



# Lewis-Burke Analysis of the Federal Economic Development and Commercialization Landscape

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This document provides an overview of federal innovation, commercialization, and economic development policy initiatives of interest to the research community and information on signature federal economic development and innovation funding programs.

## **Introduction: Economic Development and Commercialization Priorities for Congress and the Administration**

### *Innovation and the Biden Administration*

Since taking office, President Biden has been committed to enabling a paradigm shift around enhancing the federal government's role in shaping innovation and economic growth. This philosophy towards increased federal investments in commercialization and technology-based regional development emerged as a campaign pledge to rebuild communities recovering from the COVID-19 pandemic, which led to several new regional growth initiatives. As global competition continues to intensify around a series of key technology areas, these efforts continue to be greatly expanded through the ongoing implementation of several pieces of bipartisan innovation legislation. Federal support for translational research and economic development are now key components of the United States' greater economic strategy and will likely be for the foreseeable future.

Federal efforts to support technology-based economic development significantly grew in the 117<sup>th</sup> Congress, when the Biden Administration worked closely with Congress to advance several landmark bills to authorize and fund new programming pertaining to bottom-up regional economic growth, workforce development, commercialization, and innovative research and development (R&D) investments, including the *American Rescue Plan (ARP) Act*, the *Inflation Reduction Act (IRA)*, the bipartisan *Infrastructure Investment and Jobs Act (IIJA)* and the *CHIPS and Science Act of 2022 (CHIPS and Science)*. Now, federal agencies across the government are busy implementing these important measures as well as launching and executing new funding competitions around technology acceleration, community resilience, and innovation.

Meanwhile, the Biden Administration has worked closely with Congress to attempt to secure appropriations for provisions that did not receive direct funding in the aforementioned bills, particularly CHIPS and Science programming, which includes numerous commercialization and technology-based economic development initiatives. These efforts led to dedicated appropriations and supplemental funding in fiscal year (FY) 2023 to launch several key programs, including the Department of Commerce's (DOC) Regional Technology and Innovation Hubs (Tech Hubs) and programming at the National Science Foundation's (NSF) Directorate for Technology, Innovation and Partnerships (TIP). There are ongoing efforts in the research advocacy community to ensure funding for these programs is continued in FY 2024 appropriations, which are still being finalized.

The Biden Administration's continued commitment to federal investments in innovation and regional development was clearly laid out in the White House's FY 2025 R&D [memo](#), which added strengthening



R&D to build economic development as one of the seven core priority areas. This memo is used as guidance for R&D funding agencies as they develop their FY 2025 budget request and may guide decisions about whether to request increased or decreased funding for existing programs as well as indicate support for new programs. The constrained fiscal environment under the recent debt limit agreement will mean that agencies will have to make tough choices about what programs to fund robustly, and having economic development laid out as a core priority is a strong signal from the Administration in where their priorities lie. Also included as specific priorities were pre-commercialization efforts and broader investments to position the U.S. as global technology leaders in several key areas, including trustworthy artificial intelligence, quantum information science, microelectronics, high-performance computing, biotechnology, and nuclear energy.

In addition to supporting catalytic regional development and commercialization activities, the Administration continues to prioritize equity as a core investment area across the federal government. This is evidenced by a rise in grant programs specifically designed for Minority-Serving Institutions (MSIs) and non R-1 research institutions. Beyond direct awards for those institutions, there has been a whole-of-government push for integrating support for and partnerships with underserved and underrepresented communities into the review criteria of nearly every large, regional award and most new technology transfer programs to ensure no communities are left behind in industries of the future.

Leading up to the November 2024 election, the Biden Administration is expected to continue rolling out and touting historic new programs to support regional and global competitiveness, particularly as major awards from CHIPS and Science and other signature efforts are announced. The Administration will also continue to advocate for meaningful funding for programs that were recently authorized to promote competition but face budgetary headwinds in the divided Congress.

#### *Congressional Support for Innovation*

Congressional support for innovation and economic development has stretched across the aisle in recent years to allow for a number of major bipartisan legislative victories. Overall, the current 118<sup>th</sup> Congress, with a Republican majority in the U.S. House of Representatives and Democrat majority in the U.S. Senate, is largely supportive of investments in R&D and regional innovation to bolster domestic competitiveness. However, unlike the previous Congress that moved several landmark innovation and competitiveness bills, legislative activity in the current Congress will likely be more restrained with less support for as many major “new starts.” Moreover, actions from the current divided government, such as the recent debt ceiling agreement and the uncertainty surrounding the Speaker of the House position, could lead to relatively constrained funding for some of the major innovation and economic development provisions that were authorized in the previous Congress. Still, there remains bipartisan interest in moving some targeted science and economic development legislation, like those outlined below. Also, given the popularity of programs like DOC’s Tech Hubs program, NSF TIP, and place-based innovation initiatives, there is expected to be continued calls to provide as much funding as possible for CHIPS and Science programming going forward from both research and economic development advocacy communities.

#### **Select Innovation and Economic Development Legislation**

Included in this section are high-level overviews of some of the key legislation and advocacy efforts related to innovation, commercialization, and economic development in Congress as they currently



stand. Lewis-Burke will continue to monitor each of these areas and provide timely updates as they emerge.

*CHIPS and Science and the Continued Push for Funding*

In July 2022, Congress passed a long-awaited competitiveness and innovation package that was one of the most comprehensive in decades. With overwhelmingly bipartisan support, the *CHIPS and Science Act* provided \$54 billion in funding for semiconductor research and development, manufacturing, tax incentives, and workforce development as well as advanced wireless innovation infrastructure and development. The legislation also authorized approximately \$102 billion to advance major research initiatives at NSF, Department of Energy (DOE), the National Institute of Standards and Technology (NIST), and the National Aeronautics and Space Administration (NASA), create a new bioeconomy research and development national initiative, and establish Regional Technology Hubs and other programming at DOC’s Economic Development Administration (EDA). These latter authorized provisions did not come with appropriations and thus funding through regular appropriations or other special funding vehicles is necessary to support them.

Some programs, like Tech Hubs at EDA and various NSF programs, were partially funded through the FY 2023 appropriations bill and its related supplemental package and the Biden Administration continues to advocate for additional appropriations to support these programs in FY 2024 and beyond. Still, other CHIPS and Science programs of importance to regional innovation and tech-based economic development remain unfunded. The chart below outlines some of the authorized but unfunded programs:

| Agency   | Description   |
|--|---|
| National Institute of Standards and Technology | Expansion of the Hollings Manufacturing Extension Partnership (MEP) – NIST was authorized to expand the MEP program to bolster worker pipeline development, create more resilient supply chains, and expand technology uses among U.S. manufacturers  |
| Department of Energy                           | Regional Clean Energy Innovation Program – \$50 million was authorized for DOE to support consortia of universities, national labs, nonprofits, industry, etc. to support a region’s transformation around clean energy.  |
| National Science Foundation                    | Translation Accelerators – \$6.5 billion was authorized for FY 2023- FY 2037 to carry out translation accelerators at NSF TIP. These accelerators are intended to promote R&D and commercialization across key technology areas with the participation of institutions of higher education, non-profits and for-profit companies. |
|  | Test Beds – NSF TIP, in collaboration with NIST and DOE, was authorized to support test beds at universities and nonprofits that focus on advancing, developing, operating, integrating, and deploying innovative technologies – hardware or software.  |
|  | Planning and Capacity Building Awards –\$3.1 billion was authorized to support technology transfer at academic institutions, bolster patenting and licensing, cultivate public-   |

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|  | private partnerships and networks, and support entrepreneurial activities through venture funds and more. NSF released one solicitation in alignment with this, the Accelerating Research Translation (ART) program, but have yet to scale to include other initiatives under this title such as Collaborative Innovation Resource Centers to support broader technology transfer in various regions.  |
|  | Centers for Transformative Education Research and Translation (CTERTs) – This program would support R&D on widespread and sustained implementation of STEM education innovations. Projects would be required to work in partnership with state and local districts, support implementation of promising, evidence-based STEM education practices, enhanced STEM education infrastructure, fund R&D that recognizes diverse needs of learners with and without disabilities and students in both urban and rural communities. |

### Public Works and Economic Development Act

The Senate Environment and Public Works (EPW) Committee is leading the charge for a reauthorization of the *Public Works and Economic Development Act* (PWEDA), the authorizing legislation for public works and other regional assistance programs at the Economic Development Administration (EDA). EDA has not been formally reauthorized in 19 years, and the agency has long argued that there is a strong need for updated authorities to ensure equitable development and to better address challenges like natural disasters. Of note, this bill would not directly impact most innovation-facing programs at EDA, such as Regional Technology Hubs or Build to Scale, which are under the authority of the *Stevenson-Wydler Technology Innovation Act*. However, reauthorization could provide an opportunity to strengthen EDA University Centers and codify programs like the Good Jobs Challenge and Build Back Better Regional Challenge that were launched under the *American Rescue Plan Act*, leveraging PWEDA authorities.

The Senate EPW Committee hopes to markup a bipartisan bill this Fall. However, on the House side, there is little momentum. If the House considers PWEDA in this Congress, it likely won't be until at least 2024.

### National Defense Authorization Act

The *National Defense Authorization Act* (NDAA) authorizes appropriations and programs for the Department of Defense (DOD) and other national security initiatives. The House Armed Services Committee (HASC) and Senate Armed Services Committee (SASC) approved their own versions of the FY 2024 NDAA at the end of June, and, just before August recess, SASC publicly released their draft legislation. Historically, the NDAA is a bipartisan bill which has reliably passed annually for over 60 years.

For FY 2024, the House and Senate NDAA bills would both authorize a top line figure of \$886 billion for national security funding, including \$842 billion in discretionary funding for DOD, consistent with the president's budget request and the level negotiated between Congress and President Biden during



June's debt limit deal. Both bills include various provisions related to cybersecurity, technology, research security, hypersonics, and space policy.

Though the NDAA serves as the primary authorization vehicle for national security, this legislation often encourages the Department to prioritize innovation and technology transition. Both the House and Senate versions of the bill include provisions to strengthen authorizing language for Partnership Intermediary Agreements (PIAs) to ensure the Department prioritizes technology transfer and workforce development in critical technology areas.

The House bill underscores the need for integration of commercial technology across the Department, improves DOD's cybersecurity posture, and encourages technology transition. For example, the House bill calls for the creation of a new role for Principal Transition Advisor in each military service to help facilitate the transition of technologies from industry and academia into capabilities and technologies. Additionally, the House NDAA would authorize funding increases for the Defense Innovation Unit (DIU), DOD's primary organization focused on fielding and scaling commercial technology across the U.S. military. The bill would also establish a new, innovative fielding enterprise for DIU, focused on bringing non-traditional vendors to strengthen warfighting capabilities. The Senate bill would authorize \$21.6 million for the National Security Innovation Network (NSIN), including \$7 million towards the expansion of NSIN activities, including entrepreneurship programming.

Now, the chambers must negotiate a compromised version, but negotiations are expected to be contentious this year, given controversial amendments – not related commercialization-- that were included in the House's NDAA. Nonetheless, the FY 2024 NDAA is expected to pass for its 63<sup>rd</sup> consecutive year, given that the bill authorizes pay for military servicemembers and serves as a legislative vehicle for other non-defense authorizations.

#### Emerging Technology Legislation

Within the divided Congress, support remains for the consideration of new science legislation around emerging technology areas, beginning with quantum and artificial intelligence (AI). Congress plans to advance the *National Quantum Initiative Act*, which is up for reauthorization in December 2023, this fall and has signaled an intent to attach it to the NDAA to expedite passage. Some provisions of the bill are expected to address various challenges associated with expediting the transfer of quantum technologies from lab to market, including the potential establishment of regional test beds and other demonstration activities. Congress is also meeting regularly to better understand the positive and negative impacts of AI and draft legislation to help regulate applications and uses while also maintaining U.S. leadership. AI legislation is not likely to pass before the end of the year, but legislative activity will be high around a number of bills that are likely to shape a future package next year.

Finally, in Spring 2023, Majority Leader Chuck Schumer's (D-NY) called on numerous Senate committees to support the development of a sequel to *CHIPS and Science*. The proposed measure is still in its nascent stages and would likely focus primarily on trade and other foreign policy provisions that were left out of the initial version of the bill. Among several priorities listed, Leader Schumer called on committees to consider domestic investment in key sectors, such as biotechnology and biomanufacturing. Since the announcement, little tangible progress has been made on the package, but efforts could resume in the months ahead after the advancement of AI and quantum legislation.



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## **Small Business Administration**

### ***Overview***

The Small Business Administration (SBA) supports small business growth by providing access to capital, public-private partnerships, technical assistance, and commercialization support. While each federal agency runs its own Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, SBA is charged with overseeing and coordinating the SBIR and STTR programs across the government and provides support to expand innovation and entrepreneurship through initiatives that bolster SBIR/STTR and other development activities. SBIR/STTR officials within SBA also coordinate the America's Seed Fund Road Tour, which allows program officers from different agencies' SBIR/STTR programs to meet with researchers and small businesses across the country. SBA events are usually held at Small Business Development Centers (SBDCs), which are SBA's centralized hubs for small business support in each state, or at sites hosted by SBA's Federal and State Technology (FAST) Partnership Program awardees. Additionally, SBA licenses and regulated Small Business Investment Companies (SBICs). SBICs are privately owned companies that invest in small businesses utilizing their own funds and SBA-guaranteed funding. The SBIC program is one of several useful mechanisms at SBA for catalyzing regional economic development.

### ***New and Emerging Activities:***

- The fiscal year (FY) 2024 budget request proposed enhancing the nation's climate resilience, implementing evidence-based policymaking, and investing in equitable economic development across the U.S. as some of the Administration's priorities for SBA in the coming fiscal year. While the FY 2024 budget request for SBA does not propose creation of any new economic development or innovation programs, it does call for the permanent authorization of the SBIR and STTR programs, which were recently reauthorized through 2025.
- This August 2023, SBA finalized a new rule meant to make it easier for the SBIC program to support early-stage investment in start-ups through several policy changes, including making expenses related to employee ownership transitions an eligible use of SBIC loan funds and by altering the loan funding mechanism to only require repayment at the end of a ten-year period or at the time of a distribution event.

### ***Funding Opportunities***

#### **Small Business Development Centers (SBDCs) and other Technical Assistance Centers**

SBDCs are SBA's [main technical assistance entities](#). SBDCs provide wide-ranging consultation, training and other support to small businesses owners and entrepreneurs in their communities, often in partnership with state governments and universities. There are around 62 SBDCs, each of which is responsible for managing a network of service providers in their regions. Funding for individual SBDCs is allocated based on state populations. SBDCs are among several technical assistance centers at SBA, including [Women's Business Centers](#) (WBCs) and [Veteran Business Outreach Centers](#) (VBOCs).

New SBDCs and other technical assistance centers are rarely competed by SBA. In the case of SBDCs, SBA generally prefers to renew existing grantees unless they deem there to be performance issues or disruptive administrative changes on the part of the applicant. Other smaller centers, such as WBCs and VBOCs, are competed periodically, often for specific regions of the country, as SBA strives to expand their regional footprints.





### **The Federal and State (FAST) Partnership Program**

SBA's [FAST program](#) is a competition that provides funding for statewide initiatives to increase the number and quality of SBIR/STTR program applications. FAST awardees, often universities, play a critical role in providing technical and business assistance to small firms that are traditionally left out of competitions for SBIR/STTR awards. FAST institutions are often looked to by SBA as trusted partners to lead state/regional events and programs. SBA emphasizes that submissions should address helping disadvantaged firms compete for SBIR/STTR and support efforts such as the commercialization of university research, mentoring for SBIR grants, R&D assistance for small businesses, and the transfer of technology developed through SBIR/STTR awards.

There can only be one application and active award per state and there must be demonstrated support for the applicant from the state's governor's office. Funding for FAST is typically up to \$125,000 per year with a base 12-month performance period. In the 2022 competition, SBA added up to four non-compete continuation periods of 12 months each to be exercised at SBA's discretion. The most recent FAST solicitation is available [here](#).

### **Growth Accelerator Fund Competition (GAFC)**

The GAFC supports efforts to strengthen the STEM R&D pipeline, increase success for small businesses and entrepreneurs in technology transfer, and promote equitable investments in the U.S. entrepreneurial ecosystem. GAFC awards specifically seek to support underserved communities and industries in the innovation ecosystem and boost global competitiveness by supporting connections developed between the lead applicant and entrepreneurs, community organizations, institutions of higher education, and non-profit organizations.

In 2023, [the competition](#) was competed in two stages, with a total budget of \$3 million. Stage One was called Catalyze, which awarded up to \$1 million in increments of \$50,000 for each winner to engage with relevant stakeholders and build regional ecosystems called Growth Accelerator Partnerships. Stage Two was called Accelerate, which used the remaining \$2 million to make awards between \$50,000 and \$150,000 to Catalyze winners to further scale regional innovation ecosystems by providing additional resources to entrepreneurs through activities such as technology transfer support. Submissions for Stage One required the submission of a slide deck, a maximum 90 second video on the proposal, and a single, public, summary slide on the proposal. Applicants were required to build their proposals around one of the following themes: Underserved Communities, National Security and Global Competitiveness, Domestic Manufacturing and Production, Climate and Renewable Energy, and an "other" category that allowed a theme to be specified by the applicant. More information on the funding opportunity and 2023 awardees can be found [here](#).

### **Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (STTR)**

The U.S. Government's flagship initiatives supporting innovation and commercialization of federally funded research and development (R&D) are the SBIR and STTR programs. Although the SBIR/STTR programs are overseen by SBA, each agency is responsible for administering their own programs. The administration of SBIR/STTR programs varies based on federal agency. Additional information on specific competitions is available on each participating agency's website.

SBIR and STTR were reauthorized in 2022. The current authorization continues to allow agencies to set aside additional funding for initiatives to attract small business development and participation in the



programs. For instance, the Department of Health and Human Services (HHS) has used this and other authorities to launch the Commercialization Readiness Pilot to provide additional support to transition promising technologies beyond Phase 2. The 2022 SBIR reauthorization also included a new requirement that all small businesses applying for SBIR/STTR funding disclose additional information regarding investment and foreign ties to China, North Korea, Russia, Iran, and “any other country deemed to be a country of concern by the Secretary of State,” demonstrating the on-going concern in Congress regarding foreign influence and federal funding.

### **SBIR Program**

The [SBIR program](#) supports competitive awards that allow small businesses to explore the potential of developing and commercializing new technologies. Federal agencies participating in SBIR have extramural research budgets over \$100 million and include: Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DOD), Department of Education (ED), Department of Energy (DOE), Department of Health and Human Services (HHS), Department of Homeland Security (DHS), Department of Transportation (DOT), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), and National Science Foundation (NSF).

Qualifying agencies are required to set aside 3.2 percent of their extramural research budgets for SBIR. Available funding has grown rapidly at agencies that received an influx of research support in recent years, like NIH, and more slowly at those that have not. More growth can be expected at other agencies like DOE and NSF as Congress has bolstered research funding as part of their overall competitiveness agenda.

SBIR supports three phases of awards:

- Phase 1 – To establish the technical merit, feasibility, and commercial potential of a new technology or innovation. Awards are usually between \$50,000-\$250,000 for six months to one year, depending on the agency.
- Phase 2 – To progress the results achieved in Phase 1 SBIR awards. Awards are usually between \$500,000-\$1.5 million for two years, depending on the agency.
- Phase 3 – To commercialize the results of Phase 1 and Phase 2 activities. Phase 3 is funded by private industry, not SBIR.

Of note, individual agencies have worked with SBA to expand their authorities in recent years to provide additional funds for Phases 1 and 2 as well as launch supplemental initiatives, such as Phase 2b to further commercialize technologies under certain circumstances. The primary employment of a SBIR principal investigator must be with a small business but they can partner with research institutions on awards. Additional information on university partnerships on SBIR awards can be found [here](#).

### **STTR Program**

The [STTR program](#) aims to bridge the gap between basic research and commercialization. STTR supports the expansion of public/private partnerships to include joint venture opportunities for small businesses and non-profit research institutions. STTR supports the same three phases of awards and funding amounts as SBIR, listed above.

Unlike SBIR, STTR projects *must* include formal collaboration with research institutes in Phase 1 and Phase 2 (collaboration between small businesses and research institutes is permitted but not required in



SBIR). Research institution partners can also serve as principal investigators. Federal agencies participating in STTR have extramural research budgets over \$1 billion and include: DOD, DOE, HHS, NASA, and NSF. These agencies are required to set aside 0.45 percent of their extramural research budgets for the program.

## **Economic Development Administration**

### ***Overview***

The Department of Commerce's (DOC) Economic Development Administration (EDA) is the only federal agency that focuses solely on economic development. The agency provides funding to support regional innovation and collaboration efforts that encourage job creation and revitalization. EDA investments align with local strategies to build capacity for sustained economic growth, including fostering private investment and leveraging the discoveries, facilities, and workforce based at universities and research organizations. Most EDA programs support targeted growth for distressed communities and/or technology-based economic development activities, though there has been an increased focus on spurring innovation over the past three years.

EDA has seen its profile significantly rise in recent years with the realization among policymakers that the agency's flexible authorities could support in-depth regional investments in economic recovery projects and large-scale, place-based innovation initiatives. Although EDA had an operating budget of \$498 million in FY 2023, it has been tapped to manage hundreds of millions of emergency dollars in disaster relief grants and COVID support, and has garnered congressional authorization through the bipartisan *CHIPS and Science Act* and supplemental funding to launch large, signature programs aimed at harnessing the geography of innovation across the U.S. to ensure the nation can rapidly scale key emerging technologies. While Congress provided a down payment to compete *CHIPS and Science* programs, like Regional Technology and Innovation Hubs (Tech Hubs) and the Recompete Pilot Program, EDA will continue to seek additional funds to scale these initiatives toward the authorized levels.

In addition to competing new *CHIPS and Science* opportunities that provide hundreds of millions of dollars to coalitions in support of place-based innovation and economic growth, EDA continues to manage a suite of smaller programs to support regional development at all levels. As EDA assumes a larger role in national economic development efforts, it remains a uniquely bottom-up agency. Each state has at least one economic development contact to support applicants with questions about funding opportunities and to provide general assistance. Those interested in funding from EDA are strongly encouraged to reach out to their state's contact when applying for several awards from the agency. However, while maintaining this connection is a key element to successfully competing for most EDA funding, it should be noted that some recent, larger awards like Tech Hubs and Recompete encourage applicants to primarily engage directly with the EDA Washington office through generic email portals if they have any questions.

Applicants are also encouraged to follow the Biden Administration's [EDA investment priorities](#), which include key terms and definitions to guide funding decisions at the agency. Since the beginning, the Administration has been clear that **Equity** is the number one investment priority and that projects will be more competitive if they intentionally include underrepresented populations and geographies. DOC Secretary Gina Raimondo has also pushed for EDA to have a larger role in workforce development, through larger funding opportunities, standalone programs, and more intentional engagement with the Department of Labor.



*New and emerging activities:*

- *President Biden’s FY 2024 budget requested \$804 million for EDA in base discretionary funding, which would be a 61 percent increase over FY 2023 base discretionary appropriations, as well as nearly \$1.5 billion in additional mandatory funding to support Tech Hubs. The draft Senate bill for FY 2024 would provide \$466 million in base discretionary appropriations and the draft House bill would provide \$254.5 million. Of note, the budget request and Senate bill would provide funding for the **Good Jobs Challenge (GJC)**, a largescale workforce development initiative that was initially created and funded by the American Rescue Plan Act (ARP) for a one-time competition. GJC did not receive discretionary appropriations in FY 2023. If funded, GJC could become a permanent program at EDA. Also, EDA’s call for mandatory funding for **Tech Hubs** in FY 2024 is recognition that there would need to be some sort of supplemental funding above the amounts provided in the current appropriations bills to continue to meaningfully scale the programs, as was done in FY 2023. The House Appropriations Committee has yet to release accompanying details with its draft bill, offering limited visibility into what programs they are proposing to cut in FY 2024.*

**Funding Opportunities**

**Regional Technology and Innovation Hubs (Tech Hubs)**

In May 2023, EDA released a [Notice of Funding Opportunity](#) (NOFO) for Phase 1 of the highly anticipated [Tech Hubs program](#). Tech Hubs were authorized through the *CHIPS and Science Act* at \$10 billion through 2027 and were funded at \$500 million in FY 2023 appropriations bill to launch the program. Through this program, EDA intends to make place-based investments in geographically diverse regions that have strong resources, capacity, and potential to become globally competitive in key technology areas within the next decade and ensure all outputs, including industries and job growth, remain in the United States. Under CHIPS and Science, EDA must designate at least 20 Tech Hubs.

Applying for a Tech Hub is a two-phase process. The first phase, released in May and recently closed in mid-August, solicited applications for eligible consortia to pursue Tech Hub Designation – which is formal recognition by EDA that a consortium within a region has the potential to be a global leader in a technology area and a prerequisite to compete for Phase 2 funding – and/or Strategy Development (Strategy) grants, which provide additional funds for planning and coalition development. EDA is currently reviewing Phase 1 applications and will announce Designations and release the NOFO for Phase 2 Implementation awards in fall 2023. Implementation awards will provide initial awards of \$50-75 million to approximately five to ten consortia. Consortia must receive formal Designation in Phase 1 to compete for Phase 2 funding.

Tech Hubs enjoy bipartisan support as a direct effort to ensure U.S. leadership in a series of key technology areas while leveraging the assets and workforce of regions across the country. Congress has granted EDA flexibility in administering funding for Tech Hubs, making most of the \$500 million currently provided for the program available until it is expended. Still, EDA views this initial funding amount as a “down payment” and is seeking additional robust appropriations in FY 2024 and beyond to continue to scale the program. Subject to appropriations, EDA has signaled willingness to launch additional Tech Hub competitions and/or provide additional funding to Implementation awardees from the initial competition.



### **Distressed Area Recompete Pilot Program (Recompete Pilot Program)**

In June 2023, EDA released its [Phase 1 NOFO](#) for the [Recompete Pilot Program](#). Recompete was authorized by the *CHIPS and Science Act* at \$1 billion through 2026 and was funded at \$200 million in the FY 2023 appropriations bill to launch the program. Unlike Tech Hubs that focus on global competitiveness in key technology sectors, Recompete is aimed at providing comprehensive support for distressed communities to spur decreases in unemployment. Specifically, Recompete supports planning and flexible implementation awards for construction and non-construction investments to address pathways to good jobs in areas with a prime age employment gap (PAEG) above the national average.

Recompete will be competed in two phases. Through the Phase 1 NOFO, released in June, applicants can choose to apply for approval of a Recompete Plan, a Strategy Development Grant, or both. Approval of a Recompete Plan does not come with any funding but, importantly, only applicants with approved Recompete Plans from Phase 1 will be eligible to apply for Phase 2 Implementation grants. If funded through Phase 2, Implementation grants will support a wide range of construction and non-construction activities to increase eligible areas' capacities in workforce development, business and entrepreneur development, infrastructure, and additional planning or technical assistance.

Phase 1 applications were due by October 5. The NOFO for Phase 2 is expected to be released in winter 2023.

### **Build to Scale (B2S)**

[B2S](#) is a rebranded version of EDA's popular Regional Innovation Strategies (RIS) program. B2S aims to stimulate entrepreneurship, support cluster-based economic development, promote job growth in emerging sectors, and translate discoveries from the lab to the marketplace. B2S is an annual program and while the [most recent solicitation](#) was released in June 2023, it is typically released each February. B2S funding can be used to develop proof of concept and commercialization centers, as well as develop seed capital funds. The FY 2023 solicitation was funded at \$50 million, which marked the first time the program received full authorized funding, indicating continued growing support for B2S and other innovation programs at EDA. B2S awards are useful to catalyze regional innovation priorities and can complement larger federal regional innovation awards.

B2S is comprised of two competitions: the Venture Challenge and the Capital Challenge, each of which include two to three tiers based on the proposed projects' goals. The goal of the Venture Challenge is to stimulate entrepreneurship and the growth of scalable startups in a region by providing support to innovation-facing organizations like universities or accelerators. Awards range between \$300,000 to \$2 million each, depending on the tier. New to the 2023 solicitation was the Ignite Challenge tier, within the Venture Challenge, which seeks to provide the support necessary to develop "nascent technology-based ecosystems." The Capital Challenge provides programmatic and operational funding for the planning, formation, marketing, expansion, or launch of regional seed capital funds to support scalable startups (angel, seed, or investment funds). Awards range between \$400,000 to \$750,000 each, depending on the tier. The most recent competition closed in July 2023.

### **Public Works and Economic Adjustment Assistance (EAA) programs & Disaster Support**

The EDA [Public Works and EAA programs](#) are signature initiatives at the agency that provide competitive funding for projects that leverage regional strengths to promote economic growth and resilience. Public Works and EAA programs fund similar activities, with EAA focusing more on planning, support, and



development strategies for regions facing economic hardships. Given the substantial overlap between the programs, they are both included in the same solicitation which is typically released annually. Funding can include activities such as construction, non-construction (i.e. strategic development, infrastructure development strategies etc.), technical assistance, and revolving loan funds. Projects must be consistent with an existing comprehensive economic development strategy (CEDS) for the region.

Projects must be focused on providing support to economically distressed regions. EDA defines distressed regions as having an unemployment rate for the most recent 24-month period that is at least one percent higher than the national average; per capita income that is 80 percent or less than the national average; or a “special need” identified by EDA. The special need criteria can include areas like transitioning coal communities and a series of other designations. Eligibility can also be extended to regions that have been afflicted by **natural disasters**. Unlike the previous solicitation for the program, economic damage caused by COVID-19 is no longer considered a standalone qualifying special need.

In FY 2023, Congress provided \$483 million for [disaster support](#) for areas experiencing economic harm as a result of wildfires, flooding, Hurricanes Ian and Fiona, and other *major* [federally designated natural disasters in 2021 and 2022](#), as determined by the Federal Emergency Management Agency (FEMA). Funding is available regardless of “distress” level as defined by EDA’s traditional aforementioned metrics. Funding can support most of the same broad activities supported by an EAA award, including construction projects. Along with the promotion of economic resilience in affected regions, under the Biden Administration, EDA expects every proposal for disaster funding to include a component promoting climate resilience, including by accounting for future natural hazards and other climate-related risks. Also, under the recent disaster supplemental, EDA regions have set individual priorities for the administration of awards. Interested applicants should contact their regional offices when pursuing these awards.

Funding is available for both the Public Works and EAA as well as the Disaster Supplemental until it is expended. The most recent Public Works and EAA solicitation can be found [here](#).

**University Centers**

[This program](#) provides funding for universities to leverage existing assets to promote regional innovation, high-growth entrepreneurship, inclusiveness, and resiliency. Annual awards for University Centers have been in the range of \$80,000 to \$200,000 each over a five-year period. EDA competes University Centers on a staggered schedule for the six EDA Regional Offices and generally funds eight to ten awards per region. The [most recent competitions](#) were for the Austin and Denver regions in 2023. A chart outlining forthcoming competitions is provided below.

|                            |                              |  |
|----------------------------|------------------------------|--|
| FY 2026 (next competition) | Chicago Regional Office      | Serves: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Muscatine and Scott counties in Iowa  |
|                            | Philadelphia Regional Office | Serves: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Puerto Rico, Rhode Island, Vermont, Virginia, U.S. Virgin Islands, and West Virginia |

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| FY 2027 | Atlanta Regional Office | Serves: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee   |
|         | Seattle Regional Office | Serves: Alaska, Arizona, American Samoa, California, Guam, Hawaii, Idaho, Republic of Marshall Islands, Federated States of Micronesia, Nevada, Northern Mariana Islands, Oregon, Republic of Palau, and Washington |

## STEM Talent Challenge

The [STEM Talent Challenge](#) seeks to bolster workforce development through the creation and implementation of programs that support high-growth, high-wage entrepreneurial ventures, and industries in emerging technology sectors. While the STEM Talent Challenge had been an annual program since it launched in 2020, EDA did not run a competition in 2022. Instead, the agency ran the [2023 competition](#) with FY 2022 and FY 2023 appropriated funds, more than doubling the program and award sizes. The STEM Talent Challenge encourages the creation and expansion of models to address unmet needs of employers in regional economies, including “competency-based, work-and-learn education and training models.” Experimentation and innovation are strongly encouraged in the development or expansion of initiatives and partnerships through the program. The solicitation notes that applications should include plans to build or expand community-based partnerships that link STEM employment opportunities to underserved populations and outline proposed outcomes. In FY 2023, EDA allocated \$4.5 million for grants, \$2.5 million above the last competition, with up to \$500,000 per individual award for a 24-month workforce program.

EDA has sought to expand this program and relaunch the Good Jobs Challenge in recent budget requests to meet demands from applicants for workforce programming and the Secretary’s priorities in this space.

## National Science Foundation

### Overview

The National Science Foundation’s (NSF) capacity to drive innovation and domestic competitiveness continues to receive increased attention as a part of Congress and the federal government’s prioritization of competition with China and other international peers. NSF supports a range of programs and activities to encourage the maximum societal impact of the research it funds and catalyze technology transfer towards commercialization. Programs range from individual student and investigator awards to large center funding, as well as support for entrepreneurship training, workshops, and instrumentation awards. NSF also participates in several interagency initiatives to support technology transfer and commercialization.

Most of the NSF programs that support NSF innovation, entrepreneurship, and technology transfer reside in NSF’s newest Directorate, the Directorate for Technology, Innovation, and Partnerships (TIP). TIP was officially established in 2022 after the passage of the *CHIPS and Science Act* and its growth continues to be a priority for NSF. While it has competed new programs such as the Regional Innovation Engines and the Accelerating Research Translation programs, the Directorate’s overarching organization and priorities are still being formulated. In addition, as expected, a number of existing NSF programs moved into TIP’s jurisdiction, including the Convergence Accelerator program and programs supporting lab-to-market previously housed in the Directorate for Engineering (ENG), such as Partnerships for



Innovation (PFI), Innovation-Corps (I-Corps), Pathways to Enable Open-Source Ecosystems (POSE), Small Business Innovation Research (SBIR), and Small Business Technology Transfer (STTR) programs.

During its first year, TIP has promoted cross-Directorate and cross-agency partnerships as well as partnerships with external philanthropies. This is expected to continue in the coming years. While some Directorates, such as STEM EDU, have embraced the new Directorate and its interest in partnering, other Directorates and some external stakeholders have expressed concern about NSF's investment in technology transfer and innovation as they consider it to be at the expense of NSF's basic research mission.

*New and Emerging Activities:*

- *TIP Directorate:*
  - *The community is waiting to see how NSF will respond to its recent request for information (RFI) "Developing a Roadmap for the Directorate for Technology, Innovation, and Partnerships," which asked for public comment on which of the ten Key Technology Focus Areas and five Societal, National, and Geostrategic Challenges laid out by CHIPS should be prioritized for investment by TIP.*
  - *The president's budget request recommended \$1.2 billion in funding for TIP and \$300 million for the Regional Innovation Engines Program. It is unlikely that TIP will receive this high of a funding level given the current constrained federal fiscal environment. The U.S. Senate's FY 2024 Commerce, Justice, Science, and Related Agencies (CJS) Appropriations bill did not specify a funding level for TIP, though it did recognize the importance of the Directorate in its draft bill and proposed \$200 million for the Regional Innovation Engines program, which is equal to the FY 2023 level. At the time of writing, the U.S. House of Representatives has yet to release the details of their FY 2024 CJS appropriations bills so it is unknown whether they will specify a funding level for TIP.*
  - *TIP intends to have an advisory committee (AC) but its members have yet to be announced. Participation on an NSF AC allows for representatives of institutions of higher education to raise their and their institutions profile at NSF and inform future strategic priorities of the Directorate.*

***Funding Opportunities:***

**National Artificial Intelligence (AI) Research Institutes**

Previously called the NSF National AI Research Program, the [National AI Research Institutes](#) were created after the President's Council of Advisors for Science and Technology (PCAST) published their report, [Recommendations for Strengthening American Leadership in Industries of the Future](#), and the 2019 update to the [National Artificial Intelligence Research and Development Strategic Plan](#) both called for increased and sustained investment into AI.

The National AI Research Institutes are a joint effort between NSF, The U.S. Department of Defense Office of the Under Secretary of Defense for Research and Engineering (DOD OUSD R&E), and the National Institute of Standards and Technology (NIST). The 2023 solicitation also includes industry partners Capital One Financial Corporation, Intel, and the Simons Foundation.

The overarching vision for this program is to advance AI to address societal issues. Proposed Institutes must be multi-disciplinary, composed of multiple organizations across all geographic regions of the U.S.





working together to create new research capabilities, and serve as a nexus point for collaborative efforts around the continuing growth of AI. Institute proposals are expected to communicate how they will perform use-inspired AI research, advance foundational research in AI, and actively work to develop a diverse and well-trained future AI workforce. Applications must focus on one of the outlined themes in the solicitation. The themes for the 2023 competition are: AI for Astronomical Sciences, AI for Discovery in Materials Research, and Strengthening AI.

The [2023 competition](#) is currently open, with required preliminary proposals for the AI for Astronomical Sciences theme due **October 31, 2023**, and required preliminary proposals for the AI for Discovery in Materials Research and Strengthening AI due **January 12, 2024**. Full proposals for the AI for Astronomical Sciences theme are due February 16, 2024, and full proposals for the remaining two themes are due May 17, 2024.

NSF anticipates making 5 awards via cooperative agreement from the 2023 solicitation. NSF expects to make two awards of up to \$20 million each for a five-year award period under the AI for Astronomical Sciences theme, one award for \$16-20 million under the AI for Discovery in Materials Research theme and two awards for \$16-20 million under the Strengthening AI theme.

#### **Regional Innovation Engines Program (Engines)**

The [Engines program](#) is one of the newest programs out of NSF TIP. With maximum funding at \$160 million over 10 years, the Engines will be NSF's largest centers to date. NSF hopes that these will transform innovation ecosystems in regions without strong existing ecosystems to drive use-inspired research on critical emerging technologies and address societal and economic challenges; catalyze technology commercialization, new start-ups, capital influx, and industry growth; and foster broad and diverse workforce development.

The Engines program utilizes a new model includes the release of a [Broad Agency Announcement](#) (BAA) instead of a traditional NSF solicitation; broad eligibility for non-academic institutions to both partner and lead proposals; requirements to raise funding and resources over the lifetime of the award with the expectation of eventual full self-sustainability; expectation of a full time CEO to lead each Engine; the diverse core functions of the Engine encompassing research, translation, entrepreneurship, and workforce development; major partnership requirements encompassing many regional entities and stakeholders; the robust budget and ability to use it on infrastructure and other nontraditional research costs; and the high level of post-award oversight with regular reviews that can result in loss of funding if metrics are not met.

The first Engines BAA was released in May 2022 and is now closed. As a part of this application, NSF requested non-traditional applicants, including those that had not previously received NSF funding. NSF expects Engines to progress along five phases from "development to mature" through two types of awards – \$1 million per Type-1 award for Engines in the development phase to prepare for a Type-2 award; and up to \$160 million per Type-2 award for Engines ready for Phase 2. Type-2 awards are expected to carry Engines ten years through remaining phases: nascent, emergent, growth, and mature. In May 2023, NSF announced 44 Phase 1 awards. Phase 2 awards are expected to be announced in Fall 2023. While authorized through FY 2026 by the *CHIPS and Science Act of 2022*, future competitions of the program will be determined by availability of federal appropriations.



### **Accelerating Research Translation Program (ART)**

The [ART program](#) is another new program out of the TIP Directorate. Like the Engines program, it was authorized by the *CHIPS and Science Act of 2022*. The ART program aims to support projects that will increase the role of U.S. institutions of higher education in their region's innovation ecosystems through building their capacity and strengthening their infrastructure for translational research and supporting translational research training for graduate students and postdocs. For this competition, NSF recognizes "translational research" as converting research into practical applications that can be deployed at scale, including knowledge/technology transfer, commercialization, or transition to practice, resulting in tangible economic and/or societal benefits.

Colleges and universities that have high levels of fundamental research activity but low translational research activity are encouraged to apply to the ART program. Applicants must provide data to "justify their current capacity and infrastructure for translational research activities, using multiple evidence-based methods and metrics to determine their capacity. Institutions applying to the ART program also need to clearly state why they have significant potential to build translational research capacity.

The [first solicitation](#) for the ART program was released in February 2023 and closed on May 9, 2023. The application deadline for the 2024 competition will be September 18, 2024. For the 2023 solicitation, NSF provided up to \$6 million per award for a grant period of four years.

### **Industry/University Cooperative Research Centers (I/UCRC) Program**

The [I/UCRC Program](#) supports partnerships between universities and industry to carry out high quality, industry-driven research, as well as to train the next generation of innovative students. I/UCRCs are supported in all NSF research areas. There are currently 77 I/UCRCs, with planned NSF funding of around \$20.5 million in the current solicitation. Institutions of higher education are eligible to apply and the primary investigator (PI) on the award must be a tenured faculty member.

Under the [current solicitation](#), I/UCRCs can receive two phases of funding for five years each. NSF uses the following funding formula for new I/UCRCs: Phase I for the first five years - \$150,000 annually; Phase II or Phase II + for the second five years - \$100,000 or \$150,000 annually. Centers that were previously funded under another solicitation can apply for Phase III for a final five years of funding at \$50,000 annually. The I/UCRC program also offers \$20,000 planning grants.

NSF routinely issues Dear Colleague Letters to highlight areas of particular interest to the I/UCRC program. Current priority areas are advanced electronics; advanced manufacturing; advanced materials; biotechnology; civil infrastructure systems; energy and environment; health and safety; information, communication, and computing; sensing and information systems; and system design and simulation. The most recent preliminary proposal deadline was **September 13, 2023**, and the next full proposal deadline is **December 13, 2023**. There are usually two deadlines per calendar year. Preliminary proposals are only required for planning grants. The most recent I/UCRC webinar is available for viewing [here](#).

### **Partnerships for Innovation (PFI)**

The [PFI program](#) supports researchers from all disciplines funded by NSF to participate in technology development, building of partnerships, and commercializing research to address a societal need. PFI has two tracks:



1. The Technology Transfer (PFI-TT) Track; and
2. Research Partnerships (PFI-RP) Track.

The PFI-TT track provides the opportunity to turn promising, prior-funded NSF research into technological innovations through prototyping, scale-up work, or proof-of-concept work. PFI-TT projects are considered successful if they create “technology-driven commercialization outcomes” and address a societal need. PFI-TT supports approximately 15-35 awards per year at \$550,000 per award. Awards can be between 18 and 24 months.

The PFI-RP track supports partnerships between academic institutions, non-profits, industry, and public-private partnerships engaged in complex technology development beyond the scope of a single researcher. Through PFI-RP, partnerships conduct applied research on a larger commercialization project. Like PFI-TT, PFI-RP awards are expected to have a societal impact. PFI-RP supports approximately 10-20 awards per year for up to \$1 million per award for an award period of 36 months.

Institutions of higher education and non-profits with experience in technology transfer are eligible to apply for PFI awards. The next application deadlines are **September 5, 2023 and January 2, 2024**. There are usually multiple application deadlines per year. The most recent solicitation is available [here](#).

### **Innovation Corps (I-Corps)**

[I-Corps](#) supports a range of activities and training programs to equip scientists and engineers with the entrepreneurial skills they need to transfer technology developed in their laboratories to market and broaden the impact of NSF-funded, basic research projects. I-Corps currently supports two components:

- [I-Corps Teams](#) – I-Corps teams provide technical, entrepreneurial, and business know-how to help launch technological innovations. The I-Corps team includes a principal investigator, an entrepreneurial lead, and a mentor.
- [I-Corps Hubs](#) – Hubs are responsible for creating a network of universities with the capability to help researchers learn how to commercialize research.

I-Corps previously supported Nodes and Sites which still exist from previous solicitations, the most recent I-Corps solicitation only supported I-Corps Teams and Hubs. NSF intends for I-Corps Hubs to operate as the backbone of the I-Corps National Innovation Network.

The last solicitation for I-Corps Hubs closed in May 2022. Proposals are accepted at any time for I-Corps teams. Each funded I-Corps team will receive \$500,000 for a six-month award period. Two and four-year institutions of higher education are eligible to apply for both team and hubs awards.

### **Enabling Partnerships to Increase Innovation Capacity (EPIIC) Program**

[The program](#) was newly created in 2023 and is a funding opportunity from NSF TIP that aims to build capacity and institutional capabilities at underrepresented and non-research-intensive institutions to participate in regional innovation ecosystems and grow external partnerships. Funding from EPIIC supports activities such as award management, relief time for faculty, and staff for developing external partnerships, infrastructure, and resources to facilitate participation in future NSF solicitations.



As NSF and other federal agencies increasingly move toward regional innovation ecosystem models, such as the recent NSF Engines, there is a recognition that many institutions, including minority-serving institutions (MSIs), Predominantly Undergraduate Institutions (PUIs), and two-year institutions, lack the capacity to meaningfully contribute to these activities. Through EPIIC, NSF will support networking events and form cohorts to develop approaches to improve capacity to engage in multi-sector partnerships to advance programming in workforce development, use-inspired research and development, and the translation of technologies in key areas, including “advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, and semiconductors and microelectronics.” The goal for EPIIC awardees is to better compete for external funding, including current or future NSF Engines.

EPIIC leverages a multi-phase process that will allow NSF to provide guidance and mentorship for generating proposal ideas and concepts. Phase One will entail the submission of brief required preliminary proposals; Phase Two will be a series of workshops where likeminded institutions will form cohorts to address barriers to entry to regional innovation ecosystems; and for Phase Three, NSF program officers will invite select teams to submit full proposals following the workshops. The next preliminary proposal deadlines are December 15, 2023, and June 27, 2024. NSF anticipates making up to 50 awards with a maximum budget of \$400,000 for three years. EPIIC is only open to two- and four-year institutions of higher education (IHEs), including community colleges, that are considered as neither R1 nor R2 institutions according to the [2021 Carnegie Classification of Institutions of Higher Education](#). The current EPIIC solicitation is available [here](#).

### **Convergence Accelerator**

The [Convergence Accelerator program](#) was established in 2019 to support interdisciplinary solutions to challenges facing the U.S. The goal of the Convergence Accelerator is to quickly move use-inspired research into market by building on basic research through bringing together experts across disciplines in partnership to create long-lasting change.

The Convergence Accelerator program has three phases, beginning with the ideation process. NSF releases a Request for Information (RFI) to solicit ideas from the broader scientific community on what the research topics should be for an upcoming solicitation. Topic ideas submitted through the RFI must be broad in scope, built upon basic research, impactful and scalable, and suitable for multidisciplinary research. After topic ideas are submitted, NSF invites some of them to submit a workshop proposal, which are used to expand on the submitted topic ideas. The results from the workshops are used to help NSF select the topics for the next Convergence Accelerator solicitation.

The Convergence Accelerator program offers two phases of funding. All teams who are funded by the program start in Phase I. At the end of Phase I, teams must participate in a pitch competition, which is how NSF selects the teams they will fund for Phase II. Applications for the Convergence Accelerator program are expected to focus on turning foundational research into practice through leveraging a multidisciplinary approach, and by the end of Phase II, solutions funded through the program are expected to be sustainable and impacting society.

Phase I is a planning effort that funds teams with grants that are up to \$750,000 for up to twelve months, with nine of the twelve months including hands-on planning activities. Participating teams engage with NSF’s innovation curriculum and are expected to identify required skills and partnerships to



accelerate their solution. Teams that are selected for Phase II enter into a 24-month development effort and are funded at up to \$5 million through a cooperative agreement.

NSF hosted [workshops](#) for the 2023 cohort topics in Fall 2022. After the workshops, the selected topics were “Equitable Water Solutions,” “Real-World Chemical Sensing Applications,” and “Bio-Inspired Design” were selected. Applications to participate in the [2023 cohort](#) were due by August 22, 2023. NSF anticipates \$36 million in funding for up to 48 Phase I awards, which will be made as standard grants, and up to 6 Phase II awards, which will be made as cooperative agreements. Available funding for Phase 2 awards will be determined by the number and size of Phase I awards granted.

### **Science and Technology Centers (STC): Integrative Partnerships**

The [STC: Integrative Partnerships program](#) supports large-scale, longer-term awards that are innovative, potentially transformative, and involve complex research and education projects. STCs are multi-institutional public-private partnerships that carry out research at the interface of disciplines and/or take new approaches to existing disciplines. STCs involve any area of science or engineering that is supported by NSF and are expected to involve groups underrepresented in science and engineering. STCs must also undertake activities to support knowledge transfer.

The [most recent solicitation](#) closed in August 2022. The STC competition is very competitive, previous competitions have attracted around 250 preliminary proposals and only funded three to five new centers. Institutions of higher education must lead STC proposals and are expected to develop partnerships with other academic institutions, research laboratories, and third parties as appropriate for their application.

### **Gen-4 Engineering Research Centers (ERCs)**

[ERCs](#) support large interdisciplinary research projects that promote partnership between industry and universities and create societal impact. In addition to research and technology development, ERCs are responsible for growing the engineering workforce, sustaining a culture of diversity and inclusion, and creating an enduring “value system of innovation.” ERCs are also expected to support NSF’s goal of providing global leadership in research and education and creating new scientific concepts. Since the founding of the ERC program in 1975, NSF has supported [75 ERCs](#), which has led to more than 200 spin-off companies and 850 patents.

There are currently 17 active ERCs which focus on topics across the following research areas: advanced manufacturing; health and the bioeconomy; energy and environment; and infrastructure. The latest “Gen-4” Engineering Research Center [solicitation](#) was released in 2022, with full proposals due in May 2023. Award announcements from this solicitation are expected in summer 2024. Each center is awarded funding for up to ten years, with the first five years of funding guaranteed and the second five years of funding contingent on the performance of the ERC and submission of a renewal proposal. For the 2022 solicitation, NSF intends to fund up to six centers at \$26 million annually.

### **Activate Fellowship**

The [Activate Fellowship](#) is a two-year program aimed at helping science entrepreneurs move their breakthrough research into the market. The fellowship provides a secure path for fellows to start their journey as entrepreneurs—providing the time, resources, and guidance to develop as leaders and mature their ideas.



Activate works between government, philanthropy, and the private sector, transforming scientists into high-impact entrepreneurs through a fellowship experience that guides them along every step of the journey and in 2022 [announced](#) a new \$20 million cooperative agreement with NSF. The expansion of the Activate Fellowship launched the organization's Anywhere platform which enabled fellows to participate anywhere in the U.S. as long as they have the lab space to support their research and prototyping.

Activate supports an array of verticals, most areas of deep tech, including advanced robotics and manufacturing, built environments, carbon management, chemistry and materials, climate, computing, earth resources, electronics and connectivity, energy generation and delivery, energy storage and batteries, food and agriculture, industrial biotechnology, life sciences, space and aeronautics, transportation and mobility, and water.

## **Department of Defense**

### ***Overview:***

Within the federal government, the Department of Defense (DOD) stands at the forefront of innovation but has historically struggled with aspects of technology transfer and commercialization. Defense programs, managers, and solution providers continue to be stymied by “the Valley of Death;” the period where emerging technologies are supposed to transition from R&D at the technology readiness levels [\(TRL\) 8/9](#) to full industrial commercialization but often fail.

In recent years, DOD has tried to overcome this barrier and prioritize technology transition, focusing its R&D enterprise on *fieldable capabilities* to ensure that end users receive and utilize products on a reasonable schedule to solve warfighter problems with minimal disruption to their activities. This translates to a renewed focus on advanced technology development that capitalizes on quick approaches like those popularized by the Defense Innovation Unit (DIU). Development approaches such as these utilize less abrasive contracting mechanisms and more diverse, equitable, and inclusive interface with nontraditional defense solution providers. Additionally, the Department announced its new Office of Strategic Capital (OSC) in December 2022 to “help build an enduring technological advantage by partnering with private capital providers.”

Innovation efforts also span the branches of the military services including the U.S. Army Futures Command (AFC), which focuses on research, development, experimentation, and acquisition through eight Cross-Functional Teams aligned to the Army's modernization priorities: Long-Range Fires; Synthetic Training Environment; Network; Air & Missile Defense; Future Vertical Lift; Assured Positioning, Navigation, and Timing/Space; Soldier Lethality; and Next Generation Combat Vehicles. In the Air Force, leadership has utilized the [Kessel Run program](#) to expand partnerships with academic institutions, program shops, and other stakeholders. This effort seeks to continue to renovate how the Air Force acquires and commercializes software.

For DOD regional development efforts, the Office of Local Defense Community Cooperation (OLDCC) within the Office of the Under Secretary of Defense for Acquisition and Sustainment (A&S) provides technical assistance and place-based grants to bolster resilience and readiness of installations and other military communities. OLDCC's two-fold mission includes ensuring that “defense manufacturing and supply chains are agile, resilient, adaptive and responsive to defense needs” and “communities can

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support their local military installations through sustainable economic development and other civilian activities that are compatible to the Department's current mission."

## *New and Emerging Activities:*

- *Since its establishment in 1961, OLDCC (previously the Office of Economic Adjustment) has provided \$1.3 billion in grants to support military installations and communities. Of relevance to the research community, the OLDCC provides funding, overall supported by Congress, to two of the following programs:*
  - *[Defense Community Infrastructure Pilot \(DCIP\) Program](#): Aims to "address deficiencies in community infrastructure, supportive of a military installation, in order to enhance military value, installation resilience, and military family quality of life."*
  - *[Defense Manufacturing Community Support Program \(DMCSP\)](#): "Designed to support long-term community investments that strengthen national security innovation and expand the capabilities of the defense manufacturing industrial ecosystem."*
- *In December 2022, the Secretary of Defense announced the creation of the [Office Strategic Capital](#) (OSC). The OSC will connect "companies developing critical technologies" important to national security with capital using non-acquisition-based tools, such as loans and loan guarantees. The office will attempt to "bridge the valley of death" between lab and full-scale production for critical technologies like advanced materials, next-generation biotechnology, and quantum science.*
  - *This process will be two-fold: identifying promising tech areas for the Department, then funding investments to partner and sustain long-term capital. In December 2022 OSC announced a partnership with the Small Business Administration on a Small Business Investment Company (SBIC) Critical Technologies (SBICCT) Initiative and in March 2023, OSC and SBA officially signed a memorandum to guide this Initiative and future joint activities. As of August 2023, OSC is working to establish its Strategic Capital Advisory Council.*
- *In April 2023, DIU was realigned and elevated to be under the authority of the Secretary of Defense. DIU has entered its third phase of the organization -- "DIU 3.0" -- with a focus on scaling capabilities across the Department, even hinting at embedding DIU at combatant commands and with acquisition-oriented Pentagon organizations to scale technologies more efficiently. As background, DIU was made a permanent organization in 2017 under the Under Secretary of Defense for Research & Engineering (OUSD-R&E) and aims to accelerate the adoption of commercial technologies for national security missions and transform the way DOD does business with industry. It pioneered the use of Other Transactional Authority (OTA) for fast selection of commercial technology, rapidly equipping innovation to the warfighter.*
- *AFRL recently solicited its first call for university-led consortia to compete in its [Regional Research Convergence Hubs \(ARRCH\)](#). ARRCH is envisioned as the Air Force's version of the Army Research Lab's Open Campus initiative, where hubs of technology innovation organize between academia and industry to produce research and applications that can eventually be transitioned to commercial solutions. ARRCH will include hubs in the Northeast (already competed), Midwest (already competed), South, and West regions.*



### ***Funding Opportunities:***

#### **DEFENSEWERX**

Capitalizing on the success of The Doolittle Institute as a foundry for innovation incubation and acceleration, the Air Force Research Lab (AFRL) created an ecosystem of programs to address specific challenges and end user sectors in DOD. From 2015-2017, several “WERX” programs were stood up to invest in quick initiatives to connect their individual user communities to STEM talent, industry startups, workforce development pipelines, and public/private economic development opportunities. Under the DEFENSEWERX ecosystem label, each program assists in the development of innovations for DOD end user requirements that can and often do spin out into larger, sustainable commercial entities. Current DEFENSEWERX programs include:

- [AFWERX](#), focused on Air Force applications.
- [SOFWERX](#), focused on bespoke requirements for joint Special Operations Forces (SOF).
- [ERDCWERX](#), focused on Army Engineering and R&D applications.
- [MGMWERX](#), focused on AFRL and Air University innovation and research with the state of Alabama.
- [FATHOMWERX](#), focused on Navy and Marine Corps applications.
- [Cyber Fusion Innovation Center](#) (CFIC), focused on support to US Army Cyber Command (ARCYBER).
- [ICWERX](#), brings CIA officers together with the private sector and academia to research and develop science and technology solutions.
- [SPACEWERX](#), spun out of AFWERX in 2021 to focus on Space Force applications.

#### **Manufacturing Technology Program (ManTech)**

DOD’s ManTech Program was originally created in 1956 to further national security objectives through the development and application of advanced manufacturing technologies. Housed within the Office of the Under Secretary for Research and Engineering (OUSD-R&E), ManTech bridges the gap from R&D to full-scale production and aids in the economical and timely acquisition of weapon systems and components. ManTech invests in advanced manufacturing ecosystems built on common commercial and defense challenges for shared risks and benefits. ManTech oversees the DOD Manufacturing Innovation Institutes (MIIs), a key investment strategy for future defense industrial base (DIB) security and stability. MIIs help overcome DIB challenges by advancing manufacturing innovation for focused technology areas and their associated manufacturing ecosystems. MIIs are excellent sources for economic development and commercialization initiatives as they drive public-private partnerships, act as regional hubs for manufacturing excellence, stimulate investment in research and industrially relevant manufacturing technologies, and promote manufacturing education and workforce development solutions.

A guide to the institutes’ missions and recommendations for how to engage with them can be found [here](#).

#### **Army Research Laboratory (ARL) Collaborative Research Alliances (CRAs) and Collaborative Technology Alliances (CTAs)**

DOD supports university-industry collaborations through Military Service-specific initiatives like the [ARL’s CRAs and CTAs](#). These mechanisms support collaborations between Defense laboratories and centers, industry, and academia to ensure rapid technology transfer of new innovations and





technologies. Alliance topics include cybersecurity, Internet of Things applications, autonomy, AI, and other novel applications for Army deployment. Industry is encouraged to participate in these alliances to enable commercialization. ARL uses CTAs to drive the development of “complex technologies” to solve some of the Army’s most complex challenges.

### **ARL Open Campus**

ARL continues its [Open Campus](#) initiative to enhance relationships with the international, academic, and entrepreneur communities by sharing ARL facilities and research opportunities. Open Campus increases opportunities for technological advancement and transfer of research knowledge. Four regions of the country feature Open Campus locations as well as several issue area-specific centers for research listed as critical ARL requirements. Each center seeks industry partners to advance research into its field of study on behalf of emerging Army requirements.

### **Irregular Warfare Technical Support Directorate (IWTSD)**

IWTSD, formerly known as the Combating Terrorism Technical Support Office (CTTSO), is funded by the Assistant Secretary of Defense for Policy (ASD) Special Operations and Low-Intensity Conflict (SO/LIC). IWTSD issues an annual BAA to identify and develop capabilities to combat terrorism and irregular adversaries and to deliver those capabilities to DOD and interagency partners through rapid research and development, advanced studies, technical innovation, and support to U.S. military operations. The BAA is typically issued in March each year and is preceded by an Industry Day where commercial, academic, and nonprofit partners can interact and understand IWTSD’s subgroups’ specific requirements. IWTSD typically seeks technologies at the TRL-4 level and above to fulfill their mission of equipping end users within a 6-24-month timeframe. Sign up to be notified for future BAA cycles [here](#).

### **Rapid Reaction Technology Office (RRTO)**

OUSD-R&E’s RRTO program periodically solicits proposals to leverage commercial technology to meet needs identified by combatant commanders, Military Service organizations, other Defense agencies, and interagency organizations. RRTO aims to remove barriers to commercial technology utilization and support DOD’s Better Buying Power objectives by leveraging technology and emerging products developed by small, innovative businesses in the commercial sector, including commercial startups and spinoffs from universities. RRTO announced its [Global Needs Statement](#) and corresponding Fall Virtual Solutions Meeting, applications to which closed in April 2021.

### **Military Service Rapid Capabilities Offices (RCO)**

DOD has established RCOs in each of the Military Services chartered to rapidly identify and deploy technologies and commercial systems in support of near-term operations. Each office publishes technology interest areas and conducts Service-specific events like pitch days, hackathons, and experiments. Some Services, like the [Army Rapid Capabilities and Critical Technologies Office](#) (RCCTO), maintain open BAAs to encourage persistent engagement with innovative solution providers. Others, like the Office of [Naval Research’s \(ONR\) NavalX program](#) (which resides inside a technology accelerator department that acts as the Navy RCO) conduct regular Tech Bridges between Navy warfighters and solution providers to vet requirements, develop innovations, and transition them into the field quickly. There are also RCOs at the following Services: [Marine Corps Rapid Capabilities Office at the Marine Corps Warfighting Laboratory](#) (MCWL), [Department of the Air Force Rapid Capabilities Office](#) (DAF RCO), and [Space Rapid Capabilities Office](#) (SRCO).



## **Strategic Environmental R&D Program (SERDP) & Environmental Security Technology Certification Program (ESTCP)**

DOD has funded basic, applied, and advanced development research in climate and environmental science, installation energy, and force sustainment through the [SERDP](#). As technologies that address high-priority environmental requirements mature, they can transition or be acquired through a complementary effort called the ESTCP.

## **Minority Business Development Agency**

### **Overview:**

The Biden Administration has committed to elevating the Minority Business Development Agency (MBDA) and scaling its support for minority business enterprises (MBEs) as part of its broader diversity, equity, and inclusion goals. Over the last three years, MBDA has been charged with bolstering its investments in the growth and global competitiveness of MBEs through technical assistance and other programs that support minority small businesses and entrepreneurs. Beginning in 2021, the Build Back Better Agenda emphasized the importance of MBEs to fortifying the U.S. economy and the work MBDA does to assist these vital enterprises in accessing capital, investing in new technologies, and successfully competing for federal contracts. In 2021, the agency was permanently authorized through the *Infrastructure Investment and Jobs Act* (IIJA), which codified its existing programs and added new programs and roles, expanding the scope of the agency's services. IIJA also expanded the geographic authority of MBDA, by directing the agency to create regional offices and rural business centers. In 2022, Donald "Don Cravins" was unanimously confirmed as the Under Secretary of MBDA, elevating MBDA's leadership to a cabinet position for the first time in its history. The agency's growth was catalyzed in fiscal year (FY) 2023 when it received \$70 million in appropriations, which was \$15 million over the FY 2022 level. While the fate of FY 2024 appropriations is still unknown, the current Senate bill would match the FY 2023 funding level, while the House bill proposes a \$15 million cut.

### *New and Emerging Activities:*

- *In the Fall of 2022, the Secretary of Commerce announced that MBDA would extend an award of \$4.72 million to "strengthen and expand" its network of business centers nationally. Of that, \$2.62 million was used towards MBDA's 26 existing centers across the country to better their procurement services and aid MBEs in getting federal contracts. Another \$2.1 million was used to open six new business centers in states where MBEs would greatly benefit from increased access to MBDA services.*
- *In late 2022, MBDA introduced its Capital Readiness Program, which seeks to help minority and underserved entrepreneurs grow and scale their businesses. The Capital Readiness program provides support to incubators and accelerators with the expertise to train entrepreneurs in high-growth sectors in accessing tools, resources, and technical assistance. In August 2023, the Biden Administration announced the recommended awardees for the program, as well as that it would provide \$125 million in technical assistance to prepare entrepreneurs to secure funding from the \$10 billion State Small Business Credit Initiative (SSBCI), as well as other federal capital resources.*
- *In April 2023, MBDA announced the appointment of its inaugural Deputy Undersecretary for Minority Business Development, Jessica G. Cavazos, demonstrating MBDA's commitment to building out its leadership and staff to meet the growing responsibilities of the agency.*



### **Funding Opportunities:**

#### **Business and Specialty Centers**

MBDA supports various centers focused on expanding business development for minority-owned businesses and providing technical assistance to industry. The Business Centers program comprises most centers funded through MBDA. This five-year grant aims to improve access to markets and focuses on cultivating public-private partnerships to increase competitiveness and spur job creation. The centers' three pillars are access to capital, contract opportunities, and foreign markets. In addition to the Business Center program, MBDA funds [Specialty Centers](#), which include Export Centers, Advanced Manufacturing Centers, and Procurement Centers. Following the program's [most recent competition](#), which closed in the Fall of 2022, MBDA is supporting 93 centers.

#### **National Aeronautics and Space Administration**

##### **Overview:**

The National Aeronautics and Space Administration (NASA) has multiple mechanisms for supporting commercialization efforts within academia and private industry. Most of the commercialization and technology transfer work is done through the agency's Space Technology Mission Directorate (STMD); however, the Aeronautics Research Mission Directorate (ARMD) and Human Exploration and Operations Mission Directorate (HEO) also support some projects. STMD supports NASA's Technology Transfer program (T2) and has been instrumental in supporting NASA commercialization priorities such as the commercialization of low-Earth orbit spaceflight.

##### *New and Emerging Activities:*

- *NASA's Commercial Low-Earth Orbit development program will support new space platforms and capabilities to accelerate the growth of commercial space industries.*
- *NASA announced the winners of its fourth Space Technology Research Institutes solicitation in June 2023, the next competition is expected in FY 2024.*

### **Funding Opportunities:**

#### **Space Technology Mission Directorate (STMD)**

STMD seeks the rapid maturation of cross-cutting, broadly applicable technologies through collaborative partnerships with NASA Centers, academia, and the private sector. STMD's specific focus is on high-impact, transformative technologies that are too nascent or risky for the private sector to support independently.

While NASA's other directorates are guided by mission and operational needs, STMD is comprised of capability-driven programs. As such, STMD focuses on improving NASA's technological capabilities across a broad array of areas—from propulsion and power generation to materials science and high-performance computing. This wide-ranging portfolio allows STMD to support technological research and development in areas not directly related to spaceflight, making it highly accessible to university faculty and students in the engineering disciplines. STMD would be funded at \$1.4 billion in the President's FY 2024 budget request, which is 16 percent above the FY 2023 enacted level.

#### Technology Transfer

NASA STMD has created its [Technology Transfer program](#) (T2) to coordinate its many technology commercialization projects. T2 allows the public to access its patent portfolio and software catalogue in



order to license or use its technologies. NASA has also stood up multiple programs that both facilitate technology transfer and highlight the agency's commercialization successes. Of most relevance to universities is the [Technology Transfer University \(T2U\)](#) program. NASA currently partners with 25 universities around the country to bring NASA technology into the hands of students and faculty. The T2U program is open to all interested U.S. universities.

### Technology Innovation

NASA moved away from their *Technology Roadmaps* in 2020 with the release of the [2020 NASA Technology Taxonomy](#). Unlike the 2015 Roadmap, the new Taxonomy does not provide detailed outlines of NASA's current technological capabilities, but instead lists specific technologies categorized under general areas where NASA anticipates future technologies will be needed to enable space missions and aviation technology. STMD provides support through 12 distinct programs, each focused on different phases of the technology-readiness level (TRL) spectrum. Technology at TRL-1 is a basic concept while technology at TRL-9 is ready for missions and operations. The following six STMD programs are particularly relevant to universities and private industry:

- [NASA Innovative Advanced Concepts \(NIAC\)](#) – NIAC focuses on maturing a technology from a basic idea to an experimental proof of concept (TRL-1 to TRL-3). Proposals for NIAC funding are generally “blue sky” ideas for radical new mission concepts that depend on enabling new technology.
- [NASA iTech](#) – NASA iTech promotes new NASA relevant ideas by connecting innovators with potential investors. Innovators can apply to NASA iTech through their annual cycle competition or pitch their ideas at Ignite the Night events which are held around the U.S. and focus on regional innovators. NASA does not provide funding for iTech winners but connects them with investors from private industry. Many recent focus areas have centered on foundational NASA commercialization priorities including commercialization of low-Earth orbit, hybrid and electric aircraft, and small satellite systems.
- **Space Technology Research Grants (STRG)** – STRG focuses on TRL-1 through TRL-3, but unlike NIAC, it is designed to be responsive to the priorities outlined in the NASA Technology Roadmaps. STRG encourages faculty and students to pursue research in transformative space technology through the three separate component programs below.
  - [Space Technology Research Institutes \(STRI\)](#) – STRIs strengthen NASA's connections to academic communities by developing diverse, multidisciplinary university-led centers that both advance cutting-edge technology and train the next generation of scientists and engineers that will lead NASA's science and technology innovation. Each institute advances low to mid TRL projects around a central technology focus area. The STRI competition is released once every two years and funds two institutes for five years at \$3 million annually. The latest STRI announcement is available [here](#).
  - [Early Career Faculty \(ECF\)](#) – ECF awards are specifically for early career faculty and seek to advance technologies outlined in NASA's Technology Roadmaps from TRL-1 to TRL-3.
  - [Early Stage Innovation \(ESI\)](#) – ESI has the same scope as ECF, but it is not restricted to early career faculty.
  - [NASA Space Technology Graduate Research Opportunities \(NSTGRO\)](#) – NSTGRO, first released in 2019, replaced the NASA Space Technology Research Fellowships programs, but achieves the same objective. NSTGRO provides financial and material support to

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graduate students through training grants and opportunities to conduct research at a NASA Center.

- [Lunar Surface Technology Research \(LuSTR\)](#) – LuSTR opportunities specifically advance technologies that explore the lunar surface and forms part of the Artemis program which will eventually bring humans back to the Moon.
- [Game Changing Development \(GCD\)](#) – GCD focuses on rapidly maturing technologies from experimental proof of concept to technology validation in a relevant environment (TRL-3 to TRL-5/6). GCD focuses on potentially revolutionary, high-risk high-reward technologies that may lead to new approaches to space missions. GCD works with partners from across academia, industry, and within NASA centers, but its emphasis on higher TRL levels means that universities are more likely to compete with private companies for funding.
- [Small Spacecraft Technology Program \(SSTP\)](#) – SSTP leverages university partnerships to advance small spacecraft capabilities and subsystems from validation in an operational environment to technology demonstration in an operational environment (TRL-3 to TRL-7). SSTP does this by identifying new subsystem technologies and sponsoring flight demonstrations for small spacecraft. SSTP identifies new technologies through frequent solicitations.
- [Prize and Challenge Competitions](#) – NASA holds a number of prize and challenge competitions including the Centennial Challenges and Entrepreneurs Challenge. The Centennial Challenges are open to the public (teams comprised of students, faculty, or industry researchers are encouraged to apply). The focus of the competitions varies, with the most recent challenges focusing on space robotics, 3-D printable habitats, medical research, and CubeSats. The Entrepreneurs Challenge, sponsored by NASA's Science Mission Directorate (SMD), allows entrepreneurs to pitch a technology that advances NASA's science interests. NASA will award up to \$90,000 to entrepreneurs who successfully pitch their ideas.

Funding opportunities for all of these programs are released as appendices to the annual Space Technology Research, Development, Demonstration, and Infusion (SpaceTech-REDDI) NASA Research Announcement (NRA). The exceptions are NSTGRO, SSTP, and the prize and challenge competitions which are released as standalone solicitations.

## **Aeronautics Research Mission Directorate (ARMD)**

NASA aeronautics has made decades of contributions to aviation. Every U.S. commercial aircraft and U.S. air traffic control tower has NASA-developed technology on board that helps improve efficiency and maintain safety. NASA aeronautics research creates on-ramps for industry and academia to realize various future states of aviation. [ARMD's](#) current programs include:

- [University Leadership Initiative \(ULI\)](#) – NASA's ULI provides an opportunity for the U.S. university community to receive NASA funding to build teams and set their own research agenda. ARMD assists in the transition of research results to an appropriate range of stakeholders that leads to a continuation and commercialization of the research.
- [Sustainable Flight National Partnership \(SFNP\)](#) – SFNP is partnering with industry, academia, and other agencies to accomplish aviation's aggressive climate change agenda to reduce aviation carbon emissions by half compared to 2005 by 2050 and achieve net-zero emissions by 2060. During the next ten years, SFNP will demonstrate the first-ever high-power hybrid-electric propulsion system on a large transport aircraft, ultra-high efficiency long and slender aircraft wings, new large-scale manufacturing techniques of composite materials, and advanced engine technologies based on breakthrough NASA innovations.

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- [Advanced Air Mobility \(AAM\)](#) – NASA’s AAM program partners with industry, academia, and state and local governments to help emerging aviation markets safely develop an air transportation system that moves people and cargo between places previously not served or underserved by aviation—local, regional, intraregional, urban—using revolutionary new aircraft that are only just now becoming possible.
- [Low-Boom Flight Demonstration \(LBFD\)](#) – NASA’s aeronautical innovators are leading a government-industry team to collect data that could make supersonic flight over land possible, dramatically reducing travel time in the U.S. or anywhere in the world.

## National Institute of Standards and Technology

### Overview

While most research supported by the National Institute of Standards and Technology (NIST) is carried out internally at NIST laboratories, the agency has been working to raise its profile and partnerships with industry and academia. With the passing of the *CHIPS and Science Act of 2022*, NIST has seen expanded opportunities to engage with academia, and facilitate public-private partnerships.

The *CHIPS and Science Act of 2022* includes a \$50 billion CHIPS for America Fund, which provides the Department of Commerce (DOC) with \$11 billion for semiconductor R&D activities and \$39 billion in financial incentives for domestic facilities and equipment related to semiconductor activities and production. Of most interest to the academic and research community, the \$11 billion in funding over five years for R&D activities would support the following:

- **National Semiconductor Technology Center (NSTC):** A public-private partnership for advanced semiconductor manufacturing R&D and prototyping and workforce development.
- **National Advanced Packaging Manufacturing Program (NAPMP):** A federal R&D program to bolster assembly, test, and packaging capabilities.
- **Manufacturing USA Semiconductor Institute:** A partnership between government, industry, and academia to advance semiconductor manufacturing and workforce training.
- **Microelectronics Metrology R&D:** An internal NIST research program to advance measurement science, standards, material characterization, instrumentation, testing, and manufacturing capabilities.

These programs would be primarily executed by NIST, which established a CHIPS R&D office to implement these funds. CHIPS R&D Office Leadership was announced in June 2023. The first funding opportunity for industry out of CHIPS for America was released in February 2023, and focused on supporting manufacturing incentives to restore U.S. leadership in semiconductor manufacturing, revitalize the semiconductor workforce, and bolster economic and national security. Since then, NIST has released opportunities to support supply chain projects, as well as the white paper for the NSTC. At the time of this writing, NIST is in the process of standing up the structure of the NSTC and is expected to release competitions to host NSTC technical centers to industry and academia at the end of 2023. The vision and strategy paper for the NAPMP is expected in the Fall of 2023, which will also provide funding opportunities to institutions with packaging capabilities.

*New and Emerging Activities:*

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- In June 2021, NIST released a [solicitation](#) seeking [road map](#) proposals to “establish new or strengthen existing industry-driven consortia that address high-priority research challenges to grow advanced manufacturing in the United States,” signaling the possible creation of additional manufacturing consortia or institutes.
- In August 2023, NIST released a draft updated cybersecurity framework (CSF 2.0), a new version of a tool it first released in 2014 to help organizations understand, reduce, and communicate about cybersecurity risk. NIST has opened the draft update for public comment until November of 2023. A workshop planned for the fall will be announced shortly and will serve as another opportunity for the public to provide feedback and comments on the draft. The developers plan to publish the final version of CSF 2.0 in early 2024.
- The Biden Administration announced that NIST is launching a new public working group on artificial intelligence (AI), with a focus on generative AI. NIST is seeking technical experts from both private and public sectors to help NIST develop guidance to help organizations address risks and challenges associated with generative AI technologies. The working group will be “facilitated via a collaborative online workspace”, and the announcement laid out the following goals for the working group:
  - Short-term: The working group will “serve as a vehicle for gathering input on guidance that describes how the [NIST AI Risk Management Framework \(AI RMF\)](#) may be used to support development of generative AI technologies.”
  - Mid-term: The working group will “support NIST’s work on testing, evaluation and measurement related to generative AI.”
  - Long-term: The working group will “explore specific opportunities to increase the likelihood that powerful generative AI technologies are productively used to address top challenges of our time in areas such as health, the environment and climate change.”

## Funding Opportunities

### Manufacturing USA

NIST supports national manufacturing and innovation objectives through its [Office of Advanced Manufacturing](#) and its [Manufacturing USA program](#). In December 2014, Congress passed the *Revitalize American Manufacturing and Innovation Act* (RAMI), which established the National Network for Manufacturing Innovation Program, now known as Manufacturing USA, to foster collaboration in manufacturing innovation among industry, academia, nonprofits, and government agencies through public-private partnerships. In 2016, the first annual report for the Institutes was released, along with the first [3-year strategic plan](#). Since then, an annual report has been released each year. While there are over a dozen institutes that comprise Manufacturing USA, currently only one is funded directly through NIST (other institutes are sponsored by DOD and DOE), the [National Institute for Innovation in Manufacturing Biopharmaceuticals](#) (NIIMBL). In 2022 NIST released a request for information (RFI) to inform the design, requirements, and potential work of up to three new Manufacturing USA Institutes. A report was released in June 2023 overviewing over 90 responses to the RFI from stakeholders, made up of 61 percent from industry and 7 percent for academia.

### Hollings Manufacturing Extension Partnership (MEP)

The [MEP program](#) is a public-private partnership that includes and partners with universities to support U.S. manufacturing capabilities. Regional MEP Centers “work with manufacturers to develop new products and customers, expand and diversify markets, adopt new technology, and enhance value



within supply chains.” In 2022, MEP ran three funding competitions through its competitive awards program (CAP), Disaster Assistance program, and Center State Competition.

## **National Institutes of Health**

### ***Overview***

The National Institutes of Health (NIH) continues to emphasize its role in fostering more effective and efficient translation of basic scientific discoveries into treatments and therapeutics that lead to improved health outcomes. While NIH encourages translational science to varying degrees across its 27 Institutes and Centers, the National Center for Advancing Translational Sciences (NCATS) is specifically dedicated to moving biomedical research advances from the laboratory into the clinic and into communities. NCATS’ flagship initiative is the Clinical and Translational Science Awards (CTSA) program, which operates as a network of hubs to catalyze innovation and tackle major scientific and operational problems in clinical and translational research that would be challenging for a standalone team to overcome. Although the program has undergone technical and administrative changes over the years, it enjoys strong support from Congress and will continue as a cornerstone of NIH’s translational research moving forward.

Within NIH’s Office of Extramural Research, Small business Education and Entrepreneurial Development (SEED) manages more than \$1.3 billion per year in SBIR/STTR funding, as well as provides product development support, entrepreneurial training, and support for partnerships with the private sector to help improve public health while driving economic growth. The [PHS 2023-2 omnibus solicitations](#) for SBIR/STTR funding through NIH, the Centers for Disease Control and Prevention (CDC), and the Food and Drug Solicitation (FDA) were released in July 2023 and expire in April 2024. Only NIH and Centers for Disease Control and Prevention (CDC) SBIR/STTR awardees are eligible to participate in the I-Corps at NIH program, an 8-week, hands-on entrepreneurial training opportunity. The I-Corps at NIH program aims to help participants shape and streamline their business plan and accelerate their products to market faster by connecting them with experts in the biotechnology sector, potential customers, and other SBIR/STTR awardees. A \$55,000 supplement covers program costs. Additional information on the I-Corps at NIH program, including individual Institute and Center contact information, can be found [here](#).

SEED also oversees several academic entrepreneurship and product development programs, connected through the NIH Proof of Concept Network, which includes the Research Evaluation and Commercialization Hubs (REACH) and the NIH Centers for Accelerated Innovations (NCAI). Other major NIH programs housed within specific ICs, such as the Point-of-Care Technologies Research Network (POCTRN) at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) and the Regional Technology Transfer Accelerator Hubs for IDeA States at the National Institute of General Medical Sciences (NIGMS), also work within the Proof-of-Concept Network. The goal of the [Network](#), which includes resources from the federal government, institutions of higher education, and the private sector, is to support academic innovation in its early stages to successfully convert these developments into healthcare solutions. The REACH Program provides entrepreneurial training on bringing technologies to market, feedback from industry experts, funding for early-stage product definition studies, and support for project management. REACH currently includes 8 proof-of-concept hubs involving 51 universities in 12 states; a new round of five hubs, competed through [RFA-OD-23-005](#), is expected to be announced in December 2023. The NCAI program, structurally similar to REACH but focused on technologies relevant to the National Heart, Lung, and Blood Institute (NHLBI), includes three centers spanning 28 institutions in 7 states.



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[POCTRN](#) was first launched in 2007 to “facilitate the development of a pipeline of point-of-care technologies with commercialization potential, utilizing a center structure that enables incorporation of clinical and user needs in the development process,” while also providing expertise and resources to address early barriers to commercialization and implementation. POCTRN’s infrastructure was used as a scaffold to develop the Rapid Acceleration of Diagnostics (RADx) initiative, created in spring 2020 to accelerate the development, validation, and commercialization of diagnostic technologies for COVID-19. RADx was highly successful in leveraging nearly \$1.5 billion in emergency appropriations from Congress into the development of 50 distinct diagnostic tests and the production of over 6.7 billion tests as of spring 2023. As the COVID-19 pandemic begins to recede, NIH is piloting the application of the signature RADx “innovation funnel” model to other high-need health areas, such as maternal health and HIV.

Launched in 2014, the NIH Accelerating Medicines Partnership (AMP) is the agency’s signature industry partnerships program, managed by the Foundation for the NIH (FNIH). With the support of more than 60 industry and nonprofit partners, AMP has contributed over \$830 million to accelerate the pursuit of new drug treatments for Alzheimer’s disease, autoimmune diseases, common metabolic diseases, heart failure, Parkinson’s disease, and schizophrenia. AMP served as a key model for the Accelerating COVID-19 Therapeutic Interventions and Vaccines ([ACTIV](#)) initiative, which was an essential private-public partnership to prioritize and speed the development of promising treatments and vaccines.

#### *New and Emerging Activities:*

- *In its [report](#) accompanying its version of the FY 2024 appropriations bill for NIH, the Senate Appropriations Committee “urges NCATS to continue proactive outreach to redouble its efforts to leverage its mission by exploring opportunities or potential collaborations with business incubators that host small to midsize science, research and pharmaceutical companies that use service-based approaches to nurture and guide their member companies to success.” The implementation of such efforts will depend on enacted funding for FY 2024.*
- *The Senate Appropriations Committee also directed NIH to “leverage the investments made in NCATS rare disease research to accelerate the development of new treatments for the 95 percent of rare diseases with no approved treatment, to strengthen the innovation of diagnostics to shorten the average 6.3 year-long diagnostic odyssey, and to lower the nearly \$1,000,000,000,000 annual economic burden of rare diseases.” The Committee also expressed its supports for NCATS’ new [Division of Rare Diseases Research Innovation](#), which plays a coordinating role across NIH in rare disease research and product development.*
- *The Advanced Research Projects Agency for Health ([ARPA-H](#)), launched in March 2022, aims to accelerate better health outcomes for all Americans by funding high-risk, high-reward research with high potential for translation and commercialization. ARPA-H leadership reports to the Secretary of the Department of Health and Human Services (HHS) but shares some administrative functions with NIH; it is closely associated with but not part of NIH. ARPA-H is organized into four mission areas – Health Science Futures, Scalable Solutions, Proactive Health, and Resilient Systems – and has launched two standalone programs and an Open Broad Agency Announcement as of August 2023. ARPA-H also published its own SBIR solicitation for several specific research topics in June 2023; the solicitation closed a month later in July 2023. To ensure that ARPA-H-funded technologies advance to commercial success, the agency stood up a Project Accelerator Transition Innovation Office ([PATIO](#)) which will work with Program Managers and ARPA-H performers throughout their award duration. ARPA-H is expected to release additional programs in the coming months, all of which will be supported by PATIO. As of FY 2023 ARPA-H*



*has received \$2.5 billion (over the past two fiscal years) but has only announced funding for a single project as of August 2023.*

**Funding Opportunities:**

**NCATS Clinical and Translational Science Awards (CTSA)**

The most [recent solicitation](#) for the CTSA Hubs was released in August 2021. The new solicitation features technical and structural changes to the awards, including adjustments to the project period, total cost award calculations, and career development and training components of the awards. NIH made these changes following an extensive stakeholder feedback process and notes in the solicitation that their intent in implementing these changes is to ensure the long-term stability and sustainability of the program and to reduce administrative burden on applicants. Three annual deadlines (January, May, and September) are available through September 2024. Total number of awards and award size vary depending on the requested award budget and the availability of appropriations.

A list of all current funding opportunities available through the CTSA program is available [here](#). Some opportunities are available only to current CTSA awardees so potential applicants should confirm their eligibility prior to applying.

**Concept to Clinic: Commercializing Innovation (C3i) Program**

This [NIBIB-led program](#) is designed to provide medical device innovators with tools, mentoring, and specialized business frameworks to translate their technologies from lab concepts to the clinic/market. The curriculum includes three stages of support including education, validation/execution, and acceleration, all aimed at guiding investigators as they work towards creating commercially viable products and potential business opportunities. C3i has been offered annually since 2014 thanks to a public-private partnership between NIBIB and the Wallace H. Coulter Foundation. Teams participating in the course have received more than \$24 million in NIH SBIR/STTR funding and raised nearly \$100 million in private financing, while two products associated with the program have been cleared for marketing by the FDA. The current C3i Education program ran from June through August 2023, with applications due in April 2023, while the current C3i Validation/Execution program will run from October 2023 through April 2024 (applications due August 2023). Similar deadlines are expected in subsequent years.

**Commercialization Readiness Pilot (CRP)**

[CRP](#) provides funding to SBIR- or STTR-supported projects that would benefit from additional technical assistance and late-stage research and development support not normally included in small business awards. Small businesses must have an active SBIR/STTR award from a participating IC within the previous 36 months in order to be eligible; participating ICs provide various budget guidelines and eligibility requirements as detailed in the companion solicitations linked below. Three annual deadlines (September, January, and April) are available through April 2025.

Applicants seeking technical assistance only (not proposal a clinical trial) should use PAR-23-219, available [here](#) and applicants proposing a clinical trial should use PAR-23-220, available [here](#).



### **Blueprint MedTech Program**

[Blueprint MedTech](#) is part of the larger NIH Blueprint to Neuroscience Research program, which unites 12 NIH ICs in advancing neuroscience research. MedTech specifically is an incubator program that aims to address the challenges innovators face in bringing medical devices to diagnose and/or treat nervous system disorders from bench to bedside. The program provides funding to investigators to support medical device development as well as planning resources, translational services and expertise, advice from industry experts, and access to consultants specializing in regulatory affairs, intellectual property, commercialization, and strategic partnership. Two Blueprint MedTech Incubator Hubs were competed in summer 2023, with awards expected in winter 2023-2024, and [several funding opportunities](#) with various award types, sizes, and eligibility are currently available.

### **National Cooperative Drug/Device Discovery/Development Groups (NCDDG) for the Treatment of Mental Disorders or Alcohol Use Disorder**

This pair of solicitations issued by the National Institute of Mental Health (NIMH) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA) aim to “advance the discovery, preclinical development, and proof of concept (PoC) testing of new, rationally based candidate agents and neurostimulation approaches to treat mental disorders or AUD, and to develop novel ligands and circuit-engagement devices as tools to further characterize existing or to validate new drug/device targets.”

Applicants are strongly encouraged to propose partnerships between academia and industry to accelerate the development and commercialization of new therapeutics. Applications that include a single research project and no cores should use the [U01 mechanism solicitation](#) (PAR-22-143), while applications that propose two or more research projects plus scientific/administrative core components should use the [U19 version](#) (PAR-22-144). Both solicitations include three annual deadlines (June, October, and February) through February 24, 2025.

### **Biomedical Advanced Research and Development Authority (BARDA)**

Within HHS, BARDA aims to improve federal preparedness and response efforts through public-private partnerships with industry and academia that advance research and development, manufacturing, and procurement of medical countermeasures that protect against health security threats such as chemical, biological, radiological, and nuclear (CBRN) incidents, pandemic influenza, COVID-19, and other emerging infectious diseases. BARDA received \$950 million in funding for FY 2023, a significant increase of \$204.9 million over the FY 2022 enacted level.

BARDA was established in 2007 by the Pandemic and All-Hazards Preparedness Act (PAHPA), which also created the Office of the Assistant Secretary for Preparedness and Response (ASPR) within HHS. ASPR was elevated in July 2022 to an operating division of the federal government and renamed the Administration for Strategic Preparedness and Response. ASPR’s elevation to a standalone agency within HHS allows it to mobilize a coordinated national response more effectively and efficiently during future disasters and emergencies in close collaboration with its sister agencies.

In 2018, BARDA launched the Division on Research, Innovation, and Ventures (DRIVE) program to foster technological innovation and transformative solutions to address public health security threats. DRIVE focuses on developing, procuring, and making widely available solutions and other disruptive advances to treat, detect, and prevent public health outbreaks. DRIVE program areas of interest and funding



opportunities change regularly, and current areas of interest and open funding opportunities are available [here](#).

- [DRIVE EZ BAA](#) -- Unlike traditional BARDA funding mechanisms, the DRIVE EZ Broad Agency Announcement (BAA) encourages a range of proposals, including early concepts and pre-clinical research. Through the DRIVE EZ BAA, awards can be made in as few as 30 days and projects can be funded for up to \$750,000. Through this mechanism, BARDA seeks to increase engagement with nontraditional partners, including universities and small businesses.
- [TechWatch](#) -- BARDA encourages outreach through TechWatch, an in-person or virtual meeting with BARDA scientific, technical, and contracting staff as well as representatives from other interested federal agencies. TechWatch is an opportunity for program managers to provide feedback before formally responding to funding opportunities and allows proposers to better understand how to tailor their product or technology to meet BARDA's mission and address potential regulatory challenges, increasing the likelihood of success when submitting through a funding mechanism.
- [BARDA Ventures](#) -- BARDA Ventures encourages investment in health security technology and products through a nonprofit partner, the Global Health Investment Corporation (GHIC). GHIC uses BARDA Ventures funds as well as matching capital from other investors "to accelerate the development of medical countermeasures that address gaps in health security as well as meet commercial market needs."
- [BARDA Industry Day](#) -- The annual event provides an opportunity for various stakeholders to listen to BARDA leadership and program managers on recent successes and future priorities. BARDA Industry Day is also a great opportunity to engage with program managers and leadership to shape ideas, build relationships, and improve understanding of how BARDA fits into the research, development, and procurement pipeline. Additionally, BARDA Industry Day serves as an opportunity to identify potential collaborators from industry, other academic institutions, and federal agencies. The 2023 BARDA Industry Day will take place virtually and in person from November 13-14 in Washington, DC.

## **Department of Energy**

### **Overview:**

The Department of Energy (DOE) is making significant investments to transform innovative clean energy R&D to wide-scale deployment for the economy. The Infrastructure Investment and Jobs Act (IIJA) catalyzed efforts to reduce the costs of clean energy and scale technologies. Secretary Granholm reorganized the Department to help achieve these goals by merging the Under Secretary for Energy and Under Secretary for Science programs into a new Under Secretary for Science and Innovation. Secretary Granholm also created a new Under Secretary for Infrastructure, which includes the Office of Clean Energy Demonstrations, to advance many regional innovation hubs activities like the regional clean hydrogen hubs, direct air capture hubs, and carbon capture and sequestration projects. The newly created Office of State and Community Energy Programs, Grid Deployment Office, Office of Manufacturing and Energy Supply Chains were also established under the Under Secretary for Infrastructure and are designed to spur economic development across the U.S. Furthermore, DOE's Loan Programs Office received billions of dollars under IIJA and has made recent investments in next-generation battery energy storage systems, automotive manufacturing facilities, and sustainable aviation fuels production.

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For commercialization activities, the Office of Technology Transitions remains the primary office designed to drive private sector adoption of clean energy technologies and commercialize activities across DOE, its national labs, and other research and production facilities in the U.S. Moreover, DOE has several [Liftoff Reports](#) that outline DOE's strategy to accelerate clean energy technologies from lab to market in areas of advanced nuclear, carbon management, clean hydrogen, and long duration storage.

## *New and Emerging Activities*

- *In early 2023, DOE's Office of Science and Office of Technology Transitions (OTT) released a **joint request for information (RFI) titled "National Laboratories as Catalysts for Regional Innovation."** The goal of the RFI was to solicit input on ways to create an innovation ecosystem around DOE national labs to guide a future DOE Regional Clean Energy Innovation Program which was authorized in the CHIPS and Science Act. This program is anticipated to launch in FY 2025. DOE seeks to stimulate innovation in regions surrounding national labs and sites by accelerating research, development, demonstration, and deployment (RDD&D) to commercialize, drive development of industrial and technology sectors and manufacturing and supply chains, foster sustainable and equitable economic growth, create long-term high paying jobs and new industries, increase engagement and partnerships with local and regional communities, and train and educate a diverse, equitable and inclusive workforce.*
- *DOE is establishing a nonprofit foundation outside of the federal government called the **Foundation for Energy Security and Innovation (FESI)**. FESI will advance DOE technologies and create partnerships between energy researchers and entrepreneurs, universities (all types), industry, nonprofits, venture capital, and philanthropic organizations to accelerate the commercialization of technologies to address energy and environmental challenges, including those affecting underserved communities. This will be designed to spur public-private partnerships to advance clean energy and other DOE-funded technologies coming out of national labs and universities. DOE is waiting for FY 2024 appropriations and congressional approval to launch the Foundation and develop the first programs in 2024. The actions of FESI will be dictated by a board of relevant stakeholders and could include soliciting funding, assets, and other supportive programming (sharing best practices, prize competitions, etc.) from private and philanthropic entities to help commercialize innovative technologies. Examples of other activities include awarding fellowships and grants for technology maturation activities with associated wrap-around services; supporting training and education programming to advance federally funded technologies to market; better leveraging the use of national labs for commercialization; broadening participation; stakeholder engagement; and more.*
  - *A similar foundation would be established to support the National Energy Technology Laboratory, which is managed by federal employees as opposed to government contractors for the other 16 DOE national labs. FESI is intended to be modeled after the successful Foundation for the National Institutes of Health (FNIH) and other congressionally-mandated, agency-affiliated foundations.*

## **Funding Opportunities**

### DOE Office of Science and Early-Stage Clean Energy and Emerging Technology Development

#### **Accelerate Innovations in Emerging Technologies (ACCELERATE)**

ACCELERATE is an Office of Science lab-led grant funding opportunity designed to support fundamental research to innovation. The goal of ACCELERATE is to identify key gaps within early stages of basic research so the innovations can enter the market more rapidly. ACCELERATE will require teams of



researchers from diverse disciplines, including high-performance computing, artificial intelligence, manufacturing, materials, and biotechnology. The Office of Science is focused on training a diverse workforce and leveraging regional expertise and resources, with a commitment to principles of environmental justice. This program is designed to be led by a national lab with university partners for two-year projects that focus on commercializing emerging technologies and building up regional entrepreneurship. DOE is planning another ACCELERATE call in Spring 2024, contingent on final FY 2024 appropriations.

The FY 2023 solicitation is available [here](#) and the list of awards from the first round can be found [here](#).

#### High-Risk Clean Energy Technology Demonstration and Scale Up

##### **Advanced Research Projects Agency – Energy (ARPA-E) OPEN**

ARPA-E is preparing to release a \$200 million program solicitation for [ARPA-E Open](#) in February 2024. The ARPA-E OPEN is released once every three years. Unlike ARPA-E’s standard technology program solicitations, which are narrowly focused on specific topic areas, ARPA-E OPEN is intentionally broad and offers support for the development of high-risk, transformative energy technologies. The goal of OPEN is to support energy technology development projects that fall outside of ARPA-E’s targeted solicitations. Awards typically range from \$2 million to \$10 million over three years.

##### **ARPA-E Technology Programs**

ARPA-E plans to release another \$200 million in targeted solicitations in FY 2024, each one usually ranging from \$30 million to \$40 million to fund about a dozen projects. Priority topics areas over the next six months include advanced drivers, high performance targets, fuel, and novel materials for fusion reactors; phytomining; nuclear heat and power for industrial process applications; circular battery supply chain; and transmutation of used nuclear fuel.

##### **ARPA-E Seed Funding**

In October/November 2023, ARPA-E plans to release a \$10 million funding solicitation for seed funding called SPARKS. Awards will average \$500,000 over 12 months primarily to small businesses, entrepreneurs, and university labs. The purpose is to support early-stage applied research or proof-of-concept technology development in areas of clean energy technologies not currently supported by ARPA-E. No cost sharing required for academic institutions, nonprofits, and small businesses.

##### **ARPA-E Seeding Critical Advances for Leading Energy technologies with Untapped Potential (SCALEUP)**

The [ARPA-E SCALEUP program](#), which was recently released, seeks to “scale-up” and boost high-risk and potentially disruptive technologies that ARPA-E has previously funded. The purpose is to provide bridge funding and a path to market for technologies with proof of concept that struggle to receive additional follow-on investment after the end of an ARPA-E award. This funding call is specifically targeted for small and large businesses that are leveraging ARPA-E funded technologies. The total award amounts range from \$20 million to \$50 million and the next solicitation is anticipated to come out in 2025.

#### Prize Competitions

Over the last few years, DOE has launched dozens of prize competitions to help U.S. entrepreneurs and innovators. Cash prizes, as well as access to technical assistance and national lab tools and resources, are seen as an important contribution to help innovators move new energy technologies forward.



Below are highlights of some key prize competitions currently being competed, but a full list of current and past prize competitions is available [here](#).

### **EnergyTech University Prize (EnergyTechUP)**

DOE released a solicitation for the [EnergyTechUP program](#), a student competition, designed to challenge multidisciplinary student teams to develop and present a business plan that leverages high-potential energy technologies. Teams must successfully identify an energy technology, assess its market potential and propose a strategy for commercialization. Prize amounts start at \$150,000 in cash prizes.

Applications are due February 1, 2024.

### **Manufacture of Advanced Key Infrastructure Technologies (MAKE IT) Prize**

The [MAKE IT Prize](#) is designed to help spur domestic manufacturing of critical clean energy technology components, moving manufacturing facilities from planning to shovel-ready and develop strategies for manufacturing activity in communities. The MAKE IT Prize has two tracks, the first is a Facilities Track to facilitate manufacturing plant development. The second track is the Strategies Track which asks applicants to develop a roadmap for promoting clean energy manufacturing activity in their region to attract manufacturers and employees, and this track would have a particular interest in disadvantaged communities. Deadline for submissions is October 18, 2023.

### Clean Energy Projects Driving Economic Development

#### **Transmission Siting and Economic Development (TSED) Grant Program**

The Grid Deployment Office announced up to \$300 million to support the [TSED program](#), created under the *Inflation Reduction Act*, for states, tribes, and local government to accelerate and strengthen electric transmission siting and permitting processes. This \$300 million is the first portion of \$760 million appropriated under the Act and will support engagement, economic development, and other benefits in communities that may be affected by the construction and operation of interstate or offshore transmission projects. Community-based projects can include energy investments such as resilient microgrids, renewable power integration, or electric vehicle charging infrastructure; support for essential community facilities for public safety, healthcare, education, and improved transit; or encouraging community togetherness by investing in community centers and creating green spaces.

While institutions of higher education and other research organizations cannot be prime recipients of funding, they can partner with state organizations and provide project support. Applicants must submit a concept paper by October 31, 2023. Full applications are due on April 5, 2024. The solicitation can be found [here](#).

### Regional Incubators and Entrepreneurship Support

#### **The Energy Program for Innovation Clusters (EPIC)**

On September 26, DOE started accepting applications for regional incubator teams to support energy startups and entrepreneurs in its [EPIC](#) Round 3 solicitation. DOE plans to award cash prizes, and new this year, enter into three-year cooperative agreements with regional incubator teams with the most creative and impactful plans. In Phase 1, teams need to create a plan to support energy startups and entrepreneurs and define metrics of success. DOE plans to make up to 20 awards with each receiving \$150,000. Phase 1 submissions are due February 9, 2024.



DOE has a couple of opportunities available to national labs, but open to clean energy entrepreneurs and start-ups including those coming out of research universities:

- **[Lab Embedded Entrepreneurship Program \(LEEP\)](#)**: The LEEP program is a two-year fellowship designed to train the next generation of clean technology entrepreneurs to develop innovative technologies for a clean energy future. LEEP nodes are currently located at four National Laboratories—Lawrence Berkeley, Argonne, National Renewable Energy Lab, and Oak Ridge. The LEEP fellowship aims to advance the entrepreneurs startup technology into the market. The fellowship is paid and can range up to \$110,000 per year.
- **[Small business vouchers \(SBV\)](#)**: DOE’s SBV program is designed to give small businesses access to technical assistance from national labs. According to DOE, the assistance helps companies overcome critical technology and commercialization challenges to help bring the next generation of clean energy technologies to market. In-kind support from DOE spans four categories: Pre-Demonstration Commercialization Support; Performance Validation, Modeling, and Certification Support; Clean Energy Demonstration Project Siting/Permitting Support; and Energy Efficiency Renewable Energy Commercialization Support.
- **[Technology Commercialization Fund \(TCF\)](#)**: The Office of Technology Transitions has a commercialization fund that supports the commercialization of energy technologies developed at DOE National Laboratories in partnership with small businesses. The fund is supported by DOE program offices, including the Office of Clean Energy Demonstrations, Office of Fossil Energy and Carbon Management, Office of Energy Efficiency and Renewable Energy, Office of Manufacturing and Energy Supply Chains, and the Office of Cybersecurity, Energy Security, and Emergency Response.

## **United States Department of Agriculture**

### ***Overview:***

The U.S. Department of Agriculture (USDA) is committed to promoting innovation across agriculture to ensure the resilience and success of American farmers, ranchers, producers, and forestry. As climate change and the impacts of a global pandemic continue to threaten the U.S. food supply chain and resiliency of farmlands, USDA has looked to innovate and create a more durable agricultural sector. In 2022, USDA released its [Strategic Plan for Fiscal Years 2022-2026](#) highlighting priorities for the Agency which included workforce development in agriculture, development of economic development activities in rural and tribal communities, and developing more competitive marketplaces. USDA catalyzed these initiatives with on time funding through the *Inflation Reduction Act* which poured billions of dollars into the Agency to bolster these efforts through clean energy, climate-smart Agriculture and Forestry, and equity investments. In addition to the environmental benefits, many of these one-time catalytic investments focused on empowering rural America, deploying necessary infrastructure, and creating new markets for producers.

Most notably, the Farm Bill, which authorizes all agricultural and food policy programs for five years at a time, is set to expire at the end of this fiscal year, September 30. While the focus of the Farm Bill is primarily on nutrition, commodity, and conservation policy, there are a subset of programs relevant to the innovation and commercialization ecosystem like the Natural Resources Conservation Service’s (NRCS) Conservation Innovation Grants On-Farm Trials and the Rural Innovation Stronger Economy (RISE) Program. Negotiations within the House and Senate are moving slowly, and an extension will be needed to continue support for programs across USDA.





#### *New and Emerging Activities:*

- *The Agricultural Advanced Research and Development Authority (AgARDA) was authorized in the 2018 Farm Bill. It is intended to invest in high-risk, high-reward agricultural projects to advance innovation in the field. Since being authorized the program has only been appropriated \$2 million to begin staffing and develop a strategic plan, which was released this Spring. Despite the slow start, AgARDA still has relatively high bipartisan support given the need for more advanced agricultural practices. The 2023 Farm Bill will likely reauthorize the program but with great scrutiny over the rollout.*

#### **Funding Opportunities:**

##### **Rural Innovation Stronger Economy (RISE) Program**

[USDA's RISE competitive grants program](#) was authorized through the 2018 Farm Bill and will need to be reauthorized in the 2023 Farm Bill to continue. The program aims to support job accelerator partnerships that foster high wage jobs and new businesses in distressed rural and energy communities, as well as leveraging and maximizing local assets, including broadband. The grant is designed to spark regional, innovation-driven economic development in rural communities, with an emphasis on areas where at least 20 percent of the population is living in poverty (based on U.S. Census Bureau data). RISE grants are solicited through USDA's Rural Business-Cooperative Service (RBCS) Agency. Eligible applicants include rural jobs accelerator partnerships with expertise in delivering economic and job training programs, consisting of non-profit entities, state entities, tribal entities, institutions of higher education, and public bodies. The federal register notice is available [here](#).

##### **Agriculture Innovation Demonstration Center (AIC) Grants**

The [AIC Program](#) is funded through RBCS annually, however the funding amount and timing of the solicitation is not consistent. The program aims to establish and operate AICs that provide technical and business development assistance to agricultural producers seeking to engage in the marketing or the production of Value-Added products. Of note, funds can be used for technical assistance for product development (excluding research and development) and process development services, including engineering services, scale production assessments, and systems development. The federal register notice is available [here](#).

##### **Conservation Innovation Grants (CIG)**

USDA's Natural Resources Conservation Service (NRCS) launched the CIG On-Farm Conservation Innovation Trials (On-Farm Trials) competitive grants program. The [CIG program](#) aims to stimulate the adoption and evaluation of innovative natural resource conservation approaches on private lands, improving air, water, and soil quality. The On-Farm Trials are designed to cultivate partnerships between NRCS and agricultural producers to improve their operations and simultaneously improve air, water, and soil quality. The funding laid out is intended to provide producers with technical assistance and incentive payments to help mitigate risks associated with implementation of new conservation practices and systems. The funding opportunity can be found [here](#).

#### **Department of Treasury**

##### **Overview**

While not a leading agency for the delivery of federal support for technology-based economic development, the Department of Treasury offers several tools to promote regional revitalization around

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core priorities for the Administration and Congress, typically through tax credits and community investment programs. In recent years, this has ranged from the Opportunity Zones program for investors to support construction and venture investments in qualified regions to a \$10 billion Qualifying Advanced Energy Project Credit program that was expanded through the *Inflation Reduction Act* to provide tax benefits for clean energy projects and solutions. In addition, the Department's Office of Economic Policy provides reports on major trends that inform future federal investments and regional development activities. Recent impactful reports have included investigations of large-scale racial inequality.

## ***Funding Opportunities:***

### **Community Development Financial Institutions Fund**

The [Community Development Financial Institutions](#) (CDFI) Fund encourages economic and community development in low-income and distressed areas across the country by federally certifying a broad array of lending institutions that have made promoting community development their primary mission. Once certified, these banks, credit unions, nonprofit loan funds, venture capital funds, etc. become eligible for financial awards and other assistance provided by the Department of Treasury's CDFI Fund to promote community development in markets that have been bypassed by traditional financial institutions. Hence, CDFI certified institutions are a type of federally-backed public-private partnership established to advance financial inclusion by increasing access to affordable capital to traditionally underserved populations and markets.

The Department of Housing and Urban Affairs has previously highlighted that CDFIs provide an opportunity for colleges and universities to invest and make meaningful change in their communities. While colleges and universities are not directly eligible to become a certified CDFI, some higher-education institutions have formed partnerships with local CDFIs and invested directly in these lenders through their university endowments. Some endowments have chosen to donate funds directly to the CDFIs, while others provide capital for revolving loan funds that rely upon the repayment of principal and interest to replenish the funds, which sustains the program for future loans. Beyond direct investment from university endowments, CDFIs can be key partners to universities and others as part of larger regional innovation and development efforts to ensure inclusive economic growth, which is increasingly important to Congress and the Administration. Further, universities can share their thought leadership and expertise by partnering with CDFIs and offering valuable insights on topics varying from sustainable business models, economic trends, fundraising strategies, to the mitigating impacts of historical redlining, environmental and social justice, and more.