• Introduction of new solicitation
• Overview of BP in Engineering
• Question and answer session
NSF Mission Statement

**NSF Mission:**
*To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense*....

**NSF's goals:**
discovery, learning, research infrastructure and stewardship -- provide an integrated strategy to advance the frontiers of knowledge, cultivate a world-class, broadly inclusive science and engineering workforce and expand the scientific literacy of all citizens, build the nation's research capability through investments in advanced instrumentation and facilities, and support excellence in science and engineering research and education through a capable and responsive organization.
NSF Strategic Plan

FY 2018 – 2022: 3 strategic goals

- **Expand** knowledge in science, engineering, and learning
- **Advance** the capability of the Nation to meet current and future challenges
- Enhance NSF's performance of its mission → includes strategies to **attract, retain, and empower a talented and diverse workforce**, and to continually improve agency operations.
NSF Directorate for Engineering

Assistant Director
Susan Margulies
Deputy Assistant Director
Linda Blevins

Senior Advisor for Science and Engineering
Mihail Roco

Emerging Frontiers and Multidisciplinary Activities (EFMA)
Sohi Rastegar

Chemical, Bioengineering, Environmental, and Transport Systems (CBET)
Richard Dickinson

Civil, Mechanical, and Manufacturing Innovation (CMMI)
Robert Stone

Electrical, Communications, and Cyber Systems (ECCS)
Shekhar Bhansali

Industrial Innovation and Partnerships (IIP)
Andrea Belz

Engineering Education and Centers (EEC)
José Zayas-Castro
BPE funds research to:

• Understand the systemic barriers that prevent traditionally underserved communities from pursuing and succeeding in engineering.

• Analyze factors that enhance our ability to increase access to engineering by creating support systems and social networks that raise career awareness about different engineering pathways.

• Develop innovative methods and projects to significantly impact the recruitment and retention of engineering students, faculty and employees from traditionally underserved communities.

• Design and transform culture to make diversity, equity and inclusion a priority in the engineering enterprise.

See solicitation for details on deadlines and requirements....
Broadening Participation in Engineering (NSF 22-514)

Strengthens the future U.S. engineering workforce by enabling and encouraging the participation of all citizens in the engineering enterprise via 4 tracks:

1. Planning and Conference Grants
2. Research in Broadening Participation in Engineering
3. Inclusive Mentoring Hubs (IMHubs) NEW
4. Centers for Equity in Engineering (CEE) NEW

• See solicitation for details on deadlines and requirements
Premise: The incorporation of Diversity Equity and Inclusion (DEI) concepts in Engineering Curricula presents myriad opportunities (and challenges) for research and program development...

Core Elements:

- **Development** of programs based on “needs” of various stakeholders, constituencies and beneficiaries (e.g., students, faculty, etc.).
- **Utilization** of strategies based in DEI and educational scholarship.
- **Identification** of content format and compatibility with current curriculum (e.g., case studies, classroom elements).
- **Creation** of mechanisms to implement/incorporate proven approaches into the curriculum.
- **Authentic engagement** of content developers/deliverers (e.g., faculty, teaching assistants) in the process.
- **Long term adoption** of curriculum-based concepts
- **Assessment** of impact, effectiveness
The **Broadening Participation in Engineering (BPE) Program** seeks to strengthen the future U.S. engineering workforce by enabling and encouraging the participation of all citizens in the engineering enterprise.

The **BPE Program** seeks to support not only research in the science of broadening participation and equity in engineering, but also collaborative endeavors which foster the professional development of a diverse and well-prepared engineering workforce as well as innovative, if not revolutionary, approaches to building capacity through inclusivity and equity within the engineering academic experience.
Broadening Participation in Engineering (NSF 22-514)

**Track 1**
Planning and Conference Grants

**Track 2**
Research in Broadening Participation in Engineering

**Track 3**
Inclusive Mentoring Hubs (IMHubs)

**Track 4**
Centers for Equity in Engineering (CEE)
BPE Program Description: Track 1

Track 1 Planning and Conference Grants

Supports efforts necessary to build capacity and establish collaborations endeavoring to address BP and equity challenges in engineering at scale.

Conference Grants
Focus on engaging communities and/or identifying synergies to inform the development of a future Planning Grant.

Planning Grants
Designed to foster/facilitate engineering community on formation of convergent BPE research and/or collaborative BPE relevant projects.

BPE Planning Grant not a prerequisite for submitting proposals to BPE Tracks 2 - 4.
Track 1 - Details

- Duration: 12 months
- Expected Budget: $50,000-$100,000
- Deadline to apply: None – Apply anytime
- LOI: Optional
- Submit via Research.gov
- Note: must follow the proposal preparation instructions for "Planning Proposals" or "Conference Proposals" contained in Chapter II.E the PAPPG.
The Inclusive Engineering Consortium Workshop
BPE Program Description: Track 2

Track 2
Research in Broadening Participation in Engineering

Supported research activities provide scientific evidence to make informed decisions regarding the implementation of effective programs that broaden participation and in the engineering discipline and workforce.

Funds research to:
- Understand the systemic barriers
- Analyze factors that enhance our ability to increase access to engineering
- Develop innovative methods and projects to significantly impact the recruitment and retention of engineering students, faculty and employees from underserved communities
- Design and transform culture to make DEI a priority
Funds research for K-12 to the professional and academic workforce.

Research outcomes should be:
- Scalable and sustainable
- Applicable to various contexts, settings and demographics

Particular interest in research employing intersectional approaches

- Research activities must be supported by relevant data
- Leverage BP foundational work where appropriate
- Have the capability to produce a model that can be replicated across the ENG community.

Well defined research questions should also form the backbone and substance of the proposed work.
BPE is interested in research activities that align with and provide meaningful connections to the NSF INCLUDES National Network. Collaborations are encouraged between BPE proposals and existing NSF INCLUDES projects.
To enhance U.S. leadership in science and engineering by developing STEM talent from all sectors of our society

Funding: Launch Pilots, Planning grants, Alliances, Coordination Hub

Partnerships with 8 federal agencies
FIRST NSF INCLUDES ENGINEERING ALLIANCE PROJECT!

**Announcement**

NSF INCLUDES announces new Alliances focused on increasing equity and broadening participation in STEM

### NSF INCLUDES

![NSF INCLUDES Banner](https://coe.northeastern.edu/news/northeastern-wins-10-million-nsf-grant-to-boost-people-of-color-and-women-in-engineering-nationally/)

**Northeastern Wins $10 Million NSF Grant to Boost People of Color and Women in Engineering Nationally**

**August 11, 2021**

Despite decades of scattered efforts to improve diversity in engineering, the number of women and people of color remains far below their representation in the U.S. population as a whole.

To solve this problem, Northeastern’s College of Engineering won a prestigious $10 million grant from the National Science Foundation to build a system and a network to increase engineering degrees among women and BIPOC (Black, Indigenous, and Other People of Color) nationally.

BPE - Project Examples

- Investigating the Impact of Engineering Graduate Student Financial Literacy on URP Entering and Staying in the Engineering Workforce: Luis A Vazquez, New Mexico State University

- Collaborative Research: Rising Doctoral Institute: Mayra Artiles Fonseca, Arizona State University

- Broadening Participation in Engineering: A Qualitative Study on Latina/o Persistence In and Beyond the Degree: Erika Mein, Alberto Esquinca, Elsa Villa; University of Texas at El Paso

- Investigating the Barriers to Retention and Tenure for Black and Hispanic Engineering Faculty at R1 Institutions; Henry Tran and Spencer Platt ; University of South Carolina at Columbia

- NSF INCLUDES: Increasing Degrees Awarded to African American, Hispanic, Native American and Women Students in Engineering (50K Coalition) Karl Reid (NSBE), Karen Horting (SWE), Sarah Echohawak (AISES), Raquel Tamez (SHPE) Barry Cordero (SHPE)

- Collaborative Research: Should I Stay or Should I Go? Understanding the Retention of Latinx in Engineering Jobs; Lisa Flores, University of Missouri-Columbia; Rachel Navarro, University of North Dakota Main Campus
The 2018 Status Report on Engineering Education:
A Snapshot of Diversity in Degrees Conferred in Engineering
Education Aim: Set COEs on a path to parity, such that COEs’ student demographics reflect the racial/ethnic makeup of the nation

Research Aim 1: Advance our understanding of the change strategies exemplary Colleges of Engineering (COE) use to improve Black and brown students’ access to engineering education and careers.

Research Aim 2: Develop an empirically-valid model for broadening participation of URMs in COEs.
Track 2: Details

- Duration: Up to 36 months
- Expected Budget: Average award $400,000; if greater than $400,000 contact Program Director
- Deadline to apply: None – Apply anytime
- LOI: Optional
- Submit via Research.gov
Encourage proposals from all engineering disciplines that investigate or leverage promising approaches to STEM related mentoring in an effort to establish all-access, open-platform racially and ethnically Inclusive Mentoring Hubs (IMHubs).

Can leverage or build upon existing mentoring resources; recommend activities be creative, innovative and distinct in their approach.

Goal: Connect and dynamically build networks for racial and ethnic groups not sufficiently represented in STEM or, more specifically, the engineering profession.
BPE Program Description: Track 3

Communities served by IMHubs may include 1 or more of the following:

- Students (K-12, undergraduate and graduate);
- University and College Faculty and Leaders;
- Postdoctoral and Career Transitioning Researchers;
- Small Businesses and Industry Professionals;
- K-12 Educators and Practitioners; and
- Researchers from National Labs.

An IMHub is expected to:

- Offer free access to mentoring and networking opportunities
- Provide professional development programs for members
- Coordinate institutional and organizational involvement in order to curate, develop and expand mentoring programs
BPE Program Description : Track 3

Possible activities:
• Participation in curriculum-based modules focused on engineering as a career
• Grant writing (e.g., NSF proposal preparation)
• Entrepreneurship
• Transitioning between academia, industry or government
• Mentor/mentee training and skills development
• Structured individual professional development assignments for those who plan to enter, or who have recently entered, the engineering workforce or faculty.

Activities should be creative, innovative and distinct in their approach
BPE Program Description: Track 3

• Duration: At least 5 years
• Expected Budget: Not to exceed $800K
• Deadline to apply:
  Optional LOI
  Dec. 3, 2021/ Nov. 21, 2022
  3rd Wednesday in September, annually thereafter

  Full Proposal
  Jan. 28, 2022/Nov. 16, 2022
  3rd Wednesday in November, annually thereafter

• Submit via Research.gov
• Note: Awards should be submitted by lead institution with at least two partnering institutions (as sub-awards)
Growing recognition of need to create and support a 21st Century inclusive and innovative engineering profession. Requires understanding of:

• How engineers from all communities are formed
• How they can be supported to successfully obtain both the technical and professional skills needed to solve complex, often critical, problems facing today's society.

Consider cultural, organizational, structural, and pedagogical changes needed to transform institution's College of Engineering where students are equally:

• Included and engaged
• Provided with opportunities to develop and hone technical and professional skills
• Enabled to establish their identities as professional engineers
• Proposed activities at the engineering college level or higher,
• Including community, two year and associate
• Not a singular office or engineering department.
• Center evolution and sustainability ...proposers expected to submit a "Phase I" CEE proposal.

Phase I projects and funding are focused on
1. establishing infrastructure supporting CEE in College of Engineering and
2. deploying curricular/training activities across the submitting institution's College of Engineering aligned w/CEE co-dependent goals of inclusion and professional preparation in engineering.
BPE Program Description: Track 4

**Track 4**
Centers for Equity in Engineering (CEE)

*After Phase I activities established* (i.e. CEE project in 2nd funding yr.),
• a site visit completed and
a discussion of the proposing institution's intent to submit a CEE proposal to
the next phase held with cognizant NSF BPE Program Director, proposers
may submit a CEE Phase II proposal.

**A Phase I award is a pre-requisite for a Phase II BPE CEE proposal.**

Phase II proposal builds upon the newly established center's Phase I
activities and focuses on the center partnering with additional universities
and colleges to expand, enrich and sustain the program.
BPE Program Description: Track 4

Phase I institutions encouraged to partner with at least two other institutions. Highly encouraged that at least one of these partners include an institution from
- an EPSCoR state
- minority-serving institution (MSI), or
- community college (for example 3-2, dual or combined programs).

Phase II proposals must be submitted by the Phase I awardee (PI and institution) with partnering institutions as sub awardees.
Phase II Requires a:
• Plan for sustainability
• Detailed plan for resource sharing among the partnering institutions.

Phase I and Phase II CEE proposals should include a comprehensive:
• Management Plan
• Dissemination Plan
• BPE CEE **Phase II** Evaluation & Assessment Plan to be overseen by an independent evaluator (inclusion social scientists in evaluation encouraged).
Track 4: Details

Phase I
• Duration: At least 24 months
• Expected Budget: Not to exceed $1.2M
• Requirement: Institutional Letter from the Dean (or equivalent) of the submitting institution's College of Engineering

Phase II
• Duration: At least 36 months
• Expected budget: not to exceed $4.0 M.
• Requirement: Institutional Letter from the Dean (or equivalent) of the submitting Institution's College of Engineering as well as the Dean (or equivalent) of the partnering institution(s) College of Engineering
Track 4: Details

Deadline to apply:

**LOI Strongly Recommended**
- Dec. 3, 2021
- Nov. 21, 2022
- 3rd Wednesday in September, annually thereafter

**Full Proposal**
- Jan. 28, 2022
- Nov. 16, 2022
- 3rd Wednesday in November, Annually thereafter

Submit via Research.gov
Dear Colleague Letter (DCL):
EFRI Planning Grants to Promote Diverse Participation (NSF XYZ)

- **Encourage the formation of** potential EFRI research teams that actively draw on and fully integrate diverse engineering and science research talent, ideas, and perspectives in an intentionally inclusive manner and are responsive to the Emerging Frontiers in Research and Innovation (EFRI) solicitation (NSF 21-615).
- **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.
- EFRI Planning Grants are **designed for teams** preparing to apply to the FY23 EFRI competition.

Due Date: January 28th, 2022
Up to $100k for 12 months
Historically Black Colleges and Universities – Excellence in Research (HBCU-EiR) NSF 20-542

**Primary goal:** Increase support for researchers at HBCUs interested in pursuing research in domains that align with NSF's research program areas. Help to further the PI's research, improve research opportunities for students, and serve to improve research capacity at the institution.

Proposals submitted to EiR are routed for review to most appropriate research program(s) in one (or more) of the Directorates as identified by the PI as the secondary program(s).

**Budget and Duration:** Scope and scale commensurate with the projects typically supported by the research program(s) with which the proposal aligns, and appropriate to the proposed activities. No more than 20% of the budget can be allocated for equipment.

**Participating Directorates:**
- BIO
- GEO
- CISE
- MPS
- EHR
- OIA
- ENG
- SBE

**Letter of Intent Due Date(s) (required):** July 23, 2020
Fourth Thursday in July, Annually Thereafter

**Full Proposal Deadline(s):** October 06, 2020
First Tuesday in October, Annually Thereafter
About the eFellows Program

The eFellows program places early-career PhDs in engineering fields in university research postdoctoral fellowships.

In addition to hands-on academic research with a faculty advisor, each fellowship cohort will participate in professional development and mentoring activities designed to prepare them for future research careers.

The eFellows program is administered by the American Society for Engineering Education (ASEE) with funding provided by the National Science Foundation (NSF).

UPCOMING DEADLINES
• Application Opens: June 21, 2021
• Application Closes: July 6, 2021
• Award Announcements: August 1, 2021
• Start of Fellowship: September 7, 2021

The E-Fellows program will provide postdoctoral researchers with a salary of $75,000 per year, for two years. Upon selection, ASEE will issue subawards to host institutions, to cover salary, benefits and up to $3,000 for travel expenses per fellow.
provides national recognition to institutions that are effectively diversifying engineering education using admissions policies,

provides guidance to institutions that are developing or researching admissions policies to advance diversity but have not yet met with success, and

defines directions for future research on both best practices in engineering admissions criteria, metrics, and policies and how those practices fit into the larger system of recruiting and retaining engineering students from all backgrounds.

The programs chosen as exemplary made policy changes, implemented new criteria or requirements for admissions, changed processes, or developed effective practices. The following institutions were chosen:

• California State University Long Beach
• Iowa State University
• Purdue University
• Rutgers University
• Texas A&M University
• University of Colorado Boulder
• University of Maryland
• University of Washington
For additional information

Contact: Christine Grant, BPE PO
email: cgrant@nsf.gov

Make an appointment

Provide a 1 pager prior to appointment for discussion
Any Questions