



**NATIONAL SCIENCE FOUNDATION**  
2415 EISENHOWER AVENUE  
ALEXANDRIA, VIRGINIA 22314

**NSF 22-019**

## Dear Colleague Letter: Emerging Frontiers in Research and Innovation Planning Grants to Promote Diverse Participation

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November 30, 2021

Dear Colleague:

The National Science Foundation's (NSF) Directorate for Engineering (ENG) continually seeks to advance scientific progress in research and innovation while broadening participation of underrepresented groups in science, technology, engineering, and mathematics (STEM) fields. This Dear Colleague Letter (DCL) seeks to inform the community about an opportunity to pursue both goals through Planning Grants for development of proposals for submission to the active Emerging Frontiers in Research and Innovation (EFRI) solicitation. The EFRI program is interested in activities that would catalyze new collaborations that broaden the participation of researchers and/or organizations underrepresented in science and engineering (S&E). These Planning Grants will support costs associated with the development and formation of EFRI research projects and teams that are responsive to the current EFRI solicitation and that significantly address the goal of increasing the diversity, equity, and inclusion of researchers and institutions supported by the EFRI program. Funding opportunities are available in FY 2022 to provide support to teams that plan to submit an EFRI proposal to the FY 2023 cycle of the current EFRI solicitation.

### **BACKGROUND**

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The National Science Foundation's strategic goals include expanding knowledge in science and engineering and building capacity for a diverse science and engineering workforce. The primary goal of this DCL is to broaden the diversity of institutions, faculty, and trainees participating in the EFRI program by enabling the engineering and science community to develop potentially transformative ideas, recruit the personnel needed to form topic-responsive teams, and build capacity and preparedness prior to applying to the EFRI solicitation. As described in the 2020 National Science Board's (NSB) [Vision 2030](#) report, "progress in creating a diverse and inclusive S&E enterprise has not kept pace with demographic trends or with the increasing centrality of S&E to our economy, national

security, and jobs of the future. America's diversity is a great strength. Leveraging that strength by broadening participation in the U.S. S&E enterprise will be crucial to fostering individual opportunity and a thriving economy." Importantly, progress in engineering and science is accelerated when research teams are comprised of diverse individuals who are equitably integrated into the team environment.<sup>1</sup> The array of perspectives and talent that comes from a diverse team and leadership can heighten the likelihood of transformative research and outcomes.<sup>2</sup>

The EFRI program is working in conjunction with the NSF Directorate for Engineering's Broadening Participation in Engineering (BPE) program ([NSF 22-514](#)) to coordinate EFRI Planning grants. The BPE program seeks to strengthen the future U.S. Engineering workforce and catalyze research innovation by enabling the participation of all citizens in STEM, thus reflecting the diversity and true intellectual capacity of the Nation's population. In line with the goals of Track 1 of the BPE program solicitation, the EFRI program will offer planning grants that aim to catalyze the inclusion of all traditionally under-served populations in engineering.

The EFRI program seeks proposals with potentially transformative ideas that represent an opportunity for a significant shift in fundamental engineering knowledge with a strong potential for long term impact on national needs or a grand challenge. Thus, research teams that draw on and fully integrate engineering and science research talent, ideas, and perspectives from non-research-intensive institutions, Minority Serving Institutions (MSIs), Primarily Undergraduate Institutions (PUIs), as well as institutions in EPSCoR states have the capability to undertake research that significantly addresses the societal needs and grand challenges presented in the EFRI solicitation. Through this DCL, the EFRI program offers planning grants that support the engineering and science community to form and enhance multi- and interdisciplinary research collaborations that are responsive to the diversity, equity, and inclusion goals expressed in this DCL.

## **DESCRIPTION OF THE OPPORTUNITY**

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Planning grants funded through this DCL are expected to cultivate potential EFRI research teams that actively address the diversity, equity, and inclusion goals expressed in this DCL and to develop a competitive EFRI proposal for the FY 2023 cycle of the current [EFRI solicitation](#). As a result of planning grant activities, potential EFRI teams should be better equipped to carry out potentially transformative research that addresses one of the FY 2022/2023 EFRI topics. Proposers supported through this mechanism may use the funding to organize activities that help stimulate the formation of diverse teams (in terms of PI, Co-PI, Senior Personnel, and organization type) and crystalize the ideas and research plans to be presented in a potential EFRI proposal.

Examples of planning grant activities can include, but are not limited to:

- Workshop(s) to recruit and form a diverse team
  - Lead PIs from MSIs and PUIs
  - Lead PIs from underrepresented groups in the field of engineering, such as women, persons with disabilities, and underrepresented minorities in STEM
  - Co-PIs and senior personnel from MSIs, PUIs, and institutions in EPSCoR states
- Structured mentoring for PIs and co-PIs focused on applying for mid-size NSF awards
  - Development of research goals
  - Leadership and management of mid-size projects
- Development of a research plan that addresses one of the FY 2022/2023 EFRI topics
- Building cohesiveness within the team based on best practices known from Team Science, including collaboration challenges (such as different concepts of distances)<sup>3</sup>:
  - Geographical distance: The physical distance between researchers at collaborating institutions
  - Cognitive distance: The degree of overlapping specialized knowledge between members of an inter- or multidisciplinary team
  - Social distance: The "trust and friendship" (at the micro-level) among members of the team
  - Organizational distance: The methods or networks used to exchange information, knowledge, and make decisions; The level of autonomy afforded to each member of the team
  - Institutional distance: The level of shared values, norms, and language present among collaborating team members and institutions
- Assessment of planning grant goals

Given the complexity of an EFRI proposal, NSF recognizes that many teams will identify important research priorities but may not have the full complement of skills needed to effectively address the challenge. The planning grant can be used to support team formation activities that create opportunities for the development of partnerships between researchers and institutions that are bi-directional and mutually beneficial, thus engaging diverse perspectives and scientific talent to address the national needs and grand challenges presented in the EFRI solicitation.

## **AWARD SIZE AND DURATION**

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The budget for a planning proposal may be up to \$100,000. The proposal may request funding for up to 12 months.

## **PREPARATION AND SUBMISSION INFORMATION**

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To be considered for an EFRI Planning Grant, planning proposals must be submitted by 5:00pm, submitters local time, on January 28th, 2022.

PIs must contact Alias Smith at [alismith@nsf.gov](mailto:alismith@nsf.gov) prior to submission of a planning proposal to aid in determining the appropriateness of the work for consideration under this opportunity.

This activity is being conducted under the auspices of the Broadening Participation in Engineering (BPE) solicitation ([NSF 22-514](#)), Track 1. Planning grant proposals should be prepared in accordance with the guidance in Chapter II.E.1 of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) and submitted via Research.gov, as described in [NSF 22-514](#). Proposal titles should begin with the prefix "Track 1 EFRI DCL".

Submission or receipt of a planning grant is not a requirement for participating in forthcoming EFRI competitions. Planning grant proposals do not constitute any commitment on behalf of the PI/coPI(s) or their organizations to submit a future proposal. Conversely, award of a planning grant does not constitute any commitment on behalf of NSF to fund an EFRI proposal subsequently submitted by the award team. Prospective PIs are encouraged to read this DCL and the PAPPG carefully for planning proposal preparation and submission requirements and to review the current EFRI solicitation [NSF 21-615](#) for EFRI program priorities.

EFRI planning proposals may be reviewed internally by NSF staff, reviewed in a panel or by ad hoc reviewers or any combination of these methods.

For further information, please contact:

- Alias Smith, ENG/EFMA, [alismith@nsf.gov](mailto:alismith@nsf.gov)
- Sohi Rastegar, ENG/EFMA, [srastega@nsf.gov](mailto:srastega@nsf.gov)

Sincerely,

Susan Margulies, PhD  
Assistant Director  
Directorate for Engineering

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## Citations

<sup>1</sup> Smith-Doerr L., Alegria S., and Sacco T. (2017). How Diversity Matters in the US Science and Engineering Workforce: A Critical Review Considering Integration in Teams, Fields, and Organizational Contexts. *Engaging Science, Technology, and Society*, 3 (2017), 139-153.

<sup>2</sup> Dai Y., Byun G., and Ding F. (2019). The Direct and Indirect Impact of Gender Diversity in New Venture Teams on Innovation Performance. *Entrepreneurship Theory and Practice*,

43(3) 505-528

<sup>3</sup> Boschma R. (2005). Proximity and Innovation: A Critical Assessment. *Regional Studies*, 39(1): 61-74