastructure_and_economic_stimulus_plan_1.pdf