NSF's Regional Innovation Engines Program

https://beta.nsf.gov/funding/initiatives/regional-innovation-engines

NSF Engines Program Team



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Broad Agency Announcement NSFBAA-ENGINES-2022-05-1

- The NSF Engines Broad Agency Announcement is the funding call for this iteration of the NSF Engines program.
- Link to BAA: <u>https://bit.ly/NSFEnginesBAA_2205_01</u>

If there is a discrepancy between the content of this webinar and the content of the BAA, please follow the guidance in the BAA.

Presentation roadmap



2. Overview of NSF Engines program

3. How to get started

4. Proposal application process

5. Wrap up and Q&A

Presentation roadmap

1. Overview of TIP

2. Overview of NSF Engines program

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A Pivotal Moment for the Nation and Society



Climate change



Equitable access to education, health care

Critical and resilient infrastructure

Overview of TIP | Overview of NSF Engines program | How to get started | Proposal application process | Wrap up and Q&A

A Changing Science and Engineering Enterprise Can Meet This Moment



CHANGE CHANGE CHANGE

Pace of discovery accelerated by data, emerging technologies

Demand for societal and economic impact



Opportunity to leverage partnerships Directorate for Technology, Innovation and Partnerships

Technology, Innovation and Partnerships (TIP) Directorate

TIP harnesses the nation's vast and diverse talent pool to advance critical and emerging technologies, address pressing societal and economic challenges, and accelerate the translation of research results from lab to market and society. TIP improves U.S. competitiveness, growing the U.S. economy and training a diverse workforce for future, high-wage jobs.

TIP: Accelerating Research Toward Impact

TIP integrates with NSF's existing directorates and fosters partnerships—with government, industry, nonprofits, civil society and communities of practice—to leverage, energize and rapidly bring to society use-inspired research and innovation.

Fostering Innovation and	Establishing Translation	Partnering to Engage the
Technology Ecosystems	Pathways	Nation's Diverse Talent
Accelerates breakthroughs in key technology areas to grow long-term U.S. competitiveness, leading to game-changing technologies and solutions that address societal and economic challenges and pave the way for new, high-wage jobs.	Accelerates the translation of research results to practice. Programs aligned to this focus provide pathways for researchers, startups and aspiring entrepreneurs to move their ideas from the laboratory to the market and society.	Ignites partnerships among academia, industry, government, nonprofits, civil society and communities of practice to blend expertise and resources, advancing research, innovation and education.

TIP Programs

- America's Seed Fund powered by NSF (SBIR/STTR)
- Convergence Accelerator
- Innovation Corps (I-Corps[™])
- Partnerships for Innovation (PFI)
- Pathways to Enable Open-Source Ecosystems (POSE)
- Regional Innovation Engines (NSF Engines)

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What is the NSF Engines overarching approach?

Catalyze and accelerate regional-scale, R&Dbased innovation ecosystems throughout the US through the funding of Engines that will:

- Advance critical technologies
- Address societal challenges
- Promote economic growth and job creation
- Cultivate regional talent
- Foster partnerships

NSF will fund Engines with up \$160M for up to 10 years

Teams not ready to launch an Engine, can apply for a Type-1 award, which provides up to \$1M for up to 2 years to plan for an Engine

Deadline to submit concept outlines: June 30, 2022



Overview of TIP | **Overview of NSF Engines program** | How to get started | Proposal application process | Wrap up and Q&A

What exactly is an "Engine"?

- A regionally-centered multi-sector coalition of partners and stakeholders across industry, academia, government, nonprofits, civil society and communities of practice, all working together in a topic area of regional relevance, as well as national and societal significance, and led by a full-time CEO to:
 - Drive R&D innovation to achieve regional economic growth
 - Build an inclusive innovation ecosystem that will thrive for decades to come



Where NSF Engines Fit in Innovation Ecosystem



Direct investment

Startups, VCs, accelerators, fund of funds (SSBCI), debt

R&D focused economic development

Cluster strategies and project investments

NSF Engines Program

Use-inspired R&D and translation to unleash economic growth

Where NSF Engines Fit in Innovation Ecosystem



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Examples

U.S. Department of the Treasury Private Investors Foundries/Incubators/Accelerators

R&D focused economic development

Cluster strategies and project investments

U.S. Small Business Administration U.S Department of Commerce U.S. Department of Energy

NSF Engines Program

Use-inspired R&D and translation to unleash economic growth

Characteristics of an NSF Engine

R&D innovation to achieve regional economic growth

- Robust regional partnerships
- Use-inspired R&D
- Translating innovation to practice
- Comprehensive workforce development

Building an inclusive innovation ecosystem that will thrive for decades to come

- Financial sustainability
- Culture of innovation
- Diversity, equity, Inclusion, and accessibility (DEIA) at all levels
- Community wealth building

Flexible Engine structure and activities with accountability to NSF

- Engine structure
- Leadership
- Accountability through evaluation

R&D innovation to achieve regional economic growth

Engines are expected to accomplish this through three core functions:

- **Use-inspired R&D:** R&D informed by (1) national and societal challenges, (2) the needs of the diverse set of regional stakeholders, and (3) limits and gaps in current research, technologies, and industry practices.
- **Translating innovation to practice:** Create startups and small businesses and expand existing businesses by developing and advancing critical technologies and innovations.
- **Comprehensive workforce development:** Cultivate the regional workforce through training and educating technicians, researchers, practitioners, entrepreneurs, and other community members.

Underlying robust regional partnerships: Develop, recruit, and maintain a trusted network of partners that work together to create and enhance the capacity for innovation in a region of service, spanning a diversity of sectors and organizational types (e.g., industry including small businesses, corporations, and startups; academia including minority-serving institutions, community colleges, and other IHEs; federal, state, local, and tribal governments; and non-profit organizations).

Robust regional partnerships: Building an ecosystem of partners and stakeholders

- Organizations can participate in an Engine as the lead organization, core partner, or other partner.
 - The *lead organization* must be regionally based and host the CEO.
 - <u>Core partners</u> are organizations that contribute and/or receive significant resources as part of the Engine's activities; they should span multiple sectors and should generally be regionally based.
 - <u>Other partners</u> that may grow and evolve over time.
 - Organizations located in mature innovation ecosystems are welcome to support Engines but may not serve as the lead.
- Think intentionally about each partner's value proposition, unique skillsets, how they will collaborate, and the resources they could bring to the Engine and its larger innovation ecosystem. For example:
 - Who has ability to lead or contribute to translating R&D innovations to practice, including on-the-ground experience?
 - Who has ability to lead or contribute to workforce development in the topic area, including on-the-ground experience?
 - Who has expertise and on-the-ground experience in the regional economic priorities, strengths, and gaps?
 - Who has expertise and on-the-ground experience in the Engine topic area?

Characteristics of an NSF Engine

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Building an inclusive innovation ecosystem that will thrive for decades to come

Engines are expected to incorporate the following into their approach to sustain the Engine long-term:

- **Financial sustainability:** Develop an Engine that can financially sustain itself beyond the period of the NSF award.
- **Culture of innovation:** Partners and stakeholders develop policies, processes, and incentives that promote a culture of innovation.
- **DEIA at all levels:** Embody a culture of diversity, equity, inclusion, and accessibility (DEIA) throughout its leadership and activities.
- **Community wealth building:** As the ecosystem matures, intentionally prioritize inclusive economic growth opportunities that create community wealth, including for those stakeholders and residents who do not directly participate in the NSF Engine.

Financial sustainability: Creating a self-sustaining Engine

- By the end of the award period, Engines are expected to have built an innovation ecosystem in the Engine's topic area that can sustain itself financially
- From the outset, Engines must consider strategies and a plan to:
 - Secure and sustain capital inflow to its region of service
 - Increase resources (in particular, financial resources) over the award period
- Strategies include:
 - Increasing the level of industrial and commercial investment in R&D and workforce development activities within the region of service
 - Developing new revenue streams through the creation of startups, products, and other innovative business models

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Flexible Engine structure and functions with accountability to NSF

Engines are designed to have the following:

- **Engine structure:** Lead organization can be from industry, academia, or non-profit sectors. The structure of the Engine partnerships and management are to be defined by the proposing team based on what will allow the Engine to meet its objectives.
- **Leadership:** Engines will be led by a Chief Executive Officer (Project Director) and crosssector leadership team from the range of sectors participating as partners in the Engine. Consideration of DEIA must start from the leadership composition and priorities. The Engine will be accountable to a governance and advisory boards, regional stakeholders, and NSF.
- Accountability through evaluation: Engines will develop and carry out Evaluation Plans and are encouraged to consult external evaluators. All awardees are expected to participate in any NSF funded, independent evaluation of the NSF Engines portfolio of awards. NSF has the ability to terminate Engine awards.

Engine structure:

- Engines have flexibility in determining the relevant partnership sectors and structure for working together
- Proposing teams are encouraged to start developing IP and other partnership agreements during the proposal stage

Non-exhaustive examples of potential Engine structures, to get teams started in brainstorming:





How to get started?

Engines must determine their:

- Topic area
- Region of service
- Eligibility to submit proposals
- Maturity level of the regional ecosystem
- Proposal type

Determining your Engine's topic area

To best support the needs of regions across the Nation, Engine Topic Areas will be identified by proposing teams in this first round of the BAA.

Competitive topic areas will:

- Address a compelling national and societal challenge;
- Have the potential for R&D that makes tangible progress towards addressing the challenge and creating startups, small businesses, etc.;
- Be driven by use-inspired needs and by capabilities important to the local regional economy; and
- Consider other existing large-scale efforts in the Topic Area.

An Engine does not need to address all aspects of its chosen Topic Area but should clearly define its scope within its topic area, which must be motivated by useinspired research questions.

Determining your Engine's region of service

Definition of a region of service: U.S. geographical area, ranging from a single metropolitan area (including rural areas) to multiple adjacent states.

 Note that NSF will prioritize regions that do not have well-established innovation ecosystems.

Engines must be driven by partnerships, stakeholders, and end-users within the defined region of service and must be rooted in regional interests:

- Driven by applications important to the local regional economy
- Potential to grow regional talent and jobs
- Note that except for the lead organization, Engine partners and stakeholders can reside outside of the defined primary region of service

Regions will be strengthened by working collaboratively rather than a region submitting multiple proposals in a similar topic area.

Eligibility to submit proposals or receive awards

Organization types eligible to submit proposals (and in turn lead an NSF Engine) or to receive subawards

> Institutions of higher education (IHEs) accredited in and having a campus located in the US

US-based non-profit, non-academic organizations

US-based for-profit organizations

Additional organization types eligible to receive subawards

US federally funded research and development centers

US national laboratories

US state, local, and tribal governments, limited to agencies, offices, or divisions specifically dedicated to innovation, economic, and/or workforce development All other organizations may participate as partner but are <u>not</u> eligible to submit proposals or receive subawards, including

Any organization on the Department of Commerce's Bureau of Industry and Security (BIS) Entity List

International branch campuses of US IHEs

Unaffiliated individuals

Innovation ecosystem maturity level: NSF Engines five-phase model



NSF Engines proposal types For the first iteration of the BAA





Proposal application process

- Application timeline
- NSF Proposal & Award Policies & Procedures Guide (PAPPG)
- Prospective new awardees and new application system
- Application materials
- After the proposal submission

Application timeline

Document	Type-1 Deadlines	Type-2 Deadlines
Concept Outline	June 30, 2022	June 30, 2022
Letter of Intent	August 31, 2022	To be announced for FY23
Full Proposal	September 29, 2022	To be announced for FY23

Type-1 and Type-2 applicants will be invited to a Virtual Proposer's Day to be held August 1, 2022

NSF Proposal & Award Policies & Procedures Guide (PAPPG)

- The PAPPG is comprised of documents relating to NSF's proposal and award process for programs at NSF. It has 2 parts:
 - Part I sets forth NSF's proposal preparation and submission guidelines
 - Part II sets forth NSF policies and procedures regarding the award, administration, and monitoring of grants and cooperative agreements

Proposers must follow all the requirements in the NSF Engines BAA and the PAPPG, unless the BAA specifically notes a deviation from the PAPPG.

> You can find the NSF PAPPG at: https://nsf.gov/publications/pub_summ.jsp?ods_key=pappg

Prospective new awardees and New application system

- Organizations who have not previously submitted proposals to NSF are strongly encouraged to starting looking into the requirements for submitting the various application materials well in advance of the submission deadlines. This includes:
 - Registration in the federal government's System for Award Management (sam.gov)
 - Reviewing NSF's Prospective New Awardee Guidance: <u>https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pnag</u>
 - Reviewing the PAPPG (noted on the previous slide)
- Note that the NSF Engines program is using new application systems for application submission documents and all teams should familiarize themselves with these systems well in advance of the submission deadlines.

Application materials

Concept Outline

- Proposers to both proposal types must submit a Concept Outline justifying the fit of the Engine's proposed topic area for their intended region of service.
- BAA includes guidance on the Concept Outline and associated review criteria.
- Concept outlines will be reviewed internally by Program Officers across NSF with relevant expertise.
- Approval of a Concept Outline from a cognizant NSF Program Officer is required before proposers can submit a full proposal.

The NSF Engines BAA specifies what information to include in a Concept Outline

Letter of Intent (LOI)

- LOIs are required to be eligible to submit an Engine proposal.
 - Failure to submit the requisite LOI will result in a full proposal not being reviewed.
 - Submitting an LOI does not obligate potential proposers to submit a full proposal.
- LOIs are used for internal planning purposes only and do not undergo merit review.
 - Proposers will not receive any feedback on their LOI other than a message confirming receipt of the LOI.
 - The Project Director and lead organization listed on a full Engine proposal must remain the same as the corresponding LOI.
 - The composition of the team (i.e., senior personnel and partner organizations) may change at the discretion of the proposer between the LOI and full proposal.

The NSF Engines BAA specifies what information to include in an LOI

Full proposals

Proposal Project Description

The proposal project description is the core of the full proposal and should be written as a narrative

- Guidance on the required sections and content to be covered for the different types of proposals is in the BAA
- It is the opportunity to describe the vision of the Engine, with a focus on:
 - How it will carry out R&D innovation to achieve regional economic growth
 - How it will build an inclusive innovation ecosystem that will thrive well beyond the NSF award
 period
 - Who will be involved, for what purposes, and how will the Engine be structured, managed, and internally evaluated
- Length: up to 15 pages for Type-1 proposals and up to 30 pages for Type-2 proposals
- Teams are encouraged to also look at the specific review criteria as they develop their narrative

Proposal: Other key elements

The below sections are additional opportunities to describe the strength of your partnerships and Engine vision. Note that the full list of additional documents is in the BAA.

- Facilities, equipment, and other resources
- Supplementary documents:
 - Letters of collaboration (note that letters of support are not allowed)

After the proposal submission

Review and selection process

- Proposals will be reviewed by NSF in a two-step process:
 - Step 1: External Merit Review
 - Panels of experts review a subset of proposals individually and then meet as a panel to make recommendations to NSF
 - Panelists will be selected to reflect Engine topic areas, goals, and represented sectors
 - Step 2: Final selection of awards by NSF
 - NSF Engines team will consider panel recommendations and make the final recommendations for awards
 - For Type 2 proposals: NSF will hold Virtual Site visits to further down-select proposals prior to making final decisions
- Review Criteria:
 - As specified by NSF's National Science Board, review centers around Intellectual Merit and Broader Impacts
 - BAA Review Criteria

Expected start dates for awards

	Expected start date	Expected number of awards for first round of the BAA
Type-1 awards	March 15, 2023	Up to 50*
Type-2 awards	To be announced	Up to 5*

* The number of awards made will be dependent upon the quality of the proposals received, the availability of funds, and the degree to which proposals meet the BAA's goals, NSF merit review criteria, and BAAspecific review criteria.

Post award management

- Awards will be awarded as Cooperative Agreements
 - Cooperative Agreements specify the extent to which NSF will advise, review, approve or otherwise be involved with project activities, as well as NSF's right to require more clearly defined deliverables.
 - The creation of a Cooperative Agreement involves a negotiation process between NSF and the awardee.
- Additional documents will be required post award
 - Additional documents and reporting requirements will be specified as part of the Cooperative Agreement negotiation process.
- Type-2 awardees will be evaluated by NSF on an annual basis
 - Some checkpoints will include a Site Visit and involvement of an evaluation team external to NSF.
 - A determination by NSF that the Engine has failed to perform during reviews may result in termination of the award.



More information

- Website with FAQs: <u>https://beta.nsf.gov/funding/initiatives/regional-innovation-</u> <u>engines</u>
- BAA: <u>https://bit.ly/NSFEnginesBAA_2205_01</u>
- Email: <u>engines@nsf.gov</u>
- Office hours: <u>https://calendly.com/nsfengines</u>

Learn About TIP

- Mission and focus
- Innovation programs
- Funding opportunities
- Stay informed with our newsletter
- Resources and upcoming events
 - Visit, beta.nsf.gov/tip/latest

Meet TIP – Technology, Innovation

Welcome to the new NSF website. We're completely revamping our site and we're doing it in the open so you

A new directorate at the U.S. National Science Foundation

can check on our progress. Learn more about the project

An official website of the United States gov

Science

and Partnerships

6

For more than seven decades, the U.S. National Science Foundation has been at the forefront of the research, innovation and education that has transformed American lives, powered the economy, and elevated the nation's competitiveness on the global stage. NSF investments have given the world Doppler radar, bar codes, the modern internet, web browsers, magnetic resonance imaging, laser eye surgery, DN analysis and synthetic biology.

But imagine what would be possible if we could speed the development and deployment of the next generation of these technological marvels with an eye toward addressing the foremost challenges that society and the economy face today

Enter "TIP," Technology, Innovation and Partnerships — a new NSF directorate that creates breakthrough technologies; meets societal and economic needs; leads to new, high-wage jobs; and empowers all Americans to participate in the U.S.

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CATALYZE AND FOSTER INNOVATION IN YOUR REGION Jumpstart your region's innovation ecosystem with up to \$160 million of NSF funding for up to 10+ years.

WEBINARS AND Q&A SESSIONS:

Learn about the NSF Engines program model, including program goals, phases of Engine development, proposal and award requirements, and award types.

Introductory Webinar: May 17, 2022: 1 – 3 p.m. EDT

Q&A Session 1: May 24, 2022: 1 – 3 p.m. EDT

Q&A Session 2: June 21, 2022: 1 – 3 p.m. EDT

REGIONAL ROADSHOW:

At these regionally focused virtual events, participate in a panel discussion with leading innovation and technology ecosystem builders from across the country, and join interactive breakout rooms to faciliate collaboration with others from your region. Attendees are encouraged to join the roadshow aligned to their state or territory. We hope these roadshows will be a jumping-off point for your region's future discussions about developing a cohesive NSF Engine application.

Stop 1 (CO, KS, MO, ND, NE, NM, OK, SD, TX, WY): May 19, 2022: 2 – 4 p.m. EDT

Stop 2 (CT, DE, MA, ME, NH, NJ, NY, PA, RI, VT): May 25, 2022: 2 – 4 p.m. EDT

Stop 3 (AK, AZ, CA, HI, ID, MT, NV, OR, UT, WA, other U.S. territories): June 7, 2022: 2 – 4 p.m. EDT

Stop 4 (AR, IA, IL, IN, KY, MI, MN, OH, TN, WI): June 9, 2022: 2 – 4 p.m. EDT

Stop 5 (AL, DC, FL, GA, LA, MD, MS, NC, PR, SC, VA, VI, WV): June 15, 2022: 2 – 4 p.m. EDT

REGISTER: To register for these events, visit: https://nsfengines.eventbrite.com

QUESTIONS? Email engines@nsf.gov

Thank you!

Sign up for NSF Engines office hours and participate in other outreach events: <u>https://nsfengines.eventbrite.com</u>

Reach us via email: engines@nsf.gov.

Recordings of outreach events are posted on the NSF Engines website, along with FAQs: <u>https://beta.nsf.gov/funding/initiatives/regional-innovation-engines</u>