

## FY 2025 ANNUAL PERFORMANCE PLAN AND FY 2023 PERFORMANCE REPORT

### FY 2022-2026 Strategic Plan Framework: Strategic Goals and Objectives

The National Science Foundation (NSF) Strategic Plan for fiscal years (FYs) 2022-2026: *Leading the World in Discovery and Innovation, STEM Talent Development, and the Delivery of Benefits from Research*,<sup>1</sup> includes four strategic goals—Empower, Discover, Impact, and Excel—that form the core of the plan. These themes focus on expanding frontiers, engaging people, and delivering solutions. Under each goal are two strategic objectives, which together encompass all areas of agency activity.

#### FY 2022-2026 Strategic Framework, Strategic Goals, and Objectives

Strategic Goal	Strategic Objective
<b>1. Empower:</b> Empower Science, Technology, Engineering and Mathematics (STEM) talent to fully participate in science and engineering	<b>1.1 Ensure accessibility and inclusivity</b> – Increase the involvement of communities underrepresented in STEM and enhance capacity throughout the nation.
	<b>1.2 Unleash STEM talent for America</b> – Grow a diverse STEM workforce to advance the progress of science and technology.
<b>2. Discover:</b> Create new knowledge about our universe, our world, and ourselves	<b>2.1 Advance the frontiers of research</b> – Accelerate discovery through strategic investments in ideas, people, and infrastructure.
	<b>2.2 Enhance research capacity</b> – Advance the state of the art in research practice.
<b>3. Impact:</b> Benefit society by translating knowledge into solutions	<b>3.1 Deliver benefits from research</b> – Advance research and accelerate innovation that addresses societal challenges.
	<b>3.2 Lead globally</b> – Cultivate a global science and engineering community based on shared values and strategic cooperation.
<b>4. Excel:</b> Excel at NSF operations and management	<b>4.1 Strengthen at speed and scale</b> – Pursue innovative strategies to strengthen and expand the agency’s capacity and capabilities.
	<b>4.2 Invest in people</b> – Attract, empower, and retain a talented and diverse NSF workforce.

### NSF Performance Management Framework

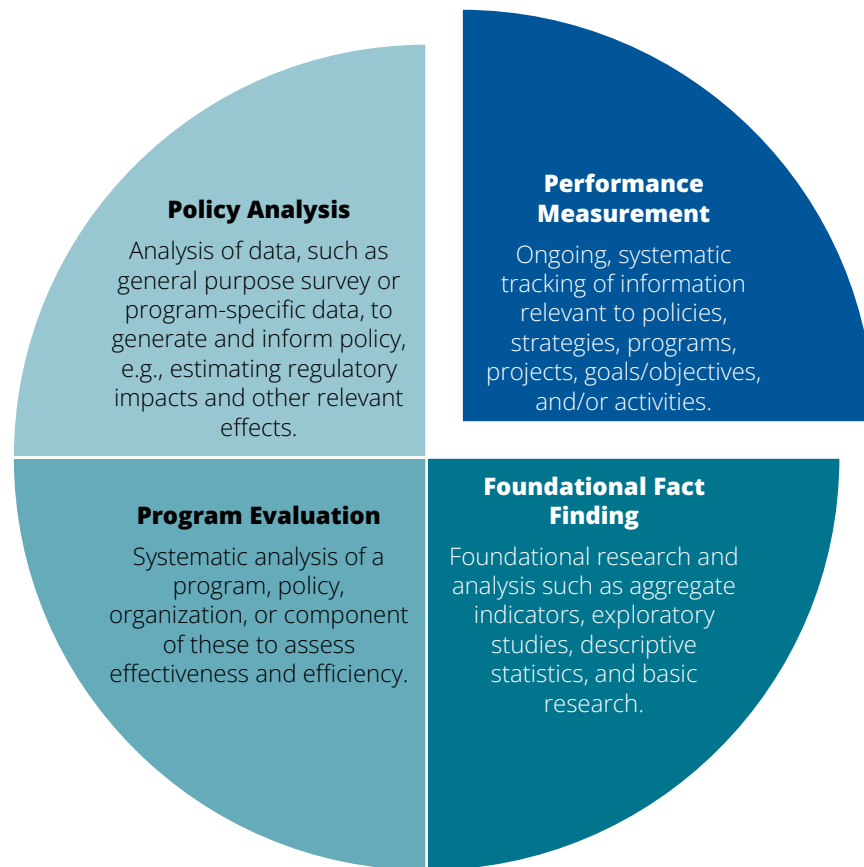
NSF’s Annual Performance Plan and Report builds upon key aspects of the Government Performance and Results Act (GPRA) Modernization Act of 2010 and the Evidence Act.<sup>2</sup> These include Agency Priority Goals and Strategic Reviews, which enable agencies to consider data beyond annual output measures when evaluating agency performance, and the framework established by the four types of evidence

<sup>1</sup> NSF’s strategic plan is available at [https://www.nsf.gov/news/special\\_reports/strategic\\_plan/](https://www.nsf.gov/news/special_reports/strategic_plan/)

<sup>2</sup> The Foundations for Evidence-Based Policymaking Act of 2018 (the Evidence Act) is available at [www.congress.gov/115/plaws/publ435/PLAW-115publ435.pdf](http://www.congress.gov/115/plaws/publ435/PLAW-115publ435.pdf)

defined in the Office of Management and Budget (OMB) guidance: Foundational Fact Finding, Policy Analysis, Performance Measurement and Program Evaluation.

**Components of Evidence  
(Presented in OMB M-19-23 and M-21-27)<sup>3</sup>**



The Annual Performance Plan and Report presented in this chapter includes goals, indicators, and other information that relate directly to three of these components of evidence:

- *Annual Goals* are the primary focus of the Annual Performance Plan and Report, and are included in the “Performance Measurement” category of evidence. They answer the question, “What progress is the implemented approach making toward objectives and goals, on key measures and against set targets?”

<sup>3</sup> OMB Memorandum M-21-27 “Evidence-Based Policymaking: Learning Agendas and Annual Evaluation Plans” may be accessed at [www.whitehouse.gov/wp-content/uploads/2021/06/M-21-27.pdf](http://www.whitehouse.gov/wp-content/uploads/2021/06/M-21-27.pdf); OMB Memorandum M-19-23 “Phase 1 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018: Learning Agendas, Personnel, and Planning Guidance” may be accessed at [www.whitehouse.gov/wp-content/uploads/2019/07/M-19-23.pdf](http://www.whitehouse.gov/wp-content/uploads/2019/07/M-19-23.pdf).

- *Other Information and Context* includes indicators in the “Foundational Fact Finding” category of evidence and answer the question, “What can we understand about the problem, existing approaches, and the target populations?”
- *Evaluation Highlights* draw upon NSF’s Annual Evaluation and Evidence Plan, and are included in the “Program Evaluation” category of evidence and answer the questions, “To what degree is our implemented approach causing the desired outcomes/ impact? How much effect? For whom? Under what conditions?”

This multi-faceted framework will provide valuable information and insights for strengthening NSF’s programs and investments, as well as highlight how science and engineering research and education generate a dynamic set of benefits and impact.

### **Organizational Health and Performance**

In April 2023, OMB issued M-23-15: “Measuring, Monitoring, and Improving Organizational Health and Organizational Performance in the Context of Evolving Agency Work Environments.”<sup>4</sup> The primary aim of M-23-15 is to ensure that agency decisions regarding work environments continually improve the organization’s health and performance. NSF has identified an initial core set of organization health and performance metrics related to human capital, employee engagement, information technology (IT), facilities, financial management, and program workload metrics. These metrics will be discussed with NSF leadership quarterly and may inform future performance goals under Strategic Goal 4: Excel.

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<sup>4</sup> OMB Memo M-23-15 [www.whitehouse.gov/wp-content/uploads/2023/04/M-23-15.pdf](https://www.whitehouse.gov/wp-content/uploads/2023/04/M-23-15.pdf)

## Strategic Goal 1, Empower: Empower STEM talent to fully participate in science and engineering

**Strategic Objective 1.1: Ensure accessibility and inclusivity. Increase involvement of communities underrepresented in STEM and enhance capacity throughout the nation.**

### **Annual Goal 1.1a: Improve representation in the scientific enterprise [Agency Priority Goal]<sup>5</sup> [Revised Goal for FY 2025]**

Goal Statement: Increase the proportion of proposals received 1) with principal investigators from groups underrepresented in STEM and 2) from emerging research institutions by 10 percent over the FY 2022 baseline.

About this Goal: This Agency Priority Goal (APG) is part of NSF's efforts to "create opportunities everywhere" by identifying and addressing individual, institutional, and geographic barriers to innovation, partnerships, and opportunities in STEM. Among the awards NSF makes annually, the proportion of awards with principal 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. The aim of the APG is to improve representation in the scientific enterprise by pursuing actions that will lead to an increase in proposal submissions led by individuals from groups underrepresented in STEM and from underserved communities.

Discussion of FY 2023 Result and Explanation of Missed Targets: NSF met one of the four targets for the FY 2022-2023 version of this goal. The FY 2023 target for percentage of proposals with principal investigators from groups underrepresented in STEM was 35.2 percent (10 percent above the 32.9 percent FY 2020 baseline) and NSF reached 36.9 percent, exceeding the target. The FY 2023 target for percentage of proposals from underserved institutions was 16.3 percent (10 percent above the 14.8 percent baseline) and NSF reached 16.0 percent, just missing the target. Neither of the targets measuring number of proposals was met. One important consideration is that the overall number of proposals submitted to NSF in FY 2023 decreased, falling 10 percent below the FY 2020 level. This drop was not anticipated when NSF set its initial targets for the FY 2022-2023 APG, and likely contributed to NSF missing both the targets for number of proposals.

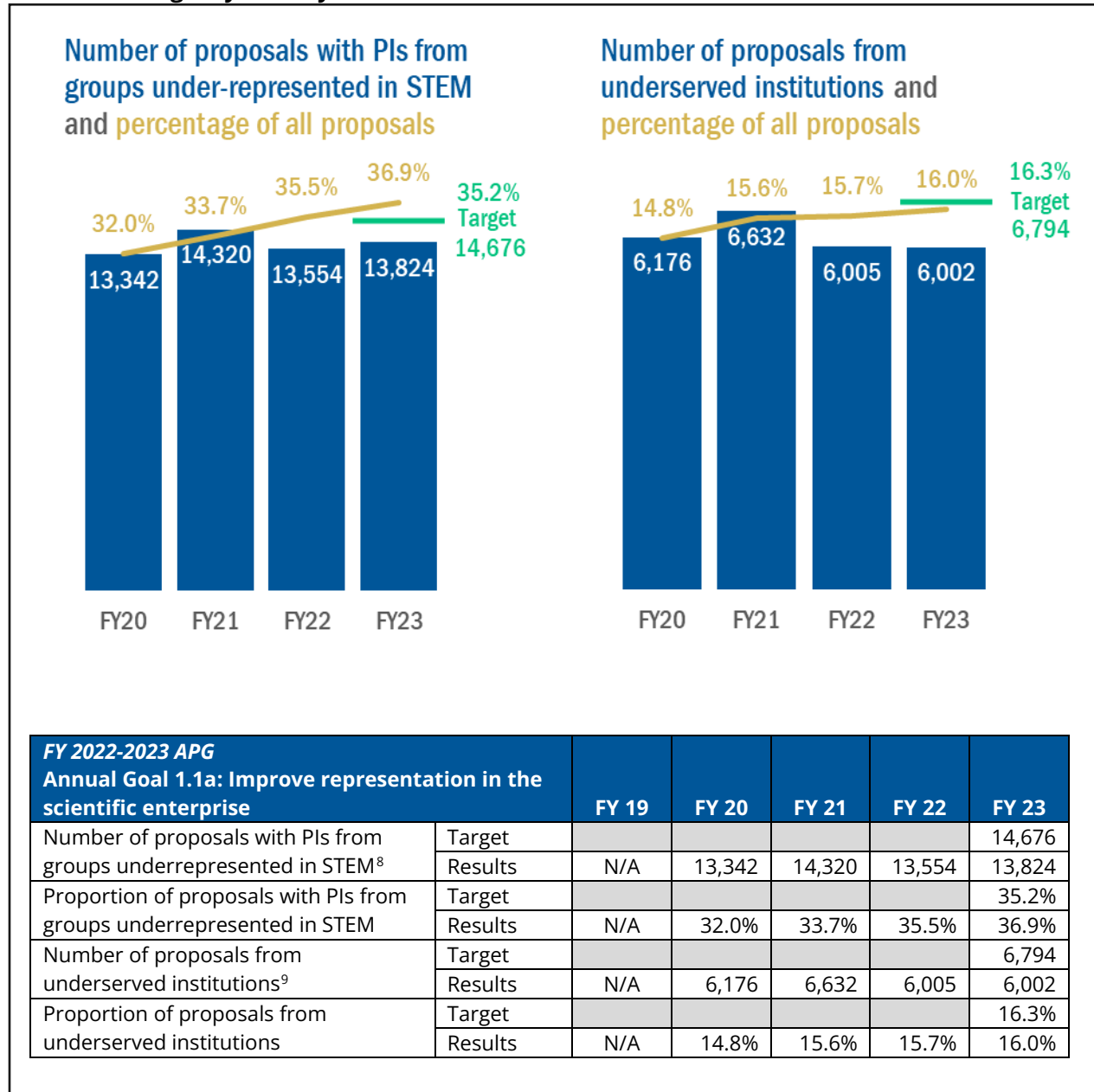
NSF will be continuing this goal in the FY 2024-2025 APG cycle, with key indicators focused on increasing the proportion of proposals with principal investigators from groups underrepresented in STEM and from emerging research institutions. Continued work on this goal will build on the work done by this APG, as well as programs focused on building institutional capacity, including GRANTED and EPSCoR.<sup>6</sup>

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<sup>5</sup> More information on the APG is available at: [www.performance.gov/agencies/NSF/apg/goal-1/](http://www.performance.gov/agencies/NSF/apg/goal-1/).

<sup>6</sup> Growing Research Access for Nationally Transformative Equity and Diversity (GRANTED) is an initiative that seeks to improve the Nation's research support and service capacity at emerging and underserved research institutions. For more information see <https://new.nsf.gov/funding/initiatives/broadening-participation/granted>. 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 and territories that have historically received lesser amounts of NSF Research and Development funding. For more information see <https://www.nsf.gov/od/oia/programs/epscor/>.

**Exhibit 1.1a. Agency Priority Goal<sup>7</sup>**



<sup>7</sup> These FY 2020 baselines, FY 2021 and FY 2022 results, and FY 2023 targets were recalculated after the end of FY 2023 to account for improvements in demographic data collection and institutional flags implemented from 2021 through 2023. Data were pulled from the APG dashboard on 11/02/2023.

<sup>8</sup> Investigators in groups underrepresented in STEM include principal investigators who identify as women, members of racial or ethnic minorities underrepresented in STEM, or persons with disabilities.

<sup>9</sup> For the FY 2022-2023 APG, underserved institutions included awardees receiving less than \$50 million in annual federal support for research and development, as measured in Federal obligations, that are either located in EPSCoR jurisdictions or are Minority Serving Institutions. Institutions designated as a Minority-Serving Institution for NSF reporting are the following institution types: Disabled Serving, High African American Enrollment, Historically Black Colleges and Universities, High American Indian Serving, Native Alaskan Serving, Native Hawaiian Serving, Pacific Islander, Tribal Colleges, Majority Minority Serving, and Hispanic Serving.

For the FY 2024-2025 APG, NSF will set targets for the proportion of proposals received, as the number of proposals could be impacted by an overall decline or increase in proposals received by NSF. For institutions, NSF is focusing on Emerging Research Institutions (ERIs), as defined in the CHIPS and Science Act of 2022.<sup>10</sup>

**Exhibit 1.1a. Agency Priority Goal, continued**

<b>FY 2024-2025 APG</b>							
<b>Annual Goal 1.1a: Improve representation in the scientific enterprise</b>		<b>FY 20</b>	<b>FY 21</b>	<b>FY 22</b>	<b>FY 23</b>	<b>FY 24</b>	<b>FY 25</b>
Proportion of proposals with PIs from groups underrepresented in STEM	Target						41.1%
	Results	33.4%	34.9%	37.4%	37.5%		
Proportion of proposals from emerging research institutions <sup>11</sup>	Target						26.6%
	Results	22.2%	24.3%	24.2%	25.1%		

**Discussion of FY 2025 Target:** Prior to the start of the 2022-2023 APG, the proportion of proposals NSF received with principal investigators from groups underrepresented in STEM had remained fairly consistent for the previous decade or longer.<sup>12</sup> This APG seeks a meaningful increase in the proportion of proposals from these groups that is also realistic within the two-year timeframe. The shift to FY 2022 baselines has increased the target accordingly. More information on NSF’s plans to achieve the FY 2025 targets will be included in the APG Action Plan, available at [performance.gov/agencies/nsf](https://performance.gov/agencies/nsf) later this year.

**Annual Goal 1.1b: Expand geographic diversity in STEM research [New Goal for FY 2025]**

**Goal statement:** Increase the percentage of NSF’s research funding to institutions in EPSCoR jurisdictions.

**About this Goal:** STEM talent is found throughout the United States, but opportunities to leverage these talents are not equally available everywhere. NSF’s Established Program to Stimulate Competitive Research (EPSCoR) seeks to expand the geography of innovation by advancing research capacity in jurisdictions (i.e., states and territories) that receive relatively small proportions of the federal research budget. EPSCoR accomplishes this work through investment in research infrastructure, co-funding in partnership with NSF directorates and offices, and outreach to investigators and institutions in EPSCoR jurisdictions. The CHIPS and Science Act of 2022 sets annual targets for NSF funding to institutions in EPSCoR jurisdictions through 2029. In addition to the goal listed below, the Act also authorizes a gradual increase in percentage of NSF funding of scholarships, graduate fellowships and traineeships, and postdoctoral awards to support institutions in EPSCoR jurisdictions, along with prioritization of investments in research capacity building activities for

<sup>10</sup> As defined in Section 10002 of the CHIPS and Science Act of 2022, an Emerging Research Institution (ERI) is: “an institution of higher education with an established undergraduate or graduate program that has less than \$50,000,000 in Federal research expenditures.” [www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf](https://www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf)

<sup>11</sup> The ERI flags used for these data were derived from the Higher Education Research and Development (HERD) survey for the 2020-2021 academic year, available at: <https://nces.nsf.gov/surveys/higher-education-research-development/2021>

<sup>12</sup> See Table 7, “Proposals, Awards, and Funding Rates, by PI Gender,” Table 9, “Proposals, Awards, and Funding Rates, by PI Ethnicity,” and Table 11, “Proposals, Awards, and Funding Rates, by PI Race,” *Merit Review Process, Fiscal Year 2021 Digest*. [www.nsf.gov/nsb/publications/2022/merit\\_review/FY\\_2021\\_Merit\\_Review\\_Digest.pdf](https://www.nsf.gov/nsb/publications/2022/merit_review/FY_2021_Merit_Review_Digest.pdf)

EPSCoR jurisdictions. NSF is developing tools and strategies to track and achieve these targets, including prioritization of funding that enables sustainable growth in the research competitiveness of EPSCoR jurisdictions.

**Exhibit 1.1b. Annual Goal: Expand geographic diversity in STEM research**

Annual Goal 1.1b: Expand geographic diversity in STEM research		FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25
Percentage of NSF funding to institutions in EPSCoR jurisdictions <sup>13</sup>	Target					15.5%	16.0%	16.5%
	Results					15.9%		

Discussion of FY 2023 Result: NSF awarded 15.9 percent of research funding to institutions in EPSCoR jurisdictions in FY 2023, exceeding the target of 15.5 percent set in the CHIPS and Science Act.

Discussion of FY 2024 and 2025 Targets: The FY 2024 and 2025 targets are taken from the CHIPS and Science Act. NSF established a cross-directorate working group to develop an implementation plan for meeting the targets in future years. The agency implementation plan is grounded in a core set of strategies and activities focused on research capacity building approaches to promote advancements in research infrastructure, outreach and engagement, and increasing and sustaining NSF funding to EPSCoR jurisdictions. An intended key outcome of implementation of the strategies and activities in the agency plan is an increase in the representation of NSF awards and funding to individuals, institutions, and organizations in the 28 EPSCoR-eligible jurisdictions.<sup>14</sup>

**Evaluation Highlight: EPSCoR**

NSF EPSCoR is continuing to refine and implement a cohesive research competitiveness evaluation framework for the program, drawing from recommendations from the Government Accountability Office (GAO), internal NSF evaluations, and a report from NSF's Committee on Equal Opportunities in Science and Engineering (CEOSE). Findings from the CEOSE report have informed the development of two new EPSCoR funding opportunities and the decision to evolve EPSCoR's Track-1 program into new opportunities with a stronger focus on building research capacity in EPSCoR jurisdictions. See further details in the Annual Evaluation and Evidence Plan.<sup>15</sup>

<sup>13</sup> Targets for FY 2023 through FY 2025 are taken from Section 10325 of the CHIPS and Science Act of 2022. [www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf](https://www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf)

<sup>14</sup> A map of all EPSCoR eligible jurisdictions is available at <https://new.nsf.gov/funding/initiatives/epscor/epscor-criteria-eligibility>

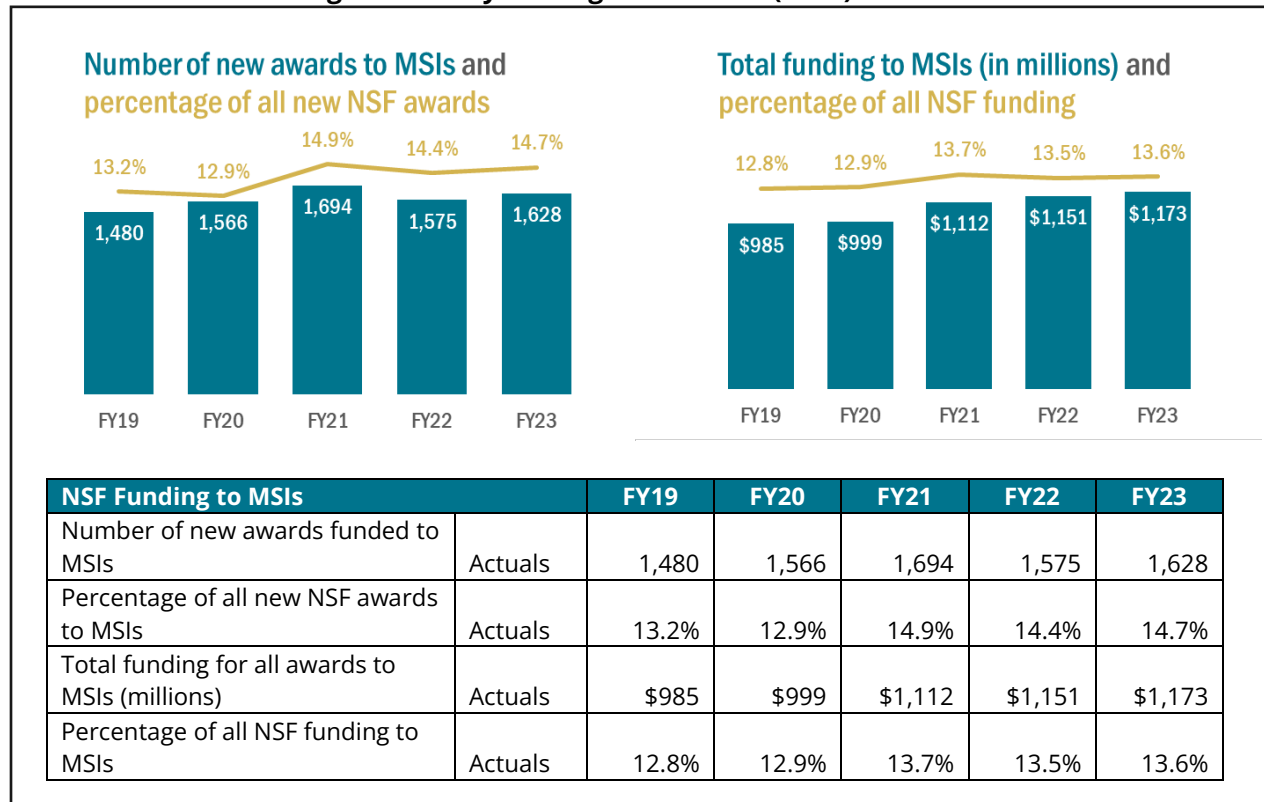
<sup>15</sup> The Annual Evaluation and Evidence Plan is available at <https://new.nsf.gov/od/oia/eac/evaluation-planning>.

**Other Information and Context related to Strategic Objective 1.1**

The information presented in the charts and tables below provides useful context for this objective and its emphasis on addressing underrepresentation in STEM and expanding the geography of innovation.

NSF Funding to Minority-Serving Institutions: Exhibit 1.1c includes the number of, and total funding for, new awards to minority-serving institutions (MSIs).<sup>16</sup> MSIs make considerable contributions to educating and training science leaders, contributing to U.S. economic growth and competitiveness. NSF tracks MSI support to monitor the impacts of the APG and many Broadening Participation programs.<sup>17</sup>

**Exhibit 1.1c. NSF Funding to Minority Serving Institutions (MSIs)<sup>18</sup>**



<sup>16</sup> MSIs include the following institution types: Disabled Serving, High African American Enrollment, Historically Black Colleges and Universities, High American Indian Serving, Native Alaskan Serving, Native Hawaiian Serving, Pacific Islander, Tribal Colleges, Majority Minority Serving, and Hispanic Serving.

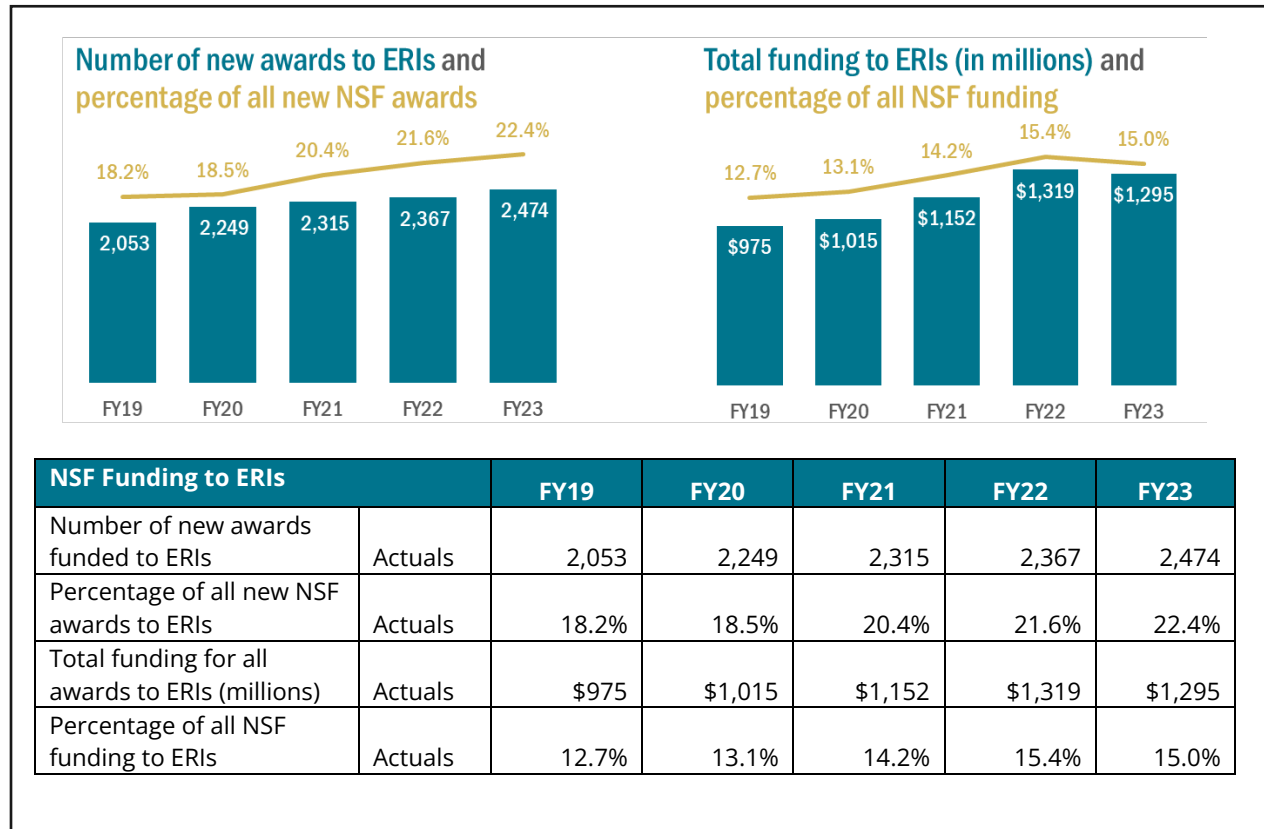
<sup>17</sup> Broadening Participation at NSF includes a portfolio of programs solely focused or with an emphasis on increasing participation from individuals from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs. Information on these programs is available at: [www.nsf.gov/od/broadeningparticipation/bp\\_portfolio\\_dynamic.jsp](http://www.nsf.gov/od/broadeningparticipation/bp_portfolio_dynamic.jsp).

<sup>18</sup> Results for all years were generated using the MSI filter for the NSF by the Numbers dashboard as of February 3, 2024. The dashboard may be accessed at <https://tableau.external.nsf.gov/views/NSFbyNumbers/Trends>. MSI data for all years are based on the institution’s status in 2021, per Department of Education survey data.



NSF Funding to Emerging Research Institutions: [New Indicator] Exhibit 1.1d displays the number of, and total funding amounts for, new awards funded to institutions designated as Emerging Research Institutions. These are important indicators for gauging NSF’s efforts to “create opportunities everywhere,” though new activities such as GRANTED,<sup>19</sup> which focuses on addressing systemic barriers within the nation’s research enterprise by improving research support and service capacity at emerging, developing and underserved research institutions, as well as other ongoing programs and activities devoted to broadening participation.

**Exhibit 1.1d. NSF Funding to Emerging Research Institutions (ERIs)<sup>20</sup>**

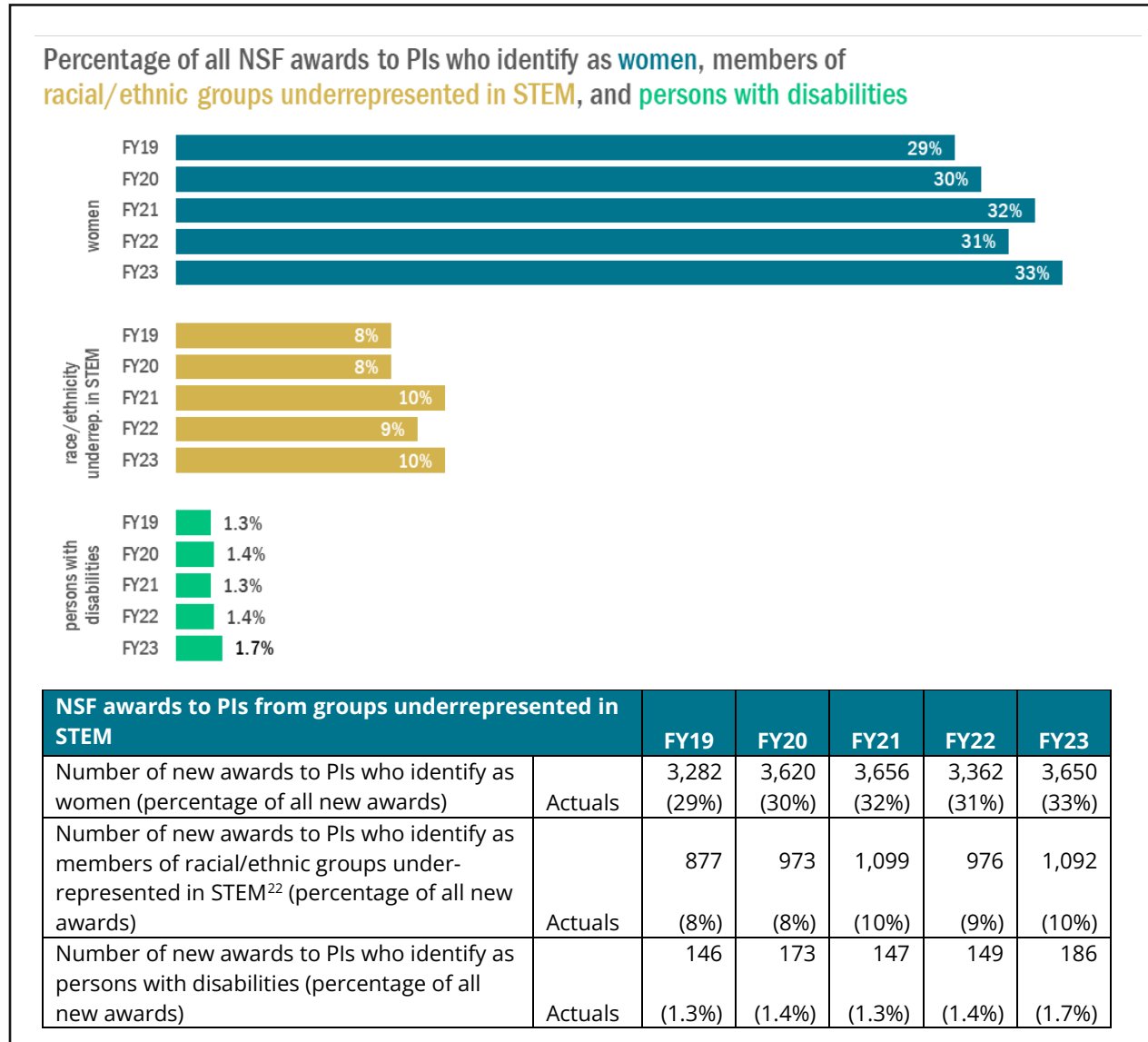


<sup>19</sup> GRANTED stands for Growing Research Access for Nationally Transformative Equity and Diversity. Further information is available at: <https://new.nsf.gov/funding/initiatives/broadening-participation/granted>.

<sup>20</sup> Section 10002 of the CHIPS and Science Act of 2022 defines an Emerging Research Institution as an institution of higher education with an established undergraduate or graduate program that has less than \$50,000,000 in Federal research expenditures. The text of the CHIPS and Science Act is available at [www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf](http://www.congress.gov/117/plaws/publ167/PLAW-117publ167.pdf).

NSF Funding to Principal Investigators from Groups Underrepresented in STEM: NSF's APG is to increase the number and proportion of proposals with principal investigators from groups underrepresented in STEM and from emerging research institutions. The number of awards to principal investigators from groups underrepresented in STEM is an important indicator that NSF's efforts to increase proposal rates are yielding increased investments in underserved communities.

**Exhibit 1.1e: NSF Awards to Principal Investigators (PIs) from Groups Underrepresented in STEM<sup>21</sup>**



<sup>21</sup> Data pulled from APG dashboard on 11/2/2023.

<sup>22</sup> Racial/ethnic groups underrepresented in STEM include African American/Black, American Indian/Alaska Native, Hispanic/Latino, and Native Hawaiian/Pacific Islander.

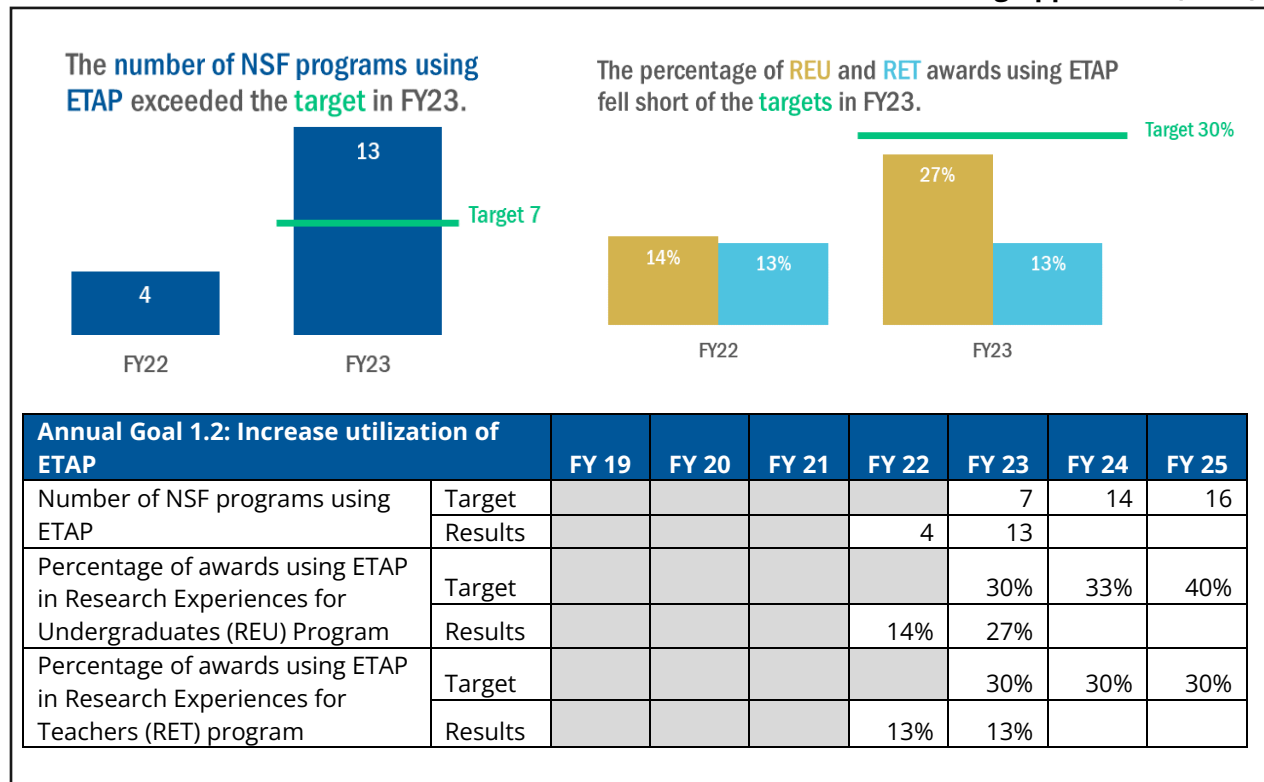
**Strategic Objective 1.2: Unleash STEM talent for America. Grow a diverse STEM workforce to advance the progress of science and technology.**

**Annual Goal 1.2: Increase utilization of the Education and Training Application (ETAP) [Revised FY 2024 targets]**

Goal Statement: Increase both (1) the number of programs leveraging NSF’s Education and Training Application (ETAP) to connect individuals (undergraduate, graduates, teachers) with NSF educational opportunities, and (2) the percentage of awards within targeted programs.<sup>23</sup>

About this Goal: Greater use of ETAP will improve NSF’s data on participants in NSF-funded education and training programs, improving the agency’s ability to make informed program and policy decisions related to Strategic Objective 1.2. By providing a secure online application platform for NSF awards to recruit STEM learners, ETAP collects applicant level information directly from individuals interested in NSF-funded education and training opportunities, such as research experiences, scholarships, and fellowships. As ETAP usage expands, this centralized online infrastructure will allow NSF to have more comprehensive and detailed information. This includes data on the characteristics of individuals participating in training activities supported by NSF programs, as well as those who apply but are not selected. Such information enables NSF to understand each program’s reach and to conduct evaluations with increasing levels of rigor.

**Exhibit 1.2a. Annual Goal: Increase utilization of the Education and Training Application (ETAP)**



<sup>23</sup> More information on ETAP can be found at <https://etap.nsf.gov>.

Discussion of FY 2023 Result: NSF achieved one of three targets for this performance goal. The number of programs using ETAP reached 13, exceeding the target of seven. This success can be attributed to effective outreach and engagement strategies, including informative webinars and the integration of user feedback into ETAP improvements.

Explanation of Missed Target: The percentage of awards using ETAP fell short of the 30 percent target for both undergraduates and teacher-focused programs. This may be due to a combination of factors, including the mostly voluntary nature of ETAP adoption and potential barriers to change in existing application processes. In response, NSF plans to increase targeted communication efforts, and offer more comprehensive training and support for principal investigators. These steps are intended to address identified challenges and encourage broader utilization in the upcoming fiscal year.

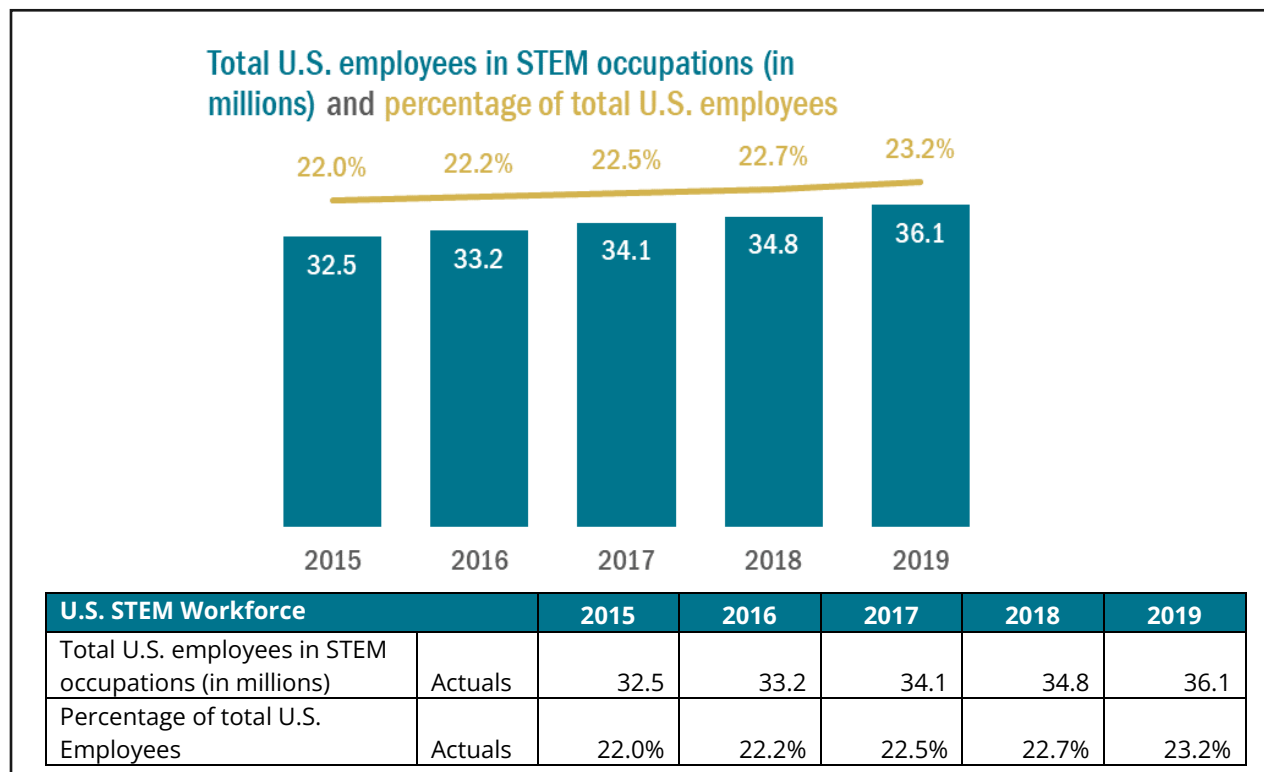
Discussion of FY 2024 and 2025 Targets: NSF will continue efforts to scale up dissemination of ETAP to onboard more programs and encourage more users into ETAP. To date, the NSF ETAP system has been largely used by the Research Experiences for Teachers (RET) and Research Experiences for Undergraduates (REU) programs with most NSF divisions encouraging (though not requiring) its use for these programs. Goals for these programs have been adjusted from prior years to reflect FY 2023 results (13 programs using ETAP, 26 percent of REU awards, 12 percent of RET awards) and a voluntary approach to system adoption. NSF is also expanding the use of ETAP to a broader set of NSF-funded opportunities, including fellowships and scholarships. This expansion also targets a wider audience, such as postbaccalaureate and graduate students, with plans to onboard new programs into ETAP.

**Other Information and Context related to Strategic Objective 1.2**

Although NSF is only one of many federal, non-profit, and private entities involved in growing the STEM workforce, knowledge of general workforce and demographic trends among those in STEM occupations informs the strategies NSF deploys in this area. The National Center for Science and Engineering Statistics (NCSES), a principal statistical agency within NSF, collects, analyzes, and disseminates objective information on the U.S. science and engineering enterprise, including its workforce. NCSES reports highlight data that are particularly relevant to this Strategic Objective and its emphasis on growing a diverse STEM workforce.

Exhibit 1.2b provides overall figures for the U.S. STEM Workforce and shows it has grown over the past several years both in total and as a share of overall U.S. employment. Updated data will be available in May 2024.

**Exhibit 1.2b: U.S. STEM Workforce<sup>24</sup>**

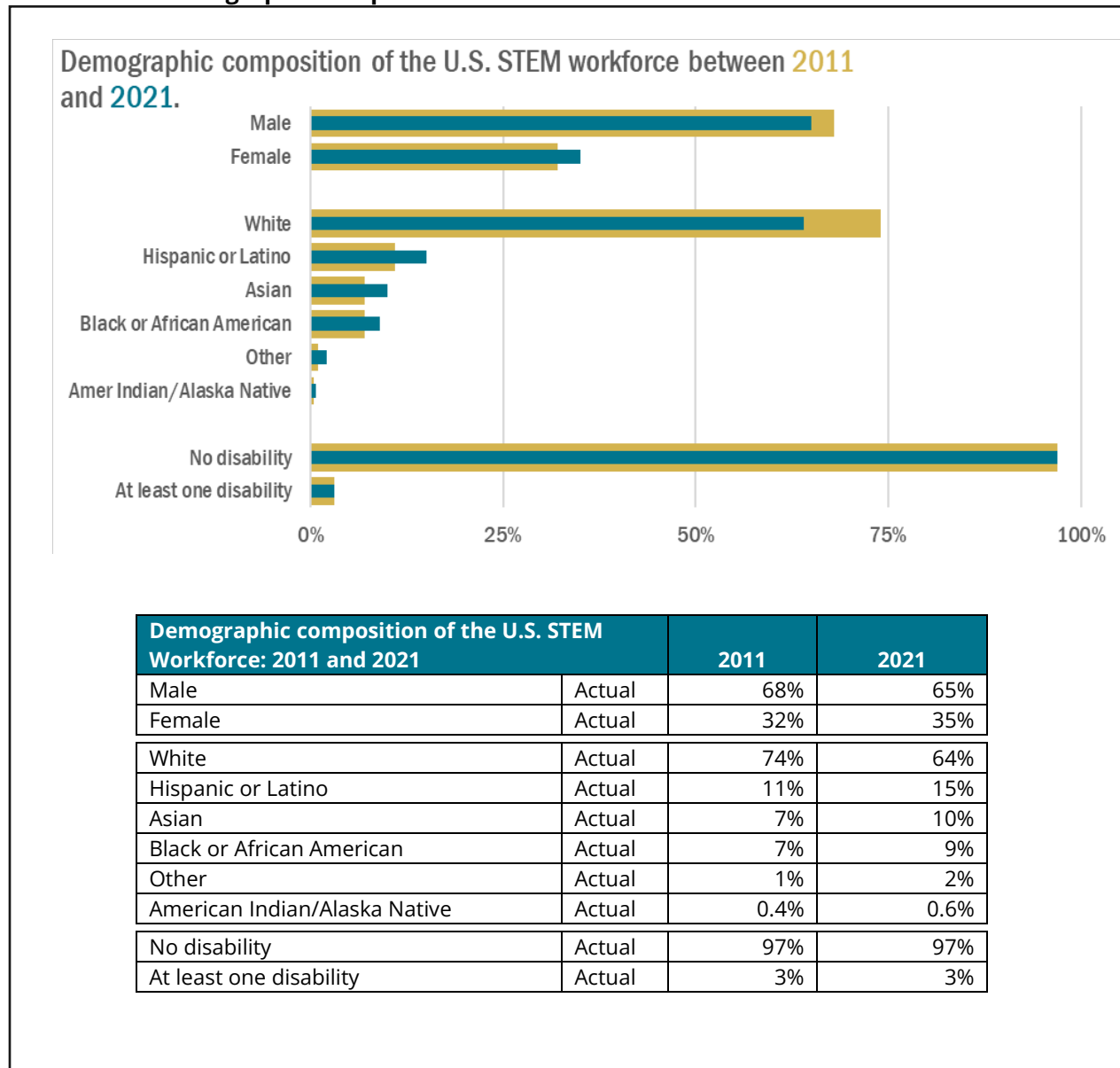


U.S. STEM Workforce		2015	2016	2017	2018	2019
Total U.S. employees in STEM occupations (in millions)	Actuals	32.5	33.2	34.1	34.8	36.1
Percentage of total U.S. Employees	Actuals	22.0%	22.2%	22.5%	22.7%	23.2%

<sup>24</sup> National Center for Science and Engineering Statistics, *The STEM Labor Force of Today: Scientists, Engineers, and Skilled Technical Workers*, 2021. Table SBLR-2, "Employed adults in the United States, by workforce type: 2010-19." The report is available at <https://ncses.nsf.gov/pubs/nsb20212/executive-summary>

Exhibit 1.2c displays data on the participation in the U.S. STEM Workforce by demographic group. These data were published in the January 2023 report, *Diversity and STEM: Women, Minorities, and Persons with Disabilities*.<sup>24</sup> Based on that report, women made up about one-third of the U.S. STEM workforce in 2021, less than their representation in the employed U.S. population (48 percent). In addition, Blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives collectively represented 24 percent of the U.S. STEM workforce in 2021, though 30 percent of the employed U.S. population.

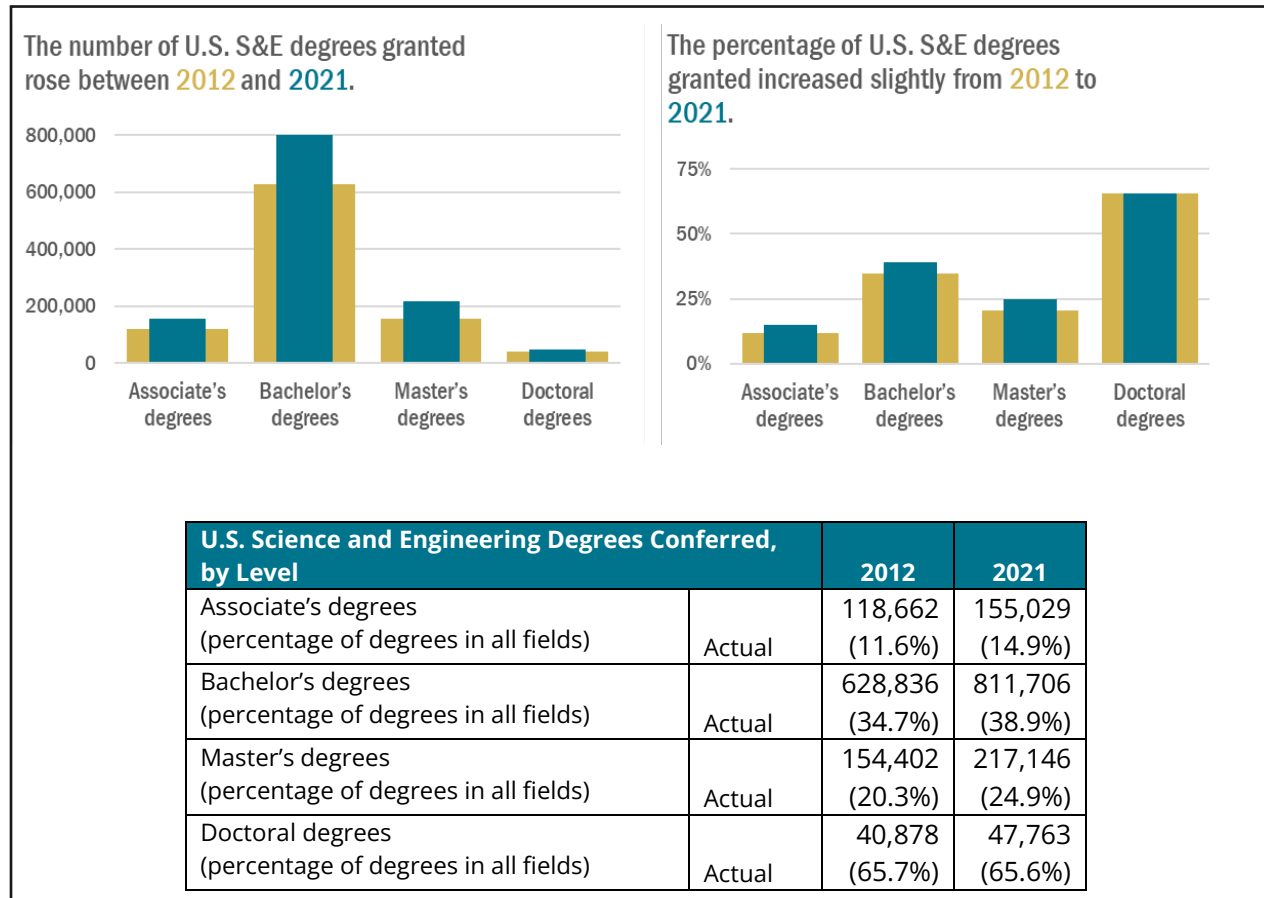
**Exhibit 1.2c. Demographic composition of the U.S. STEM workforce<sup>25</sup>**



<sup>25</sup> National Center for Science and Engineering Statistics, *Diversity and STEM: Women, Minorities, and Persons with Disabilities*, 2023. Figure 2-2, “STEM workforce ages 18-74, by sex, ethnicity, race, and disability status: 2011 and 2021.” The report is available at <https://ncses.nsf.gov/pubs/nsf23315/report/the-stem-workforce#growth-in-the-stem-workforce-between-2011-and-2021>.

Degrees granted in science and engineering fields in the U.S. have continued to increase, both in overall numbers and as a percentage of overall degrees granted, as seen in Exhibit 1.2d.

**Exhibit 1.2d. U.S. Science and Engineering (S&E) Degrees Conferred<sup>26</sup>**



<sup>26</sup> National Science Board, National Science Foundation. 2023. Higher Education in Science and Engineering. Science and Engineering Indicators 2022. Figures HED-11 and HED 12. NSB-2023-32. Alexandria, VA. Available at <https://nces.nsf.gov/pubs/nsb202332/>.

## Strategic Goal 2, Discover: Create new knowledge about our universe, our world, and ourselves.

### Strategic Objective 2.1: Advance the frontiers of research. Accelerate discovery through strategic investments in ideas, people, and infrastructure.

#### **Annual Goal 2.1: Ensure that Major Facility Infrastructure Investments are on Track**

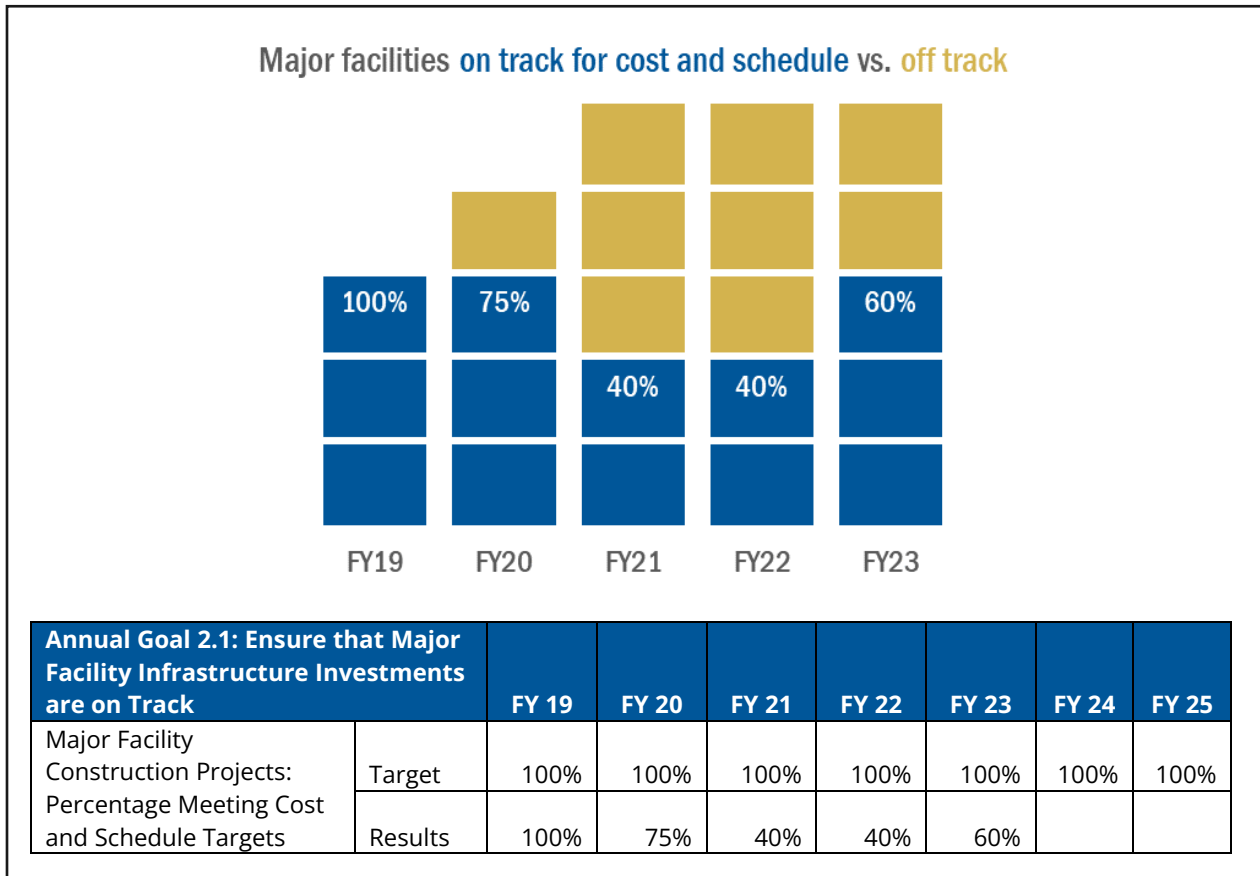
Goal Statement: Ensure program integrity and responsible stewardship of Major Facility investments that have a Total Project Cost (TPC) greater than \$100 million. Keep negative cost and schedule variance at or below 10 percent for all (100 percent) of the Major Facility projects in the Construction Stage that are between 10 and 90 percent complete.

About this Goal: Modern and effective research infrastructure is critical to maintaining U.S. international leadership in science and engineering. NSF's major multi-user research facilities (Major Facilities) are transformative in nature, with the potential to shift the paradigm in scientific understanding. Realizing the benefits of new Major Facility investments is based on ensuring their timely completion within budget and planned scope. The use of Earned Value Management (EVM) is required for all Major Facilities in the Construction Stage. Cost and schedule variance are key EVM indicators of whether a project is on track relative to the project plan. For Major Facilities, NSF performs oversight activities of the recipient's EVM System that ensure reliability of EVM metrics and reinforces the importance of recipient project management and accountability. Therefore, these metrics provide an indication of the effectiveness of NSF's oversight of projects in construction. This goal only considers the Major Facility projects under construction that are between 10 and 90 percent complete. Projects outside the range of 10 and 90 percent complete are not included because EVM data are less meaningful at early and late stages of the project.

Discussion of FY 2023 Result and Explanation of Missed Target: Beginning in FY 2020, the COVID-19 pandemic had a negative impact on projects in construction. In FY 2023, five projects were in the Construction Stage and therefore tracked against this goal: the Vera C. Rubin Observatory (Rubin), Regional Class Research Vessels (RCRV), Antarctic Infrastructure Modernization for Science (AIMS), Compact Muon Solenoid (CMS), and A Toroidal LHC Apparatus (ATLAS). As of August 30, 2023, all five reported being on track for cost performance, and three (Rubin, AIMS, and ATLAS) are on track for schedule performance. CMS is actively engaged in completing its re-baseline efforts to account for delays attributed to the COVID-19 pandemic, while the schedule for RCRV is undergoing revision in response to the ongoing effects of Hurricane Ida on the local labor market. NSF is closely monitoring these situations. However, given that the suboptimal performance in these metrics was influenced by external events beyond the control of the projects or NSF (namely, the COVID-19 pandemic and the impact of a major hurricane), no corrective actions have been deemed necessary.



**Exhibit 2.1. Annual Goal: Ensure that Major Facility Infrastructure Investments are on Track**



Discussion of FY 2024 and FY 2025 Targets: As in previous years, NSF's objective remains to maintain negative cost and schedule variance at or below 10 percent for all Major Facilities in the Construction Stage that are between 10 and 90 percent complete. NSF is conducting re-baselining and a single point adjustment reset of the projects that are currently behind schedule from COVID-19 impacts and addressing the schedule in the proposed revision to plans based on continued impacts of Hurricane Ida on the local labor market. These changes should result in a more realistic schedule in FY 2024 and beyond.

Moreover, moving forward, Rubin will no longer utilize EVM data to measure project performance, given that the project has now surpassed 90 percent completion. Instead, project performance will be tracked against milestones.

## **Other Information and Context related to Strategic Objective 2.1**

NSF's Strategic Plan frames the motivation for this goal and objective as follows: "Fundamental research is a capital investment for the nation. Basic research leads to new knowledge. It provides scientific capital. It creates the fund from which the practical applications of knowledge must be drawn. New products and new processes do not appear full-grown. They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science."

NSF is currently engaged in the development of a logic model for this objective. This project will support the identification of additional goals and indicators to illustrate NSF's contribution to the funding of scientific capital and more fully reflect investment in people, places, and ideas. New goals and indicators may be piloted internally and then included in future drafts of the annual performance report.

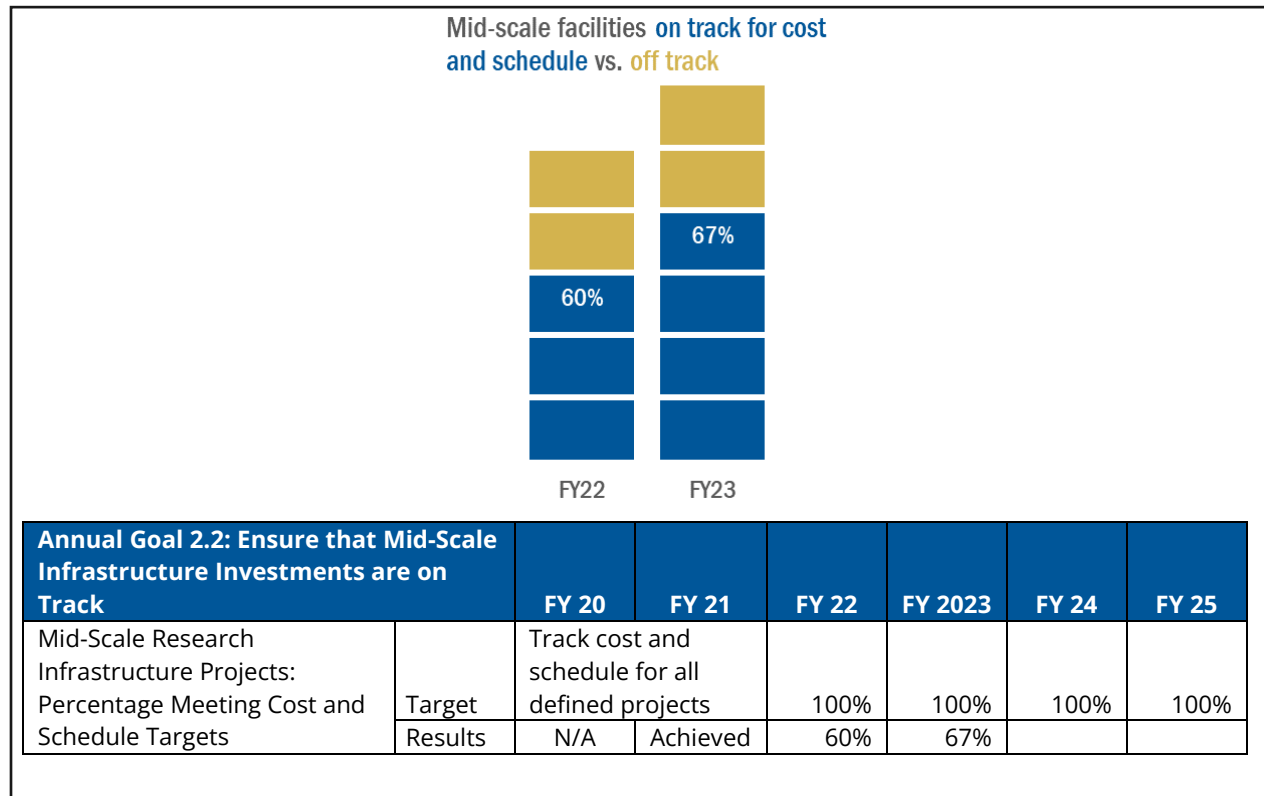
**Strategic Objective 2.2: Enhance research capability. Advance the state of the art in research practice.**

**Annual Goal 2.2. Ensure that Mid-Scale Infrastructure Investments are on Track**

Goal Statement: Track cost and schedule performance during implementation for Mid-scale Research Infrastructure projects that have a Total Project Cost (TPC) above \$20.0 million, are between 10 and 90 percent complete and are using Earned Value Management (EVM) principles.

About this Goal: Modern and effective research infrastructure is critical to maintaining U.S. international leadership in science and engineering. NSF’s Mid-Scale Research Infrastructure programs are intended to meet the research community’s needs for modern research infrastructure at a scale that is otherwise difficult for individual institutions to acquire. The objectives are to transform scientific and engineering research fields with new infrastructure while simultaneously training early-career researchers in the development, design, implementation, and use of cutting-edge infrastructure. Projects in this portfolio have costs that fall below the \$100 million threshold for a Major Facility project but exceed \$4.0 million.<sup>27</sup> Use of EVM is optional on Mid-scale Research Infrastructure projects and generally requires more scaling and tailoring when used. For mid-scale projects that cost more than \$20.0 million to implement, tracking project performance through EVM metrics is one method for ensuring proper NSF oversight and stewardship of Federal funds, and nine of the 11 mid-scale projects with costs above \$20 million are using EVM.

**Exhibit 2.2. Annual Goal: Ensure that Mid-Scale Infrastructure Investments are on Track**



<sup>27</sup> Although Mid-Scale Research Infrastructure projects begin at the threshold of \$4 million, this goal tracks those most likely to propose using Earned Value Management principles, with total project costs of \$20 million or more.

Discussion of FY 2023 Result: In FY 2023, the performance of nine Mid-scale Research Infrastructure projects with total project costs greater than \$20 million was tracked using EVM. Six of the nine projects were between 10 and 90 percent complete and therefore constitute the FY 2023 portfolio for this target: the Ice Cube Neutrino Observatory Upgrade (ICNO-U), the Laser Interferometer Gravitational-Wave Observatory A+ Upgrade (LIGO A+), the High Magnetic Field Beamline (HMF), Network for Advanced NMR (NAN), the Grid-Connected Testing Infrastructure for Networked Control of Distributed Energy Resources (DERConnect) and Research Data Ecosystem (RDE). Five out of six projects reported being on track for cost performance and four (LIGO A+, NAN, DERConnect, and RDE) are on track for schedule performance.

Explanation of Missed Target: ICNO-U is working to be on track for cost performance. ICNO-U is experiencing schedule delays due to its transition to a new project management system, and awaits full rebaseline implementation. The delay in HMF is attributable to equipment supply chain risks, which are currently being addressed. The understanding of the situation is thorough, and mitigation plans are actively underway. These risks are anticipated to return to acceptable levels in the upcoming months, potentially enabling the projects to attain target performance levels in FY 2024 and 2025.

Discussion of FY 2024 and FY 2025 Targets: Consistent with the approach in FY 2023, NSF aims to keep negative cost and schedule variance at or below 10 percent for Mid-scale Research Infrastructure projects that utilize EVM and are between 10 and 90 percent complete.

### ***Evaluation Highlight: Convergence Accelerator***

In April 2023, NSF released a descriptive study of its Convergence Accelerator (CA) program that seeks to accelerate the transition of use-inspired research into practice and build capacity to pursue exploratory, high-risk research. The study looked at key characteristics of principal investigators and their teams through the stages of the program from 2019 to 2021. The findings underscored the need to develop further measures for the CA program in the areas of team characteristics, collaboration, convergence, and dynamics; partnerships and engagement; organizational sustainability; product development; and experiences and satisfaction with the CA program. The CA program has developed five complementary surveys to gather relevant data on these concepts from teams at multiple project stages, and these results will inform future program evaluations and evolution. For further details, see the Annual Evaluation and Evidence Plan.<sup>28</sup>

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<sup>28</sup> Annual Evaluation and Evidence Plan available at <https://nsf.gov-resources.nsf.gov/2023-04/CASR-DC-2019-2021-508c.pdf>

### **Strategic Goal 3, Impact: Benefit society by translating knowledge into solutions.**

#### **Strategic Objective 3.1: Deliver benefits from research. Advance research and accelerate innovation that addresses societal challenges.**

*In its FY 2023 Strategic Review, NSF ranked Objective 3.1 as showing Noteworthy Progress. Major factors include the actions taken to implement the CHIPS and Science Act and awarding the first round of Regional Innovation Engines.*

#### **Annual Goal 3.1: Grow Partnerships**

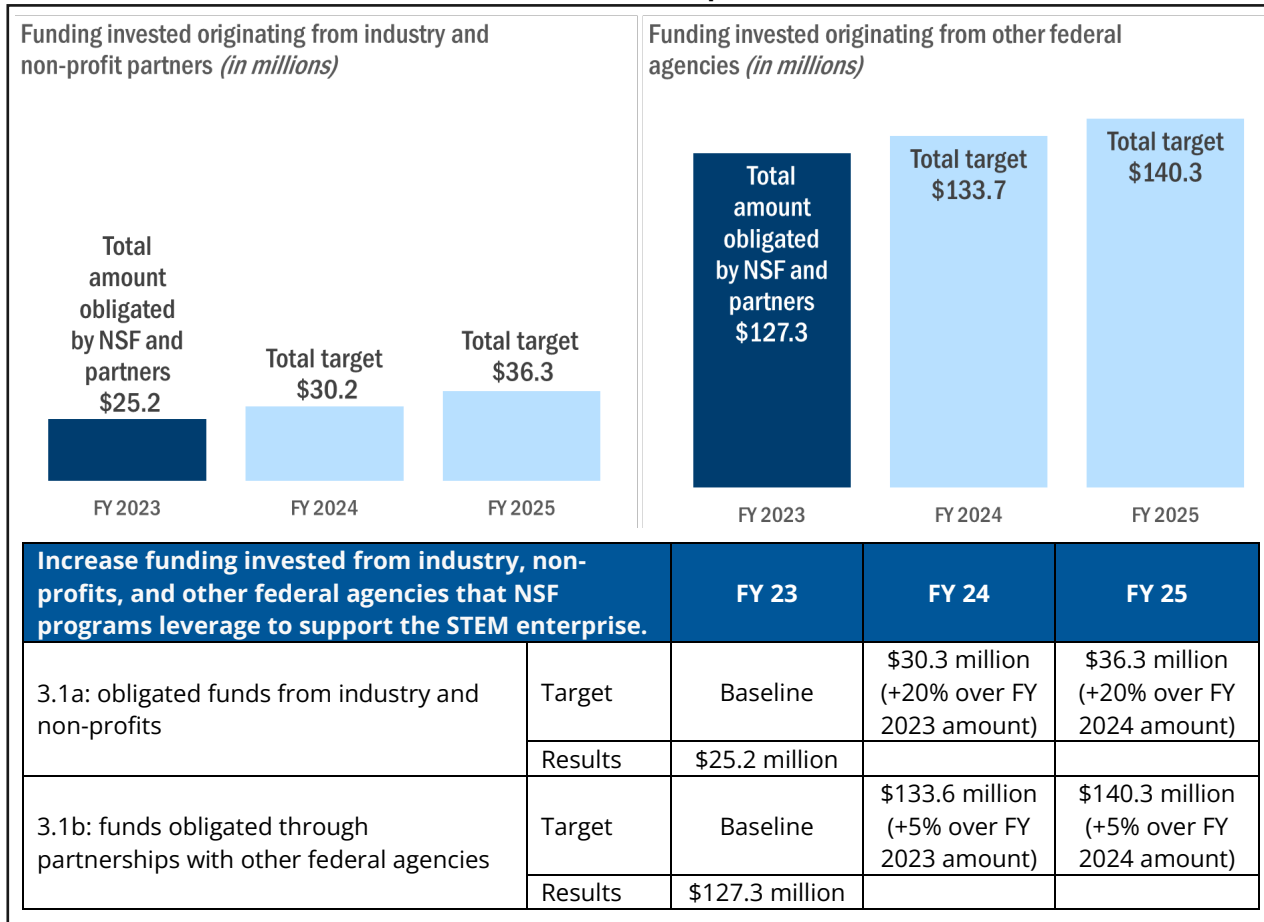
##### Goal Statements:

- 3.1a: Increase the funding invested from industry and non-profits that NSF programs leverage to support the science, technology, engineering, and mathematics (STEM) enterprise, by 20 percent over the prior fiscal year.
- 3.1b: Increase the funding invested from other federal agencies that NSF programs leverage to support the science, technology, engineering, and mathematics (STEM) enterprise, by 5 percent over the prior fiscal year.

About this Goal: Partnerships are essential to growing research and innovation ecosystems across the country. They have the potential to further the geography as well as the demography of innovation, key priorities for NSF, the National Science Board, and the U.S. STEM community as a whole. This is a new goal to support the FY 2022-2026 Strategic Plan, and measures NSF's ability to leverage funding from partnerships. It builds on prior efforts including the FY 2020-2021 Agency Priority Goal, "Strategic Engagement in Partnerships," which sought to enhance the impact of NSF's investments through engaging in public and private partnerships, as well as the FY 2018-2019 Agency Priority Goal to, "Expand Public and Private Partnerships." The culmination of these Agency Priority Goals was an NSF-wide partnerships strategy, including outreach, process improvement, and communications aspects.

The Partnership-related Agency Priority Goals measured numbers of partnerships. Due to internal system improvements made as a result of those Agency Priority Goals, NSF is now able to track funding invested from external sources as a performance measure. NSF continues to track numbers of partnerships as a contextual indicator (see "Other Information and Context" section below). This new iteration of the goal focuses on partnerships that are shaping research directions, cultivating co-design and co-creation of research-based solutions, and accelerating piloting, prototyping, and eventual translation of knowledge gained through NSF's research portfolio to address the Nation's most pressing technological, societal, and economic needs.

**Exhibits 3.1a and 3.1b: Annual Goal: Grow Partnerships**



Discussion of FY 2023 Results: NSF defined and baselined this measure in FY 2023. The unit of analysis for measure 3.1a is obligations of external funding related to a formalized direct partnership between NSF and an industry or nonprofit organization. The unit of analysis for measure 3.1b is obligations of external funding related to a formalized direct partnership between NSF and another federal agency<sup>29</sup>. Obligations made by NSF and obligations made by the partner are counted. For 3.1a, NSF obligated \$23.9 million that had been received from industry and non-profit partners, and those partners obligated at least \$1.3 million directly to the awardees. For 3.1b, NSF obligated \$48.5 million that had been received from other federal partners, and other agencies themselves obligated at least \$78.8 million directly to the awardees.

Discussion of FY 2024 and FY 2025 Targets: The FY 2024 and FY 2025 targets were established following the completion of baselining in FY 2023. Funding resulting from partnerships with industry and non-profits have a growth target of 20 percent, and funding from other federal agencies has a target of 5 percent. Funds will be attributed to the year in which they are committed to specific NSF investments.

<sup>29</sup> “External” refers to funding from the partner entity (industry, nonprofit, and other government agency). A formalized direct partnership is one for which a written partnership agreement has been signed. The partnership agreement may take a variety of forms (e.g., Memoranda of Understanding [MOU], an Interagency Agreement [IAA], a partnership plan, or some other document), but it must be signed by both parties, and it must specify that funding will be provided by the partner.

**Other Information and Context related to Strategic Objective 3.1**

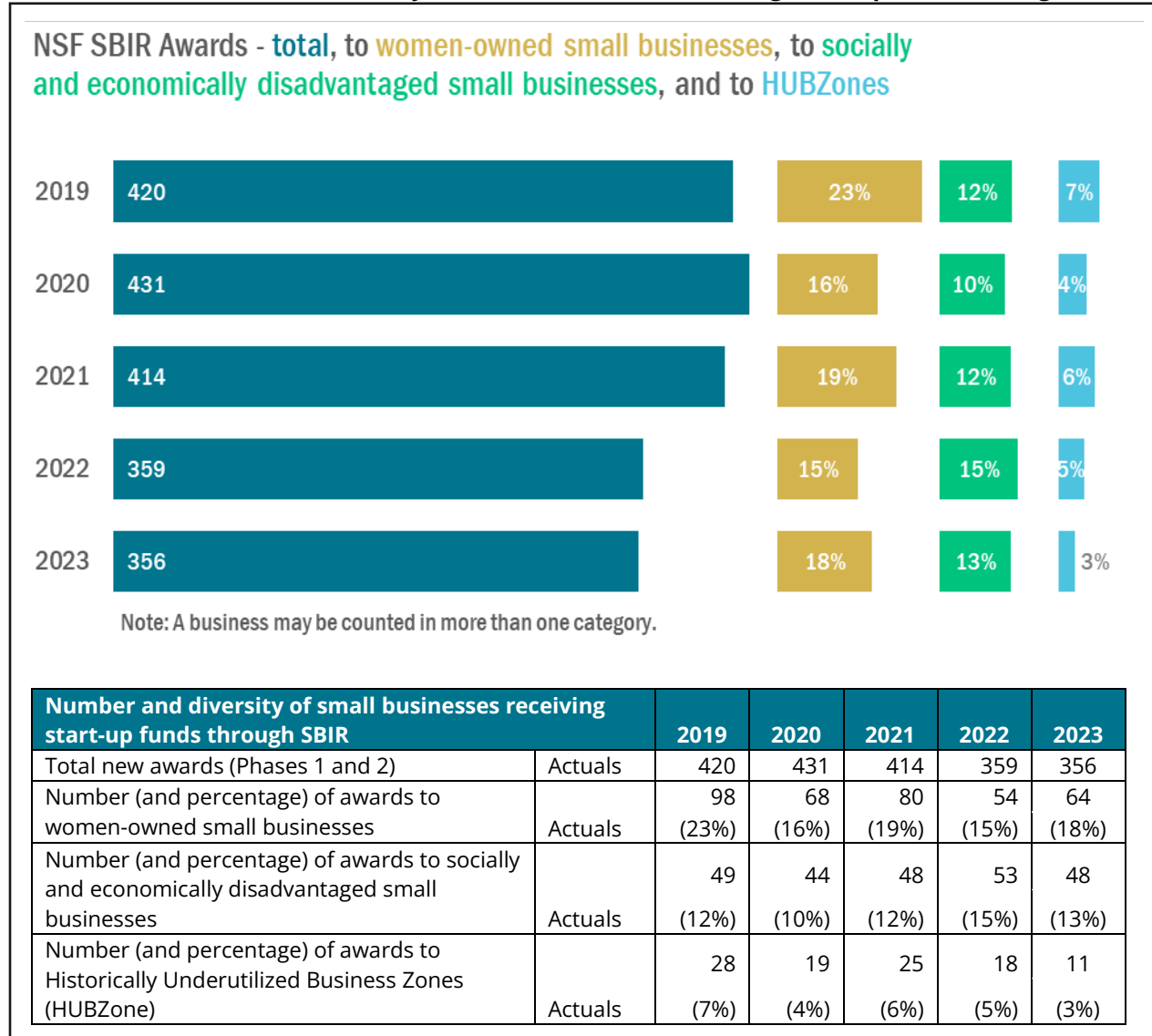
In addition to the indicators in this section, NSF is currently engaged in the development of a logic model for this objective. This project will support the identification of additional goals and indicators to illustrate NSF's contribution to the funding of scientific capital and more fully reflect investment in people, places, and ideas. New goals and indicators may be piloted internally and then included in future drafts of the annual performance report.

Partners and Partnerships Counts: In addition to strategically increasing the funding NSF leverages through its partnerships, the agency monitors the number of direct partnerships in which its directorates and offices engage and the number of unique partners. In FY 2023, NSF entered into 82 new direct partnerships spanning 52 partners, an increase from FY 2022 actuals of 57 new partnerships with 31 partners. For this metric, new direct partnerships are defined as formal agreements between NSF and other external organizations (federal agency, industry, non-profit, international) resulting in a solicitation, Dear Colleague Letter, or other funding opportunity issued in that fiscal year. The number of partners reported for each fiscal year is therefore a count of the distinct, external organizations associated with these new direct partnerships.

Accelerate innovation that addresses societal challenges: Strategic Objective 3.1 also reflects NSF's commitment to supporting use-inspired research and the translation of research results to the market and society. This strengthens the intense interplay between foundational and use-inspired work, enhancing the full cycle of discovery and innovation. NSF's Strategic Plan emphasizes the importance of engaged research as part of achieving Objective 3.1 to, "Advance research and accelerate innovation that addresses societal challenges." Specifically, the plan discusses, "supporting mechanisms and training for researchers in techniques to promote the beneficial uptake of the results of their use-inspired research; and diversifying the research workforce to bring a broader range of perspectives to the generation of research questions."

Small Business Innovation Research (SBIR): NSF has long recognized the importance of providing support to small businesses working to translate research findings into technological innovations and established the first SBIR program in 1977. Today, NSF is one of 11 federal agencies that provides research and development funding to small businesses through SBIR. The SBIR program at NSF exists to transform scientific and engineering discoveries into products and services with commercial and societal impact.

**Exhibit 3.1c. Number and diversity of small businesses receiving start-up funds through SBIR<sup>30</sup>**



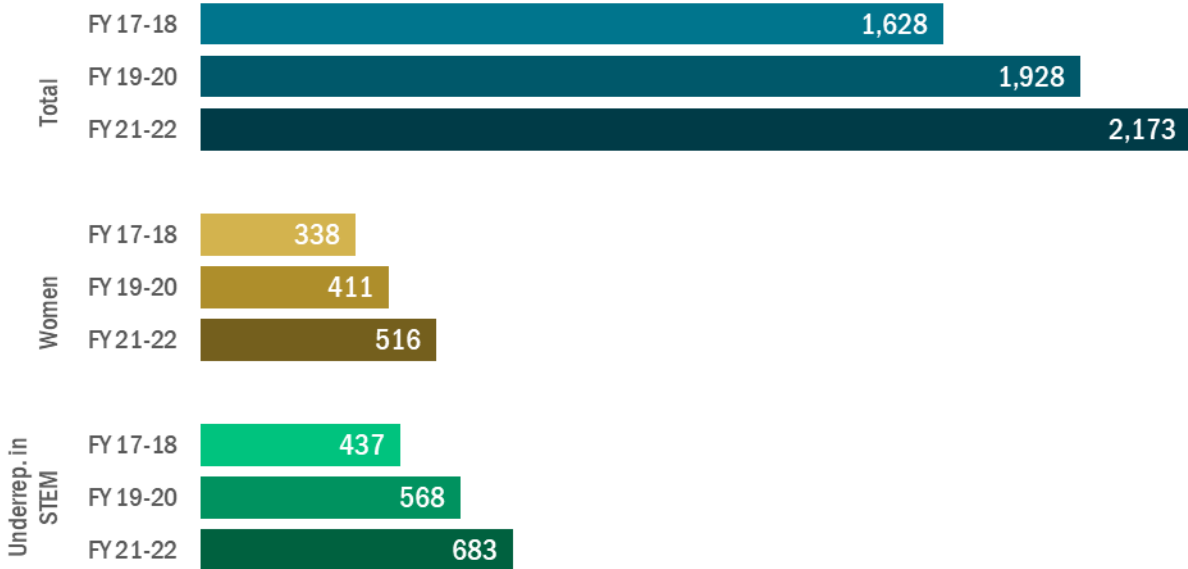
**NSF's I-Corps:** This program connects NSF-funded science and engineering research with the technological, entrepreneurial, and business communities, fostering a national innovation ecosystem that links scientific discovery with technology development, societal needs, and economic opportunities. Through I-Corps training, academic researchers can reduce the time needed to translate a promising idea from the laboratory to the marketplace or other relevant societal setting.

<sup>30</sup> Data for this metric can be found at <https://www.sbir.gov/sbirsearch/firm/all>



**Exhibit 3.1d. Number and diversity of entrepreneurs trained through I-Corps<sup>31</sup>**

The number of entrepreneurs trained through I-Corps, as well as the subset of them who are women or members of groups underrepresented in STEM, has steadily increased.



Number and diversity of entrepreneurs trained through I-Corps		FY 2017-2018	FY 2019-2020	FY 2021-2022
Total trained	Actuals	1,628	1,928	2,173
Number (and percentage) who identified as women	Actuals	338 (21%)	411 (21%)	516 (24%)
Number (and percentage) who identified as a member of a group underrepresented in STEM <sup>32</sup>	Actuals	437 (27%)	568 (30%)	683 (31%)

<sup>31</sup> Data for this metric are available on page 39 of the Appendix of the following report: [https://nsf.gov-resources.nsf.gov/2023-06/TIP\\_I-CorpsReport\\_2023\\_Final\\_6.21.2023.508.pdf](https://nsf.gov-resources.nsf.gov/2023-06/TIP_I-CorpsReport_2023_Final_6.21.2023.508.pdf)

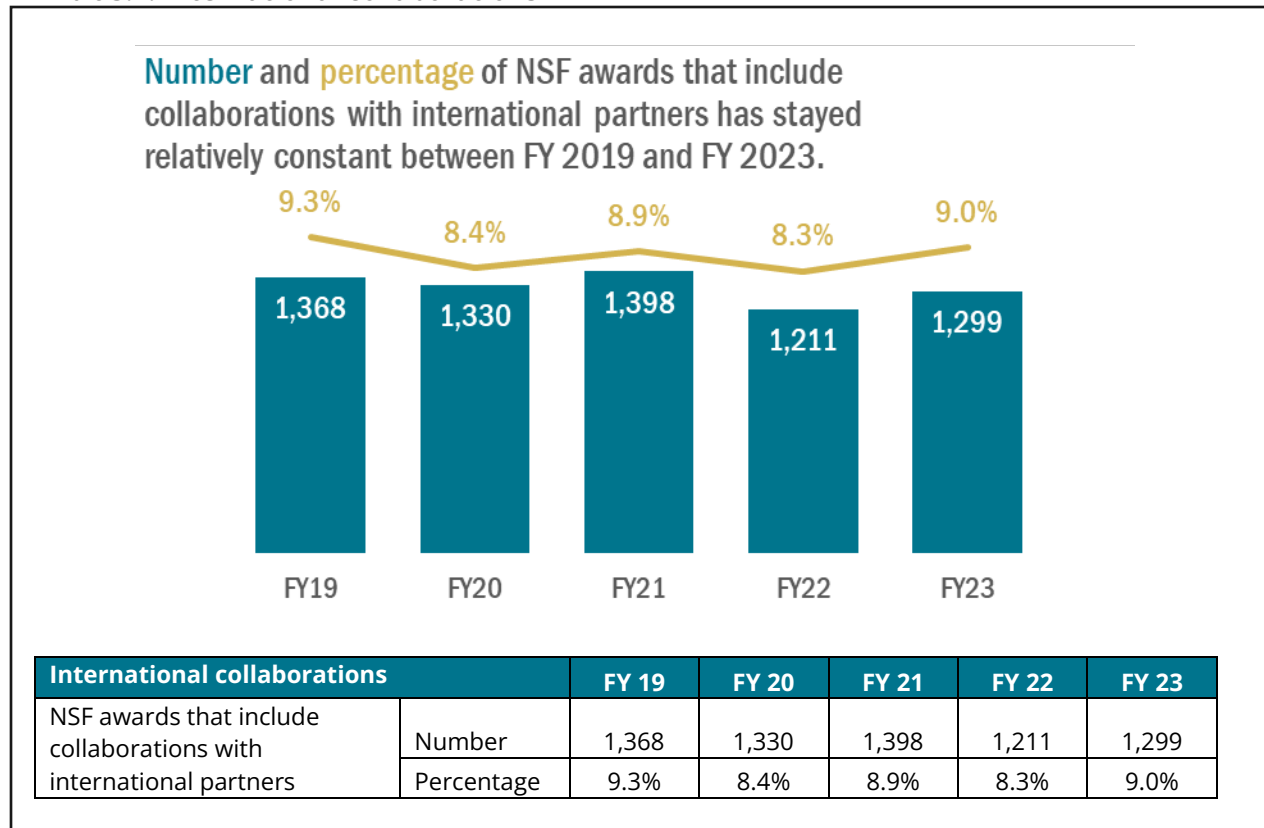
<sup>32</sup> Groups underrepresented in STEM include individuals who identify on their I-Corps project proposals as 1) women, 2) race as Black or African American, American Indian, Alaska Native, and/or Native Hawaiian or other Pacific Islander, 3) of Hispanic origin, and/or 4) having a disability.

**Strategic Objective 3.2: Lead globally. Cultivate a global science and engineering community based on shared values and strategic cooperation.**

**Information and Context related to Strategic Objective 3.2**

NSF’s commitment to leading globally reflects the critical importance of research and innovation as drivers of future growth. Through its programming, NSF facilitates international scientific collaborations on all seven continents and provides opportunities for researchers to enhance their work through international cooperation. Collaboration with international partners is defined by the inclusion of joint design or implementation of research with foreign entities or personnel, and/or the engaging of foreign entities or personnel in conducting research. Exhibit 3.2 presents data on NSF awards with international collaborations. This is one of several data points that contributes to an overall picture of NSF’s reach and success in global leadership of science and engineering.

**Exhibit 3.2. International collaborations**



**Strategic Goal 4, Excel: Excel at NSF operations and management.**

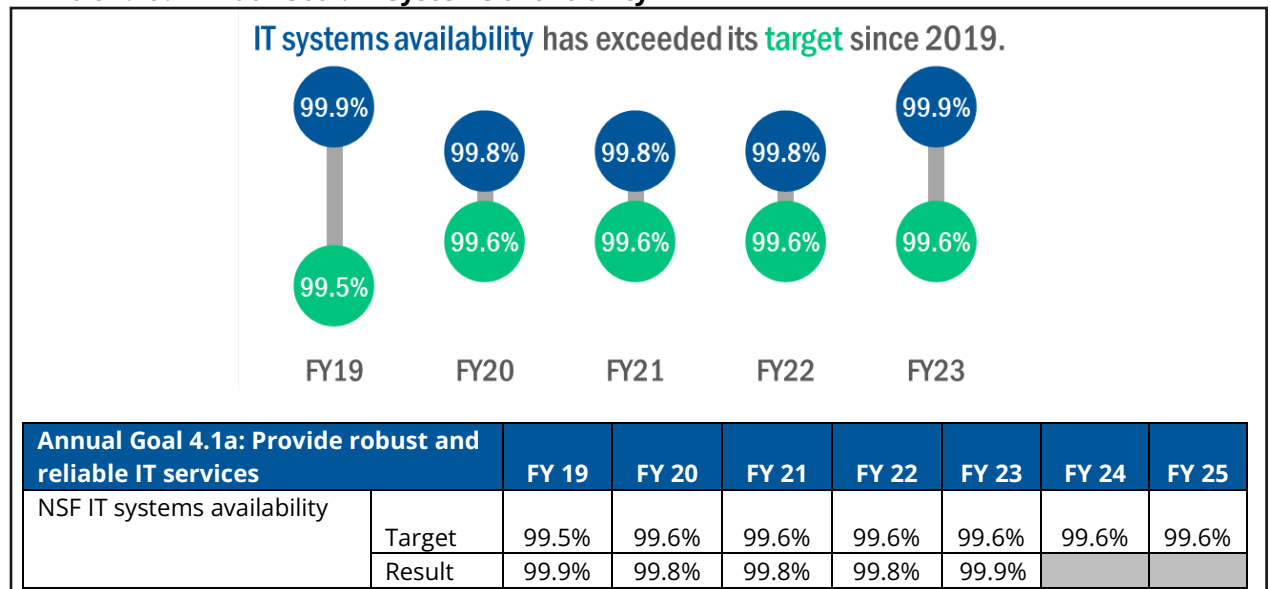
**Strategic Objective 4.1: Strengthen at speed and scale. Pursue innovative strategies to strengthen and expand the agency’s capacity and capabilities.**

*In its FY 2023 Strategic Review, NSF ranked Strategic Objective 4.1 as a Focus Area for Improvement. Factors informing this ranking include a Topical Strategic Review in 2023, which generated findings and recommendations for strengthening customer experience at NSF, and opportunities to better understand how generative artificial intelligence (AI) tools impact NSF operations and the research community.*

**Annual Goal 4.1a: Provide robust and reliable IT services**

Goal Statement: Ensure availability of IT resources for NSF staff and the broader research community.

**Exhibit 4.1a. Annual Goal: IT systems availability**



About this Goal: The availability of information technology (IT) systems is integral to delivering excellent, equitable, and secure Federal services and customer experience. NSF prioritizes the availability of its IT services, and coordinates downtime for critical maintenance and service releases to minimize disruption. This goal supports the President’s Management Agenda pillars of “Strengthening and empowering the Federal workforce” and “Delivering excellent, equitable, and secure Federal services and customer experience” by ensuring that critical information and IT systems are available to support staff and NSF awardees in their pursuit of NSF’s mission. Maintaining reliable, secure operations of NSF’s IT systems also supports the Foundation’s ability to strengthen at speed and scale and to expand the agency’s capacity and capabilities around functions where the use of IT is most critical.

This specific goal measures NSF’s success in keeping critical IT systems available. NSF’s goal is to meet or exceed 99.6 percent availability of systems, aside from a set number of hours of planned downtime per year for maintenance and upgrades. Unexpected downtime due to a system issue or incident will lead to reductions in NSF’s IT systems availability percentage.

**FY 2023 Result:** NSF exceeded the FY 2023 IT systems availability goal, achieving 99.9 percent as actual availability over the target of 99.6 percent within planned downtime of 469 hours. During FY 2023, NSF monitored IT systems availability daily, and worked to quickly identify, address, and remediate any incidents or issues to restore user access to IT systems and functions.

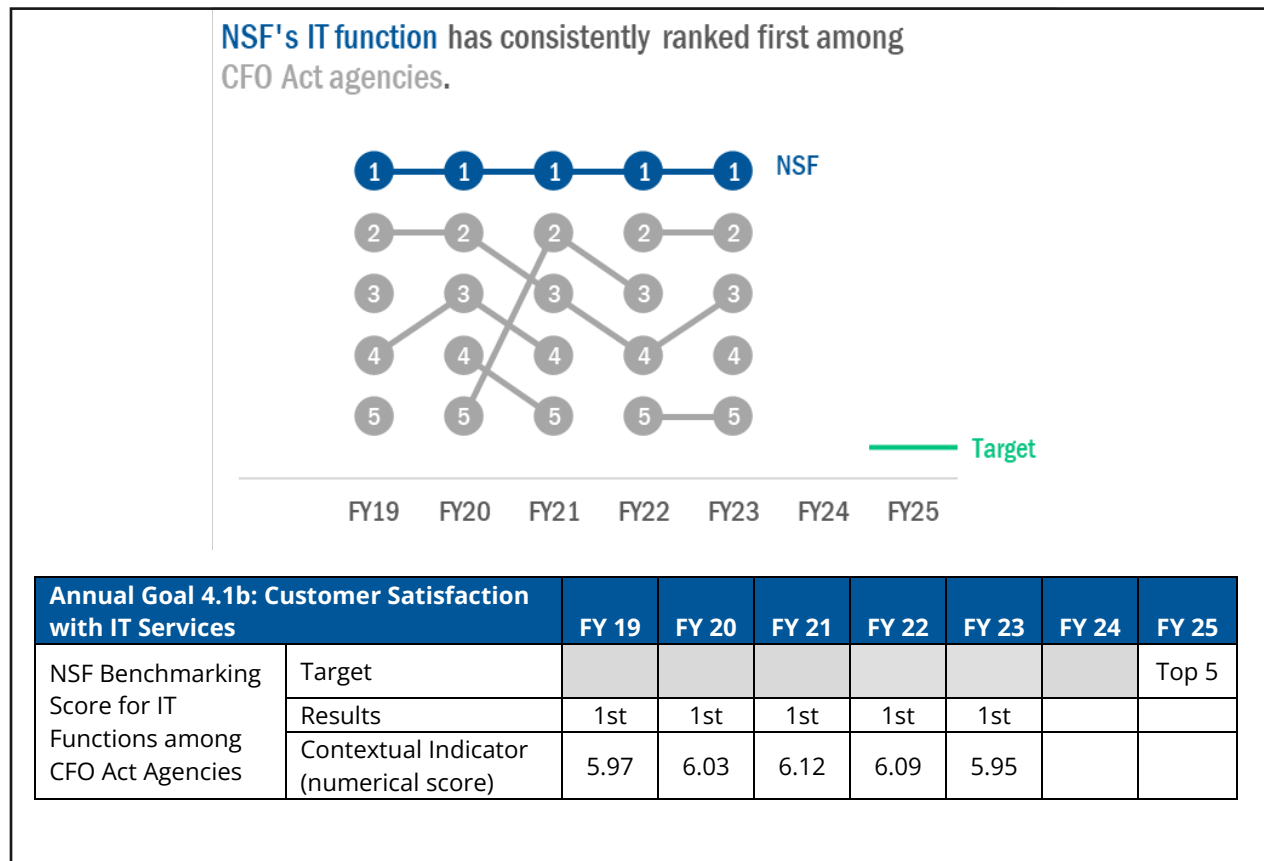
**Discussion of FY 2024 and 2025 Target:** Consistent with prior years, NSF aims to maintain or exceed 99.6 percent availability for IT systems, excluding planned downtime. Starting with FY 2024, NSF reduced the planned number of downtime hours from 469 hours to 375 hours. Dropping the overall downtime target will result in NSF reducing the time scheduled for system upgrades and planned maintenance from about 9 hours per week to approximately 7.2 hours per week. To ensure consistency with the new target, NSF will carefully plan scheduled downtime in FY 2024 and beyond.

**Annual Goal 4.1b: Internal customer satisfaction with IT services [New Goal for FY 2025]**

**Goal Statement 4.1b:** Rank among the top five Chief Financial Officers (CFO) Act agencies for Information Technology in the annual benchmarking assessment conducted by the General Services Administration (GSA).

**About this Goal:** In addition to ensuring reliable access to NSF information technology systems for both internal and external users, NSF values feedback from its customers to assess whether the services and systems provided meet their needs. GSA’s Customer Satisfaction Survey of Federal employees is an annual assessment of core federal support functions, and measures employee perceptions of how well an agency is performing these functions. In the FY 2023 survey, NSF ranked 1<sup>st</sup> among 23 CFO Act agencies in employee satisfaction with the agency’s IT function.

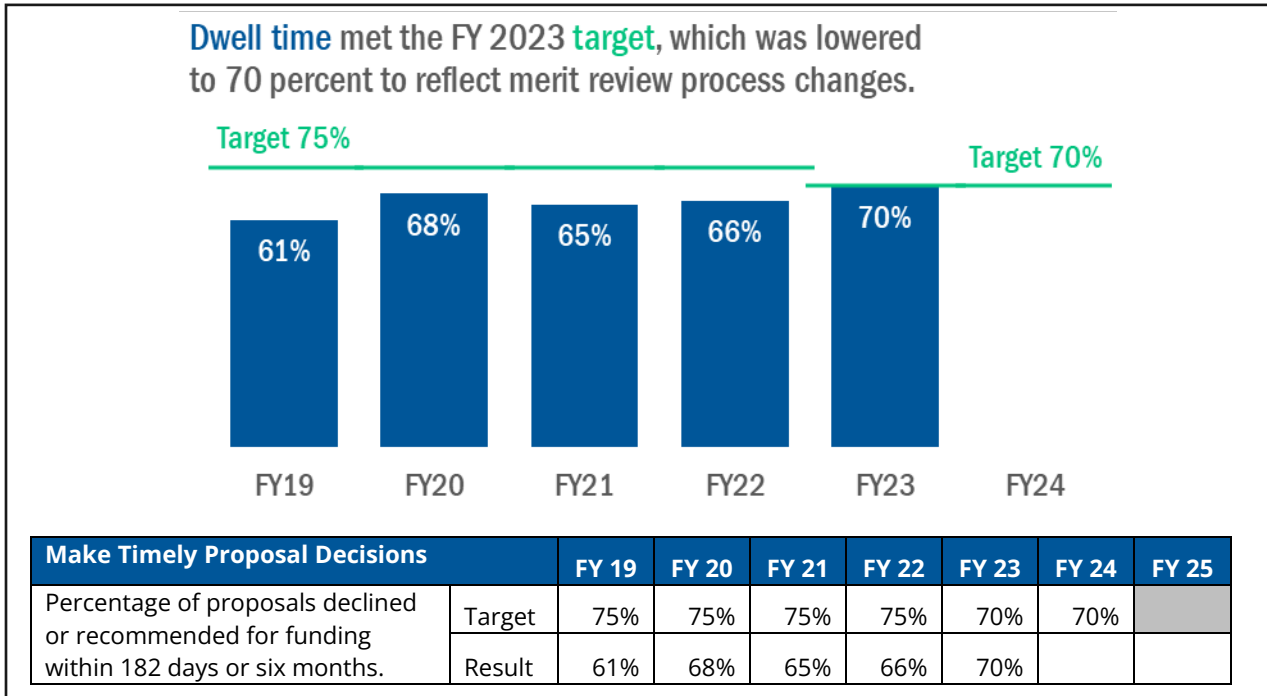
**Exhibit 4.1b. Annual Goal: Internal customer satisfaction with IT services**



**Annual Goal 4.1c: Make Timely Proposal Decisions [Revised to Indicator for FY 2025]**

Goal Statement 4.1c: Inform applicants whether their proposals have been declined or recommended for funding within 182 days, or six months, of deadline, target date, or receipt date, whichever is later.

**Exhibit 4.1c. Annual Goal, 2023-2024: Make Timely Proposal Decisions**



About this Goal: Time to decision or “dwell time” represents the amount of time that passes between receipt of a proposal and notification to the proposer about the funding decision. At the time of this measure’s establishment as a goal in the early 2000s, one of the most significant issues raised in customer satisfaction surveys was the time it took NSF to process proposals, with only around 50 percent of proposals receiving responses within six months of submission or deadline. In choosing a dwell time target, NSF sought to strike a balance between the need of the principal investigators for timely action and the need of NSF for a credible and efficient merit review system. A review period that is too long inhibits the progress of research as it delays the funding process. A review period that is too short may inhibit review quality, and some complex proposals go through a multi-stage review and approval process that requires longer than six months.

For a number of years, the dwell time target was 70 percent. In FY 2015, the target was raised to 75 percent, but the increase in complexity of programs and proposals and lengthening of the review process<sup>33</sup> made the 75 percent goal unrealistic. The target for FY 2023 and 2024 was returned to 70 percent.

<sup>33</sup> In FY 2023, NSF added a step to the award process in which potential awardees are asked to submit updated statements of current and pending support prior to the finalization of an award recommendation, which lengthens the award process. See NSF Proposal & Award Policies & Procedure Guide available at <https://new.nsf.gov/policies/pappg>.

FY 2023 Result: NSF's achievement of this goal in FY 2023 is likely due to the stabilization of recent factors disrupting workload. For example, starting in FY 2019, a number of large programs removed deadlines from their merit review processes, which has a number of effects on submission patterns. By FY 2023, these programs and their communities have matured, and patterns have stabilized.<sup>34</sup>

Discussion of FY 2024 and FY 2025 Targets: Moving forward, NSF plans to report on dwell time as a contextual indicator of NSF's operations. As a result of a topical Strategic Review in FY 2023, NSF is currently in the process of developing a more robust and updated set of customer experience metrics, to better assess NSF's engagement with its external stakeholders. For more information, please see the FY 2023 Progress Update later in this section.

#### **Evaluation Highlight: Stakeholder Experiences - 2021 Merit Review Survey<sup>35</sup>**

In 2023, NSF published results of a biennial survey on the experiences and perceptions of individuals who have submitted proposals to NSF (applicants) and/or reviewed proposals on behalf of NSF (reviewers) via the merit review process in 2021.

Over half of respondents were satisfied with the merit review process, and two out of three perceived the process to be fair. About three of four reviewers indicated the majority of proposals they reviewed in recent years have been of high quality. However, fewer than half of applicants agreed or strongly agreed that the quality of written reviews they received on their proposals was high. Respondents with reviewer experience were more likely to be satisfied with the review process and rated its quality and fairness more highly. NSF will rely on this evaluation and other data on stakeholder experiences as it develops a more robust and updated set of customer experience metrics.

#### **Other Information and Context related to Strategic Objective 4.1**

Implement NSF's Data Strategy: In order for NSF to strengthen at speed and scale, the agency will need to capitalize on emerging data analytics capabilities and expand its capacity for analysis and knowledge management. NSF's Data Strategy outlines the paradigm and activities needed to achieve the vision of an agency where everyone is empowered to leverage data and analytics to support NSF's mission. The Data Strategy was finalized and approved in FY 2023, and NSF is tracking progress against implementation. Specifically, NSF will measure the percentage of activities for implementing the Data Strategy that were completed, or on track to be completed, within established timeframes, which will provide a high-level view of implementation progress.

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<sup>34</sup> Lindsay Fox, Jesse Chandler, Francesca Venezia, Micah Wood, Emily Rosen, Gina Lewis, Alina Martinez, Samantha Zelenack, and Christina Tuttle. 2022. *Understanding the Use and Potential Effects of a No-Deadlines Approach*. Alexandria, VA: National Science Foundation available at [https://nsf-gov-resources.nsf.gov/2022-05/NDL%20Literature%20Review%20Final%20508c\\_0.pdf](https://nsf-gov-resources.nsf.gov/2022-05/NDL%20Literature%20Review%20Final%20508c_0.pdf).

<sup>35</sup> The full report, "Assessment of Stakeholder Experiences with NSF's Merit Review Process" is available at [https://nsf-gov-resources.nsf.gov/2023-10/2021-Merit-Review-Survey-Report-Final\\_508.pdf?VersionId=pJIAXpdy5tnFX1ONfQHhcKobGM3UYQn](https://nsf-gov-resources.nsf.gov/2023-10/2021-Merit-Review-Survey-Report-Final_508.pdf?VersionId=pJIAXpdy5tnFX1ONfQHhcKobGM3UYQn).

**Exhibit 4.1d. Data Strategy Implementation**

Data Strategy Implementation	FY 2023 Result
Percentage of Data Strategy implementation activities completed, or on track to be completed, within established timeframe	Eight of 11 milestones are demonstrating progress. Three have not started activity.

Budget themes: A principal mechanism for cross-cutting activities at NSF is the use of NSF-wide investments. For FY 2023 and FY 2024, NSF will monitor the extent to which NSF is able to meet its annual funding targets for key NSF-wide investments. The percentage of the annual targeted funding that is obligated by the end of the year is an indication of NSF’s effectiveness in moving through the program investment process and ensuring that key investments are implemented and on track. NSF identified the following themes in FY 2023 related to key areas of interest for NSF and the Administration and tracked annual obligations against these key areas. For more information on NSF’s budget themes, see the FY 2025 Budget Request to Congress chapter earlier in this volume.

**Exhibit 4.1e. Tracking budget themes**

Tracking budget themes	FY 2023 obligations (in millions)
Build a Resilient Planet*	\$1,243
Create Opportunities Everywhere	\$1,355
Advance Emerging Industries for Economic and National Security*	\$1,963
Strengthen Research Infrastructure	\$2,067
Amounts include both the FY 2023 appropriation (Division B) + Disaster Relief Supplemental (DRS) (Division N) funding. *These themes are collections of non-add lines, which may be double-counted. The reported amounts are calculated based on a historical pattern of 80% of total obligations being discrete and not overlapping.	

**Strategic Objective 4.2: Invest in people. Attract, empower and retain a talented and diverse NSF workforce.**

*In the FY 2023 Strategic Review, NSF ranked Objective 4.2 as showing Noteworthy Progress for 2023. Factors informing this ranking include the appointment of a Chief Diversity and Inclusion Officer and NSF's continued high ranking as one of the Best Places to Work.*

**Annual Goal 4.2a: Implement the Human Capital Operating Plan**

About this Goal: Implementing NSF's 2022-2026 Human Capital Operating Plan is critical to achieving NSF Strategic Objective 4.2: Invest in people. The Human Capital Operating Plan outlines the human capital initiatives and actions that will be undertaken to accomplish two annual performance goals for FY 2025: 1) Rank among the top five mid-size agencies in the annual Best Places to Work rankings published by the Partnership for Public Service; and 2) Rank among the top five CFO Act agencies for Human Capital in the annual Customer Satisfaction Survey conducted by GSA.

Goal Statements 4.2a:

- 4.2a(1): Track progress in NSF's Best Places to Work ranking, which assesses employee attitudes about the agency's human capital policies and programs that result in employee satisfaction with their job and the organization as a whole.
- 4.2a(2): Track progress of NSF's benchmarking ranking for Human Capital Functions, which assesses hiring manager attitudes about the agency's human capital policies and programs that result in the organization's ability to find, hire, develop, engage, retain, and reward the people needed to accomplish the agency's mission. Data are collected as part of GSA's Mission Support Customer Satisfaction Survey of Federal employees.

FY 2023 Result and Explanation of Missed Target:

- 4.2a(1): Track progress in NSF's Best Places to Work<sup>36</sup> ranking. The annual Best Places to Work in the Federal Government rankings measure employee engagement and satisfaction government-wide as well as at individual departments, agencies and subcomponents. It is based on scores in response to specific questions from the Federal Employee Viewpoint Survey, an annual survey of federal employees conducted by the Office of Personnel Management. The 2022 Best Places to Work rankings were released in FY 2023, and it ranked NSF as 2<sup>nd</sup> among mid-size federal agencies. Further, three of NSF's subcomponents ranked in the top 10 of more than 400 federal agency subcomponents in the Best Places to Work rankings.
- 4.2a(2): Track progress of NSF's benchmarking ranking for Human Capital Functions. GSA's Customer Satisfaction Survey provides a high-level indicator of customer satisfaction. The survey results reflect responses only from supervisors who have interacted with NSF's human capital functions in the previous year, making it complex to interpret any year-to-year variation in results. Each year there are a limited number of NSF responses (<100 each year).

In FY 2023, there was a drop in NSF's aggregate Human Capital Function score which coincided with decreases in a number of sub-elements for which there were operational and policy changes in FY 2023: 1) Time and Attendance Management, following the change to a different time and attendance system at NSF when the prior system was no longer supported by vendors, 2) Human

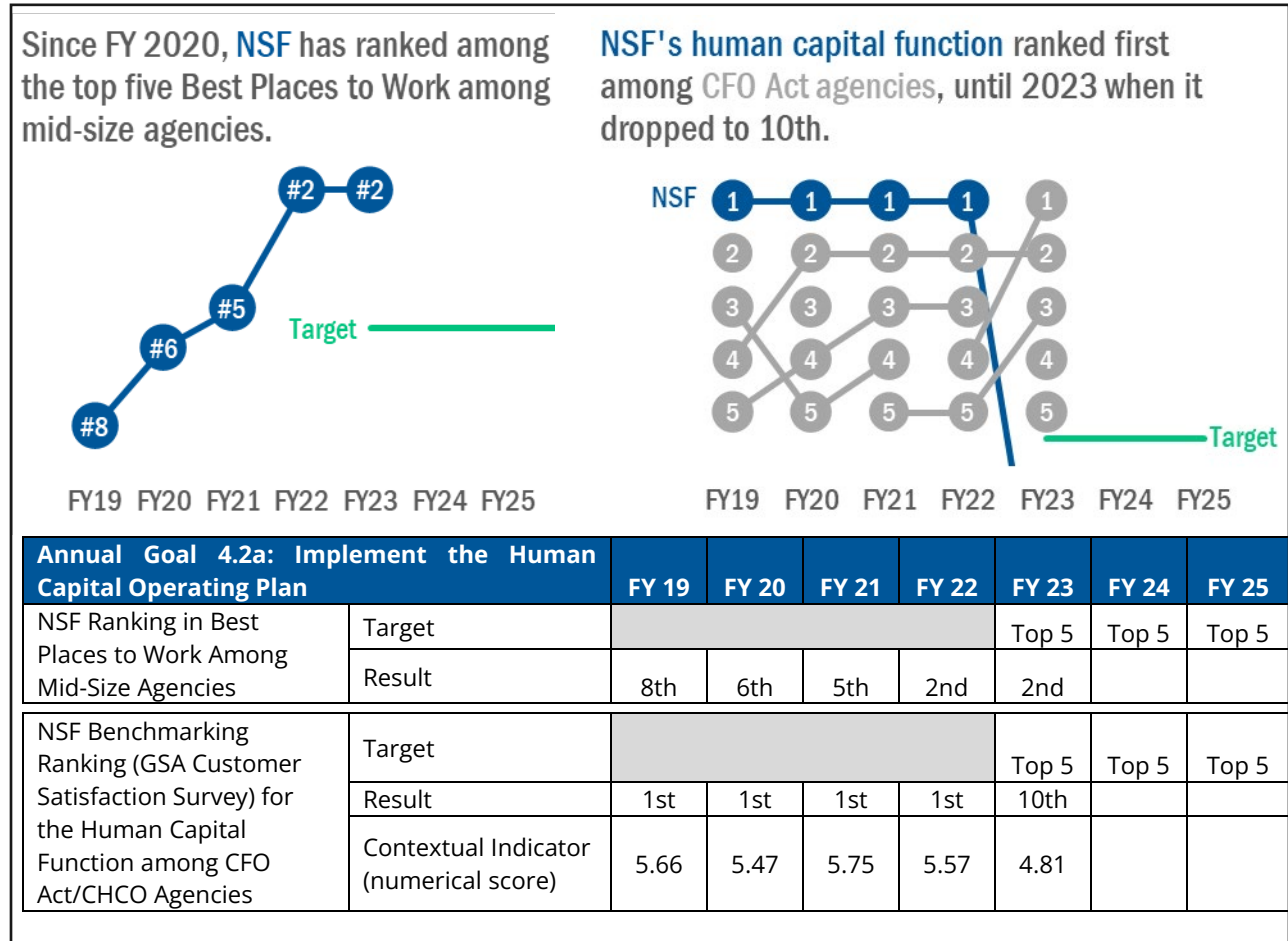
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<sup>36</sup> The Best Places to Work rankings are released a year after the Federal Employee Viewpoint Survey it analyzes. Therefore, the Best Places to Work ranking reported in FY 2023 is based on the 2022 Federal Employee Viewpoint Survey, which was open in Q3 of FY 2022. See more information at <https://bestplacestowork.org/>



Capital as a Strategic Partner, following the implementation of the agency’s new Telework and Remote Work policy requiring a return to on-site presence, and 3) Recruitment and Hiring, following the introduction of a new staffing system and during a hiring surge that began in 2022 and is anticipated to last through 2024.

**Exhibit 4.2a. Annual Goal: Implement the Human Capital Operating Plan**



Discussion of FY 2024 and FY 2025 Targets: The FY 2023 and FY 2024 measure “NSF Ranking in the Top 5 Best Places to Work Among Mid-Size Agencies” was chosen to ensure that NSF is able to curate and cultivate the workforce needed to achieve the mission and strategic objectives of the agency. That said, NSF’s ability to “attract, empower, and retain a talented and diverse NSF workforce” is predicated upon optimizing the agency’s work environment and performance culture through its human capital (HC) strategies, policies, and programs. To reflect this breadth, more comprehensive measures for this goal are under development for FY 2025.

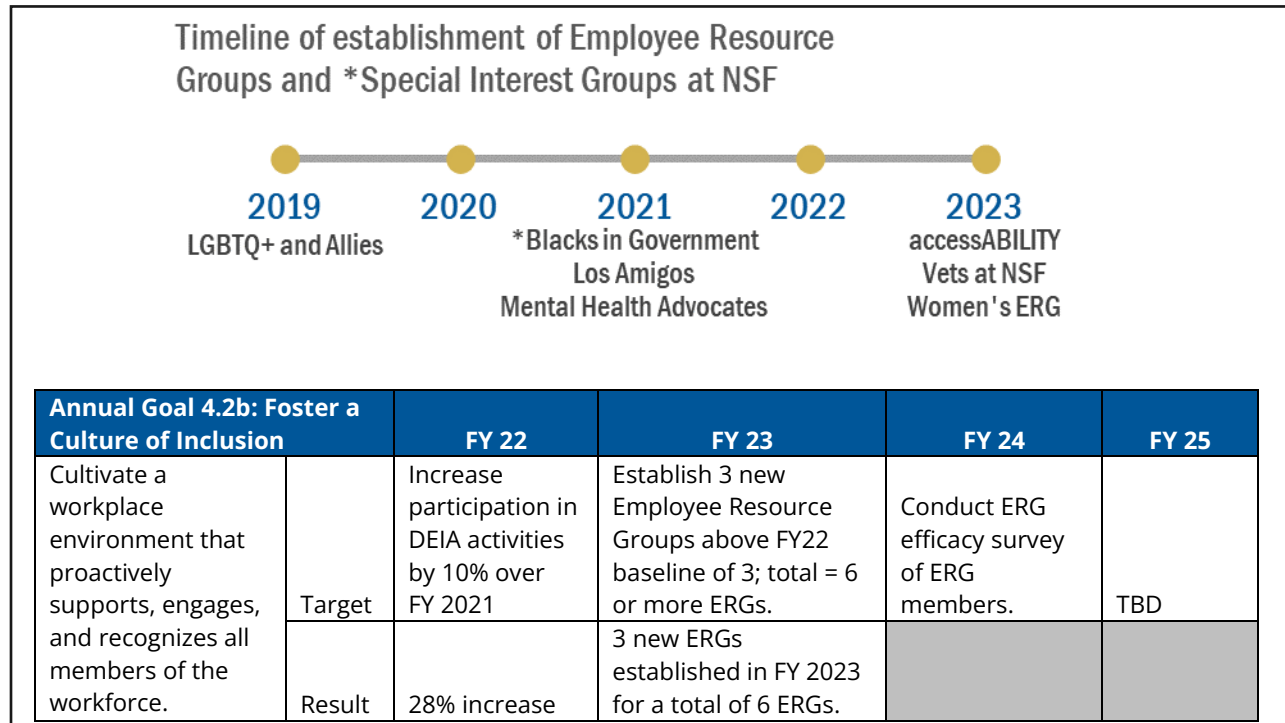
**Annual Goal 4.2b: Foster a Culture of Inclusion**

Goal Statement: Cultivate a workplace environment that proactively supports, engages, and recognizes all members of the workforce.

About this Goal: NSF values diversity and recognizes that a culture of inclusion is a critical driver in achieving its scientific mission. Fostering inclusive work environments and realizing the full potential of the workforce's diversity requires the implementation of thoughtful strategies focused on creating meaningful, sustainable, and measurable change. This holistic approach to diversity and inclusion is supported by Executive Order 14035, "Diversity, Equity, Inclusion, and Accessibility (DEIA) in the Federal Workplace," which requires that federal agencies develop DEIA Strategic Plans, and regularly measure and report on the effectiveness of DEIA initiatives.

Workplace DEIA involves promoting a culture that encourages collaboration, flexibility, and fairness to enable individuals to contribute to their full potential. Employee Resource Groups (ERGs) are recognized as an important tool for fostering DEIA through staff engagement, and NSF values their insight and perspective as members of ERGs. ERGs are groups of employees who come together based on shared interests, characteristics, or life experiences, and work to achieve diversity, equity, inclusion, access, and a sense of belonging at the agency. ERGs meet to discuss and unite under their common interests and goals and can be important avenues for individuals and allies to promote a diverse and equitable work environment. ERGs also discuss how they can expand diversity and inclusion within the Foundation while contributing to NSF's mission. Employees also participate in Special Interest Groups which differ from ERGs as chapters of larger organizations.

**Exhibit 4.2b. Annual Goal: Foster a Culture of Inclusion**



Discussion of FY 2023 Result: NSF met its goal to establish three new employee resource groups in FY 2023 with the formation of NSF Veterans, accessABILITY (in support of persons with disabilities),

and a women's-based group for persons who identify as such. The addition of these three employee-led groups amplifies the opportunities to proactively support, engage, and recognize members of our workforce.

Discussion of FY 2024 and FY 2025 Target: In FY 2024, NSF plans to issue a survey of its ERG members. The NSF ERG Member Survey aims to gather feedback from members on the effectiveness of NSF's ERGs. This proactive approach will enable NSF to better understand the benefits and outcomes of ERG participation, and to better serve all members and the NSF at large. The survey aims to establish a link between ERG participation and positive workplace outcomes, develop standardized metrics to measure the success of ERGs across various dimensions, and use data-driven insights to guide future enhancements and modifications to NSF's ERG programs. A subset of this survey will contain questions customized to specific ERGs' missions and goals. This will help establish a baseline understanding of how members view their ERG's effectiveness.

In FY 2023, NSF established a new Chief Diversity and Inclusion Officer role to lead the agency's efforts in workforce engagement around DEIA. As part of the development of the CDIO function at NSF, the agency seeks to assess DEIA capacity through use of a maturity model. FY 2025 and outyear goal targets will be developed based on results of the maturity model assessment.

#### **Other Information and Context related to Strategic Objective 4.2**

FEVS Diversity, Equity, Inclusion, and Accessibility Index: To align with administration priorities and current research, OPM developed the DEIA Index for the 2022 OPM FEVS. This measure was specifically designed to align with Executive Order 14035 which features four distinct factors: diversity, equity, inclusion, and accessibility, included as subindices in the survey. In FY 2022, NSF's score on this index was 81.7 percent, second among medium-size agencies. In FY 2023 NSF's score was 80.5 percent, third among medium-size agencies.

#### ***Evaluation Highlight: Evaluating Hybrid Work Outcomes***

The Hybrid Work Evaluation Program was initiated in late 2022 to assess the relationship between NSF's hybrid work environment and the agency's culture, workplace experience, and ability to achieve its human capital goals. The Hybrid Evaluation Program is data-driven, rooted in NSF's strategic human capital goal to, "Attract, empower and retain a talented and diverse NSF workforce," and well-aligned to the human capital elements within NSF's Work Environment Plan.

Key hybrid work metrics, defined in the plan, include recruitment and training metrics, attrition data, and survey insights from OPM's Federal Employee Viewpoint Survey, NSF's Pulse Surveys, and GSA's Customer Support Survey.

## FY 2023 Strategic Objective Progress Update

In FY 2023, NSF conducted the second set of annual assessments of the eight Strategic Objectives in the FY 2022-2026 Strategic Plan, in keeping with requirements established in the GPRA Modernization Act of 2010 and further detailed in Circular A-11. Agencies must conduct a relative assessment and identify at least one objective in each of two categories: making Noteworthy Progress or being a Focus Area for Improvement.

**Table of FY 2023 Strategic Objective Rankings**

2022-2026 Strategic Goals	2022-2026 Strategic Objectives	Agency Ranking
<b>Empower:</b> Empower STEM talent to fully participate in science and engineering	<u>1.1 Ensure accessibility and inclusivity.</u> Increase involvement of communities underrepresented in STEM and enhance capacity throughout the nation.	<i>Not ranked in FY 2023</i>
	<u>1.2 Unleash STEM talent for America.</u> Grow a diverse STEM workforce to advance the progress of science and technology.	<i>Not ranked in FY 2023</i>
<b>Discover:</b> Create new knowledge about our universe, our world, and ourselves.	<u>2.1 Advance the frontiers of research.</u> Accelerate discovery through strategic investments in ideas, people, and infrastructure.	<i>Not ranked in FY 2023</i>
	<u>2.2 Enhance research capability.</u> Advance the state of the art in research practice.	<i>Not ranked in FY 2023</i>
<b>Impact:</b> Benefit society by translating knowledge into solutions.	<u>3.1 Deliver benefits from research.</u> Advance research and accelerate innovation that addresses societal challenges.	Noteworthy Progress
	<u>3.2 Lead globally.</u> Cultivate a global science and engineering community based on shared values and strategic cooperation.	<i>Not ranked in FY 2023</i>
<b>Excel:</b> Excel at NSF operations and management.	<u>4.1 Strengthen at speed and scale.</u> Pursue innovative strategies to strengthen and expand the agency's capacity and capabilities.	Focus Area for Improvement
	<u>4.2 Invest in people.</u> Attract, empower, and retain a talented and diverse NSF workforce.	Noteworthy Progress

### Process Overview

This report provides a summary of the FY 2023 Strategic Review Process conducted by NSF in response to the requirement of the GPRA Modernization Act 2010 Section 1116(f). OMB Circular A-11 (260.2) specifies that: “Annually, agency leaders should review progress on each of the agency’s Strategic Objectives established by the agency Strategic Plans and updated annually in the Annual Performance Plan. These reviews should inform strategic decision-making, budget formulation, and near-term agency actions, as well as preparation of the Annual Performance Plan and Annual Performance Report.” The process described below was developed utilizing the guidance in sections 260.8-260.25 of OMB Circular A-11.

### Two Components: Topic Reviews and Dashboard Development

NSF's Strategic Review Process uses the results of existing assessments, evaluations, and reports as well as other sources of evidence. Internal dashboards for each of the Strategic Objectives in the NSF Strategic Plan are updated. These Objectives are crosscutting and do not mirror NSF's organizational structure, and the major strategic issues often facing NSF seldom fit within a single Strategic Objective, so NSF also scans the environment for topics and conducts crosscutting topical reviews as necessary. These are performed as a cross-agency activity, without concentrating on single organizational units or individual programs.

Both elements of the process draw upon comprehensive assessment processes that are already in use at NSF. For example, the annual Merit Review Report to the National Science Board describes outputs annually. The Committee of Visitors process, in which external experts assess NSF programmatic activities approximately every four years, is also comprehensive. Instead of duplicating these efforts, the NSF Topical Strategic Review complements them by making use of the information they generate when appropriate (e.g., reviewing their recommendations or using their data in a topic review, and using them as sources of evidence for a dashboard).

NSF performed two topical reviews in FY 2023. One of them examined NSF's opportunities to improve customer experience (CX), which yielded recommendations to build a CX community of practice, identify leadership CX champions, and establish definitions and data sources for CX metrics. Subsequently, a CX CoP was established and charged with establishing a culture of CX at NSF and advising on development of NSF's CX infrastructure. The CX CoP will establish expectations of NSF staff interactions with those we serve (our customers); identify opportunities to promote CX across NSF; support/facilitate CX data collection and access; and recommend and implement meaningful CX measurement. NSF customers are defined as funding seekers, science seekers (e.g., educators, learners, science communicators), reviewers, and (prospective) partners; two key NSF customer communities include Principal Investigators and research administrators. NSF provides support to these groups in various ways, such as through research and research infrastructure funding and fostering new scientific opportunities, STEM education, and innovative partnerships. Other NSF CX efforts underway include research into training, leadership, and performance incentive opportunities. The second review considered NSF's use of the Federal Funded Research and Development Center (FFRDC) designation and provided recommendations to clarify internal NSF guidance for the oversight of FFRDC facilities.

### **Management Challenges Progress Report**

In October 2022, the OIG identified eight areas representing challenges for NSF in FY 2023: (1) Increasing Diversity in Science & Engineering Education and Employment, (2) Overseeing the United States Antarctic Program (USAP), (3) Overseeing Grants in a Changing Environment, (4) Managing the Intergovernmental Personnel Act Program, (5) Overseeing NSF-Funded Research Infrastructure, (6) Mitigating Threats to Research Security, (7) Mitigating Threats Posed by the Risk of Cyberattacks, and (8) Addressing Harassment in the Academic Community.<sup>37</sup>

Management's report on the significant activities undertaken in FY 2023 to address these challenges

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<sup>37</sup> Management Challenges for the National Science Foundation in Fiscal Year 2023 is available at <https://www.oversight.gov/sites/default/files/oig-reports/NSF/Management-Challenges-National-Science-Foundation-Fiscal-Year-2023.pdf>.

is included in Appendix 2B: Management Challenges – NSF’s Response of this Agency Financial Report (AFR). The report also discusses activities planned for FY 2024 and beyond.<sup>38</sup>

## **Other Information**

### NSF Verification and Validation Process

NSF ensures the completeness and reliability of performance information through a verification and validation process that assesses each measure for completeness, consistency, accuracy, timeliness, and validity. An independent, external review team from Nexight Consulting assesses a subset of measures each year. Measures not being externally reviewed in a given year are reviewed by NSF staff against the same criteria to ensure their completeness and reliability. NSF has structured this mix of internal and external reviews to ensure that measures undergo the independent, external review on a biennial basis.

For other information that is presented in this Annual Performance Plan and Report, the underlying source of the information is noted in the discussion for each measure. Several measures are drawn from established publications (such as reports from the National Center for Science and Engineering Statistics) that have undergone rigorous review prior to publication. For indicators that are developed specifically for the Annual Performance Plan and Report, NSF employs a verification and validation process based on the process described above to ensure the completeness and reliability of the information presented.

### Committee of Visitors Reviews

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations; and (2) program-level technical and managerial matters pertaining to proposal decisions.

COV reviews are conducted at regular intervals of approximately four years for programs and offices that recommend or award grants, cooperative agreements, and/or contracts and whose main focus is the conduct or support of NSF research and education in science and engineering. Lists of recent COVs are available at: <https://www.nsf.gov/od/oia/activities/cov/>.

### Alignment of Human Capital Efforts with Organizational Performance

To drive individual and organizational performance, NSF requires that the performance plans of all employees, executives, and the general workforce contain individual goals aligned with the agency’s mission and strategic goals. NSF provides training and makes tools and templates available for all supervisors and employees on linking performance plans to agency mission, as well as providing assistance and training on the policies, processes, requirements, and timeframes for the development of performance plans and appraisals.

NSF also directly aligns its strategic human capital and accountability efforts to the agency goals identified in the NSF Strategic Plan. The Annual Performance Plan for FY 2024 incorporates human capital goals established in the agency’s Human Capital Operating Plan, which is updated annually. The performance goals in the plan cascade from NSF’s 2022-2026 Strategic Plan; most notably, Strategic Goal 4: Excel and Strategic Objective 4.2: Invest in people – attract, empower, and retain a

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<sup>38</sup> NSF’s FY 2023 Annual Financial Report is available at <https://www.nsf.gov/pubs/2024/nsf24002/index.jsp>.

talented and diverse NSF workforce. The agency continues to use its HRStat34 program to report on and articulate the nexus between NSF's strategic goals and objectives, including annual goals, and human capital initiatives at the agency. Senior leaders are briefed quarterly regarding the status of annual performance goals and the human capital initiatives aligned to those goals.

Lower-Priority Program Activities

The President's Budget identifies the lower-priority program activities, as required under the GPRA Modernization Act, 31 U.S.C. 1115(b)(10). The public can access the volume at: [www.whitehouse.gov/omb/budget](http://www.whitehouse.gov/omb/budget).

Use of Non-Federal Parties

No non-federal parties were involved in preparation of this Annual Performance Report.

Classified Appendices Not Available to the Public

None