Agency Priority Goal | Action Plan | FY 2022-2023

Improve Representation in the Scientific Enterprise

Goal Leader(s):

Sylvia Butterfield, Deputy Assistant Director, Directorate for Education and Human Resources
Alicia Knoedler, Office Head, Office of Integrative Activities
Goal Overview

Goal statement
- Impact: Improve representation in the scientific enterprise by making changes that will lead to an increase in proposal submissions from underrepresented and underserved applicants and communities.
- Achievement: By September 30, 2023, NSF will increase both the number and proportion of proposals received from underrepresented and underserved 1) investigators and 2) institutions by 10 percent over the FY 2020 baselines.

Problem to Be Solved
- Among the awards NSF makes annually, the proportion of awards to investigators from groups underrepresented in STEM is not on par with their representation in the STEM workforce, which in turn is below the relative proportions of the total population.
- One reason for this disparity has to do with the gap that originates at the application stage. Internal analyses indicate that investigators from groups underrepresented in STEM do well in the merit review process, but that proposals submitted to NSF do not reflect the diversity of the STEM workforce (let alone the population as a whole).

What Success Looks Like
- The aim of this APG is to improve representation in the scientific enterprise by pursuing actions that will lead to an increase in proposal submissions from underrepresented and underserved applicants and communities, including both individual principal investigators and institutions.
### Tracking the goal

<table>
<thead>
<tr>
<th>By…</th>
<th>Achievement statement</th>
<th>Key indicator(s)</th>
<th>Quantify progress</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/30/23</td>
<td>Increase the number of proposals from underrepresented and underserved investigators by 10% over FY 2020 baseline.</td>
<td>Number of investigator proposals</td>
<td>11,568</td>
<td>11,903 (+335)</td>
</tr>
<tr>
<td>09/30/23</td>
<td>Increase the proportion of proposals from underrepresented and underserved investigators by 10% over FY 2020 baseline.</td>
<td>Proportion of investigator proposals</td>
<td>27.07%</td>
<td>27.29% (+0.22 percentage points)</td>
</tr>
<tr>
<td>09/30/23</td>
<td>Increase the number of proposals from underrepresented and underserved institutions by 10% over FY 2020 baseline.</td>
<td>Number of institution proposals</td>
<td>6,379</td>
<td>6,752 (+373)</td>
</tr>
<tr>
<td>09/30/23</td>
<td>Increase the proportion of proposals from underrepresented and underserved institutions by 10% over FY 2020 baseline.</td>
<td>Proportion of institution proposals</td>
<td>14.93%</td>
<td>15.48% (+0.55 percentage points)</td>
</tr>
</tbody>
</table>

- **Underrepresented and underserved investigators** include the lead researchers (principal investigators) on proposals who identify as:
  - Female
  - A member of a racial and/or ethnic group historically underrepresented in STEM including African American/Black, American Indian/Alaska Native, Hispanic/Latino, and Native Hawaiian/Pacific Islander.
  - Persons with disabilities

- **Underrepresented and underserved institutions** include post-secondary educational institutions and other entities receiving NSF award funding classified as Minority-Serving Institutions (MSIs), or that are located in states, territories, or commonwealths that have historically received relatively small amounts of NSF funding (i.e., EPSCoR jurisdictions). For this Agency Priority Goal target we are focusing on the subset of these institutions considered "emerging research institutions" (ERIs) that have received an average of $50 million or less in federal research funds over the past 3 years. For the duration of this goal, we will be focused on institutions that fall in these categories based on information available at the beginning of FY 2022, so that the results are not affected by changes in categorization during this period.

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2. MSIs are defined under Part F of the Higher Education Act (20 U.S. Code § 1067q – “Investment in historically Black colleges and universities and other minority serving institutions”). For more information see: https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html. The Established Program to Stimulate Competitive Research (EPSCoR) was designed to strengthen research and education in the sciences and engineering with a focus on states, territories, and commonwealths, that have historically received lesser amounts of NSF Research and Development funding. For more information see https://www.nsf.gov/od/oa/programs/epscor/.
# Goal Team

## Steering Group

**Membership:**
- Includes executive agency leadership from several offices key to NSF's diversity, equity, inclusion, and accessibility work.
- Office of Equity and Civil Rights
- Office of Integrative Activities *goal co-lead*
- Directorate for Education and Human Resources *goal co-lead*
- Directorate for Social, Behavioral, and Economic Sciences

**Duties:**
- Sets strategic direction, approves reports, briefs internal and external stakeholders

## Strategy Leads

**Membership:**
- Leaders from across NSF directorates and offices who are knowledgeable and committed to advancing equity issues.

**Duties:**
- Monitors strategy progress
- Prepares reports and briefings to NSF leadership, the National Science Board, and Office of Management and Budget

## Strategy Team Members

**Membership:**
- Subject-matter and technical experts

**Duties:**
- Under direction of the Leadership Group, works to implement the strategies outlined in the action plan.

## Ex-officio Support

**Membership:**
- NSF Performance team and other staff-level individuals

**Duties:**
- Supports implementation through meetings of the Steering Group and establishing processes for compiling and clearing reports.
Goal Strategies

In order to successfully increase the number and proportion of proposals from underrepresented and underserved investigators and institutions, NSF will need to employ the following comprehensive set of strategies:

- **Policy**
  - Ensure the NSF policy, funding opportunities, and program guidance reflect diversity, equity, inclusion, and accessibility (DEIA) expectations.

- **Data Analytics**
  - Leverage data and analytics to enhance NSF’s understanding of APG goals and broader DEIA activities.

- **External Engagement**
  - Improve ability of underrepresented and underserved investigators and institutions to identify funding opportunities and support application for those opportunities through effective engagement.

- **Internal Engagement/Capacity Building**
  - Provide NSF staff and proposal reviewers with the knowledge and resources to effectively support DEIA in the proposal review and award process.
Key indicators

Note: These are the FY 2020 baselines originally published with the APG in spring 2022. Baselines will be recalculated in future reports to account for improvements in demographic data collection implemented throughout 2021 and 2022, which will apply to past as well as future proposals.
Key milestones – Policy

**Strategy 1:** Increase the number of programs that include diversity, equity, inclusion, and accessibility (DEIA) expectations in funding opportunities and program guidance.

**Objective:** Ensure that NSF policy, funding opportunities, program guidance, and the merit review process reflect expectations that underscore the agency’s commitment to DEIA. Incorporate language, tools, resources, and practices that support DEIA, especially for underrepresented and underserved investigators and institutions, and mechanisms to hold NSF programs accountable.

In order to improve consistency in the way programs across NSF incorporate and convey expectations around DEIA, there is a need to infuse these principles into funding opportunities and program guidance. For example, in a recent analysis of program documents published from 2018-2021, NSF found that fewer than 15 percent of such documents included DEIA language related to racial equity, and only about 40 percent of solicitations for grant proposals included such language. Making available sample DEIA language that satisfies complex policy and legal requirements, for example, will facilitate adoption of such language in funding opportunities, and provide accountability for ensuring DEIA expectations are met. More prominent and consistent use of DEIA expectations across NSF would signal to the scientific community that DEIA is an NSF priority and encourage more submissions from individuals and institutions underrepresented and underserved in the scientific enterprise.

**Milestone Summary**

<table>
<thead>
<tr>
<th>Key Milestone</th>
<th>Milestone Due Date</th>
<th>Milestone Status</th>
<th>Comments</th>
</tr>
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<tr>
<td>Develop sample DEIA expectations language based on examples from key federal policy documents, such as Executive Orders, agency policy documents, funding calls, and program guidance documents.</td>
<td>Q1, FY 2023</td>
<td>In progress</td>
<td>Developed language encouraging DEIA for insertion into NSF grants policy, based on federal policy documents.</td>
</tr>
<tr>
<td>Disseminate pre-approved funding opportunity and program guidance language throughout the agency for voluntary use.</td>
<td>Q2, FY 2023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approve and incorporate DEIA expectations in NSF grants policy documents.</td>
<td>Q4, FY 2023</td>
<td>In progress</td>
<td>Preliminary changes are currently in clearance for incorporation into NSF grants policy document in early Q1 FY 23. More extensive edits are planned for Q4 FY 23.</td>
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</table>
Key milestones – Data Analytics

**Strategy 2: Establish data analytics capabilities to track key indicators and monitor progress towards achievement of the APG goal**

**Objective:** Leverage data and analytics to enhance NSF’s understanding of APG goals and broader DEIA activities.

In order to track progress toward the APG goal of increasing proposals, there is a need to improve data collection on key demographic factors of individual investigators, as well as institutional characteristics, such as NSF proposal submission rates, proposal outcomes, and funding rates. In addition, NSF will develop metrics and methods to assess the impacts of other APG strategies, such as external engagement and policy changes. Finally, the agency will increase accessibility to, and transparency of, these data for use in enhancing agency-wide DEIA efforts.

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<tr>
<td>Establish definitions and metrics around DEIA for underrepresented investigators and institutions. Establish initial baselines for key indicators.</td>
<td>Q2, FY 2022</td>
<td>Completed</td>
<td>Pilot was expanded in May and new demographic data are in the process of being incorporated into NSF Systems.</td>
</tr>
<tr>
<td>Expand pilot to improve demographic data collection from investigators across NSF.</td>
<td>Q3, FY 2022</td>
<td>Completed</td>
<td>In Q3 NSF linked internal institutional databases to IPEDS (Dept of Education) institutional codes. This will lead to Improved tracking of MSIs over time.</td>
</tr>
<tr>
<td>Improve the linkage in NSF systems between data on institutional characteristics and other NSF proposal and award data.</td>
<td>Q4, FY 2022</td>
<td>Completed</td>
<td>Internal NSF dashboard with PI and institutional data is in acceptance testing.</td>
</tr>
<tr>
<td>Develop and disseminate data-related tools/resources that can be used to improve DEIA activities and achievement of the APG goal to increase proposals.</td>
<td>Q3, FY 2023</td>
<td>In Process</td>
<td></td>
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</table>
## Key milestones – External Engagement

**Strategy 3: Extend intentional, coordinated, and strategic outreach to underrepresented and underserved investigators and institutions.**

**Objective:** Improve ability of underrepresented and underserved investigators and institutions to identify funding opportunities and support application for those opportunities through effective engagement.

NSF successfully engages with investigators and institutions that have a track record of obtaining NSF awards. To increase applications from underrepresented and underserved communities, however, the agency needs to more broadly recognize, reach out to, and build relationships with investigators and institutions that are underrepresented across NSF awards, through initiatives such as the Established Program to Stimulate Competitive Research (EPSCoR), Centers of Research Excellence in Science and Technology (CREST), and the proposed Growing Research Access for Nationally Transformative Equity and Diversity (GRANTED). There are many promising initiatives in motion across NSF, but they could be strengthened through integrated and strategic engagement activities and a harmonized collection of resources that are accessible to our external stakeholders (specifically underrepresented and underserved investigators). Combined, these efforts will improve coordination and dissemination of resources that help the community identify appropriate funding opportunities.

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<tr>
<td>Gather NSF documents, program guides, and lessons learned on effective outreach to underrepresented and underserved investigators and institutions.</td>
<td>Q4, FY 2022</td>
<td>In progress</td>
<td>Collecting resources</td>
</tr>
<tr>
<td>Conduct listening sessions and workshops with institutions that historically have had low participation in NSF programs.</td>
<td>Q2, FY 2023</td>
<td></td>
<td></td>
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<tr>
<td>Create resources to present and make accessible the information from the engagement strategies.</td>
<td>Q3, FY 2023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Update NSF’s webpage to help investigators better identify funding opportunities of interest and connect with relevant NSF staff.</td>
<td>Q4, FY 2023</td>
<td></td>
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3 GRANTED is a proposed new initiative that will improve the Nation’s research support and service capacity at emerging and underserved research institutions through a variety of mechanisms to further NSF’s reach in advancing the geography of innovation and engaging groups underrepresented in STEM.
Key milestones – Internal Engagement and Capacity Building

Strategy 4: Build NSF capacity to support DEIA and broaden participation of underrepresented and underserved investigators and institutions in NSF programs.

Objective: Provide NSF staff and proposal reviewers with the knowledge and resources to effectively support diversity, equity, inclusion, and accessibility (DEIA) in the merit review process.

In order to improve DEIA across NSF’s programs and encourage proposal submissions from individuals and institutions underrepresented and underserved in STEM fields, the agency will engage in culture change activities at all levels of the organization. One dimension of this work will be to invest in change management and to ensure that DEIA policies, processes, and resources are readily accessible to NSF staff and proposal reviewers. Additionally, NSF will enhance the recruitment of program officers and proposal reviewers from the underserved and underrepresented institutions of focus for this APG.

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<tr>
<td>Perform environmental scan and gap analysis of existing NSF resources for addressing DEIA issues in NSF programs.</td>
<td>Q4, FY 2022</td>
<td>In progress</td>
<td>Currently collecting use cases and case studies to cluster, identify needed and missing resources.</td>
</tr>
<tr>
<td>Develop resources for NSF program officers and external proposal reviewers on how to equitably engage with research proposals from underserved institutions.</td>
<td>Q2, FY 2023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disseminate the resources, and establish practices to ensure continued dissemination of policies, resources, and best practices across NSF.</td>
<td>Q3, FY 2023</td>
<td>In progress</td>
<td>Communications Plan in development.</td>
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Summary of progress

Narrative – FY 2022 Q3

In the third quarter of FY 2022, NSF made progress in all four areas:

- **External Engagement** and **Internal Engagement/Capacity Building**: Working groups have engaged NSF staff to identify resources for engaging with underrepresented and underserved investigators and institutions as well as process to improve DEIA in NSF programs. The information gathered will be analyzed to facilitate dissemination of existing resources and development of needed resources.

- **Policy**: NSF developed DEIA encouragement language for incorporation into the introduction of NSF’s primary grants policy guidance, the Proposals and Awards Policies and Procedures Guide (PAPPG). The draft language is currently in clearance and on track for incorporation in Q1 of FY 2023.

- **Data Analytics**: NSF accomplished the Q3 milestone of expanding the pilot to improve demographic data collection from investigators across NSF. This data is now being incorporated into NSF systems. Progress was also made toward improving institutional data collection in NSF systems by improved tracking of MSIs over time and linkage of NSF institutional codes and other federal codes.

APG leadership discussed the impacts of improved demographic data on the baseline and determined that revised FY 2020 baselines will be presented when reporting FY 2022 and 2023 results, to reflect improved demographic data collection applied to FY 2020.

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Data Accuracy & Reliability

Data on the number and proportion of proposals from investigators and institutions are from NSF’s Enterprise Information System (EIS) as of March 8, 2022. EIS is a reporting and analysis system that provides trend analysis, financial management, and personnel information on a variety of topics, organized into modules. The EIS is refreshed on a regular update cycle using data from NSF’s financial system and from core transactional systems, including those related to accepting and awarding proposals.

NSF data on principal investigator demographics have two limitations; some individuals do not answer demographic questions, while others answer that they do not wish to disclose this information. In recent years, this has resulted in NSF not knowing the gender, disability status, or race and ethnicity of at least 25 percent of principal investigators. To address the first issue, one of NSF’s strategies under this APG is to improve response rates to better gauge the effectiveness of our efforts to increase proposals from underrepresented and underserved investigators. These demographic data improvements were successfully piloted beginning in 2021 and rolled out more broadly in May 2022. The resulting data improvements are expected to be realized over the next 12 months.

For the definition of an underrepresented and underserved institution, NSF relied on the Department of Education’s list of Minority Serving Institutions, current as of February 2022. The list of EPSCoR states is defined by NSF, using the FY 2022 update. Emerging research institutions (ERIs) are defined as those receiving $50 million or less in federal research funds over the past three years, based on data from the FY 2019 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.5

5 https://www.nsf.gov/statistics/srvyfedsupport/
Additional Information

Contributing Programs

Program Activities:

- **Broadening Participation** at NSF includes a portfolio of programs solely focused or with an emphasis on increasing participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs. Specifically, NSF is committed to broadening participation by:
  - Preparing a diverse, globally engaged STEM workforce;
  - Integrating research with education, and building capacity;
  - Expanding efforts to broaden participation from underrepresented groups and diverse institutions across all geographical regions in all NSF activities; and
  - Improving processes to recruit and select highly qualified reviewers and panelists that reflect the Nation’s diversity.

The Broadening participation portfolio provides numerous examples of the types of programmatic elements, resources, and engagement strategies that can be adopted more widely across NSF to achieve the APG. Moreover, both Broadening Participation and the APG support NSF’s Strategic Plan Objective 1.1 – Ensure accessibility and inclusivity: Increase the involvement of communities underrepresented in STEM and enhance capacity throughout the nation.

- **GRANTED**: Growing Research Access for Nationally Transformative Equity and Diversity, or GRANTED, is a new initiative that will improve the Nation’s research support and service capacity at emerging and

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6 More information on Broadening Participation is available at https://www.nsf.gov/od/broadeningparticipation/bp.jsp

7 NSF’s FY 2022-2026 Strategic Plan, Leading the World in Discovery and Innovation, STEM Talent Development, and the Delivery of Benefits from Research is available at https://www.nsf.gov/about/performance/strategic_plan.jsp
underserved research institutions. The GRANTED initiative will use a variety of mechanisms to further NSF’s reach in advancing the geography of innovation and engaging groups underrepresented in STEM.

**Stakeholder / Congressional Consultations**

**National Science Board:** This APG complements a priority of the National Science Board to close the STEM talent gap in part by accelerating progress in increasing the diversity of the science and engineering workforce to be representative of the U.S. population as a whole.8

**Committee on Equal Opportunities in Science and Engineering (CEOSE):** CEOSE is a panel of external advisors to NSF on policies, programs, practices, and activities to encourage full participation of women, underrepresented racial/ethnic populations and persons with disabilities within all levels of the nation’s STEM enterprise. By elevating the goal of improving representation in the scientific enterprise to among the agency’s highest priorities, the APG aligns with a recommendation CEOSE made in its 2019-2020 Biennial Report to Congress: “CEOSE recommends that NSF demonstrate and promote bold leadership actions to create, integrate and make visible elements within and across its programs to enhance broadening participation of underrepresented and underserved groups in STEM.”9

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8 More information can be found in the National Science Board’s Vision 2030 report: [https://www.nsf.gov/nsb/NSBAactivities/vision-2030.jsp](https://www.nsf.gov/nsb/NSBAactivities/vision-2030.jsp)