

FY 2021 MANAGEMENT CHALLENGE PROGRESS REPORT

Background

Under the Reports Consolidation Act of 2000, NSF's Inspector General is required to submit a memo to the NSF Director summarizing what it considers to be the most significant management and performance challenges facing NSF in the coming fiscal year. In response, the Director provides a report on NSF's progress and achievements made over the prior year in relation to each management challenge.

The OIG's challenges, NSF's response, and NSF's progress update towards addressing previously identified challenges are included in the annual Agency Financial Report published in November.¹ This section is a republication of NSF's summary of the FY 2021 OIG Management Challenge progress reports, which appeared in the Management Discussion and Analysis section of the FY 2021 Agency Financial Report.² It highlights the significant actions taken in FY 2021 on the management challenges identified by NSF's Inspector General at the beginning of that fiscal year. The FY 2022 Progress Update will be published in November 2022.

Enterprise Risk Management

Starting in FY 2018, NSF's Progress Report applied its Enterprise Risk Management framework to document its assessments of the inherent and residual risks for each of the OIG's Challenges, including actions to mitigate risks. NSF management's overview of the challenges presented represent NSF's view of the residual risk in light of the key actions NSF has already taken to address the OIG-identified challenge. Further, NSF management developed the anticipated milestones in consideration of NSF's strategic objectives, the risks inherent to NSF's work, and key actions NSF has already taken to address those risks.

FY 2021 Management Challenges

In October 2020, the OIG identified six areas representing challenges for the agency for FY 2021: (1) Providing Oversight of Major Multi-User Research Facilities, (2) Providing Oversight of Grants During a Pandemic, (3) Managing the Intergovernmental Personnel Act Program, (4) Providing Oversight of the Antarctic Infrastructure Modernization for Science (AIMS) Project, (5) Increasing Diversity in Science & Engineering Education and Employment, and (6) Mitigating Threats Posted by Foreign Government Talent Recruitment Programs.³ Some of the agency's significant actions and planned next steps to address the challenges are highlighted below.

¹ Prior year Agency Financial Reports are available at www.nsf.gov/about/performance/annual.jsp

² The summary of the FY 2021 Management Challenges is included in the FY 2021 Agency Financial Report on p. MD&A-12. The full progress reports are included in Appendix 3 of that document on p. Appendices (OI)-21. www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22002.

³ The Inspector General's Memorandum on Management Challenges for NSF in FY 2021 is in NSF's *FY 2020 Agency Financial Report, Appendix 2A*. www.nsf.gov/pubs/2021/nsf21002/pdf/08-chap3-appendices.pdf

Providing Oversight of Major Multi-User Research Facilities

NSF understands the importance of its role in overseeing current award recipients' on-going management of major facilities, and of assessing prospective recipients' capabilities for managing major facilities prior to award. Over the past several years, NSF has greatly strengthened its oversight policies and procedures in response to prior OIG audits and four Government Accountability Office (GAO) reviews related to its oversight of projects funded from the Major Research Equipment and Facilities Construction account.

NSF leadership continues to show its commitment to major facilities oversight through appointment of the Chief Officer for Research Facilities and through the annual Major Facilities Portfolio Risk Assessment process. Further, NSF has taken significant actions in recent years to mitigate the risks inherent in the major facilities portfolio, including the unprecedented degree of complexity and uncertainty resulting from the COVID-19 pandemic. Such actions include, but are not limited to: (1) completing the major facilities portfolio workforce gap analysis and beginning development of a training plan tied specifically to the major facility oversight competency model, (2) producing a regular report on COVID-19 impacts on major facilities in both the operations and construction stages, and (3) revising standard operating guidance for NSF grants and agreements officers on the pre-award review process, which includes business and financial reviews, in line with GAO guidance. In addition, NSF took action to address the unique risks presented by the COVID-19 pandemic, including potential improper use of budget contingency funds, by developing internal and external guidance for major facility programs and recipients. The controls developed in response to the pandemic will be more widely applicable to other unforeseen events, such as when the shipyard constructing the Regional Class Research Vessels experienced significant damage from Hurricane Ida in August 2021. NSF is confident that its current and planned controls related to major facility oversight adequately consider and balance risk, resources, benefit to the science community, and stewardship of federal funds.

Going forward, NSF will finalize the *Major Facilities Oversight Reviews* standard operating guidance and provide it to OIG and GAO for consideration in closing remaining recommendations. NSF will also complete development and implementation of the training plan for the major facilities oversight workforce and monitor progress through periodic self-assessment surveys or other means.

Providing Oversight of Grants During a Pandemic

Throughout the COVID-19 pandemic, the research community has faced unprecedented challenges that have tested the people and infrastructure that make up the U.S. scientific research enterprise. Given these challenges, NSF recognized there may be heightened risk in grants programs compared to prior years, and that existing oversight processes may not align with challenges presented by the pandemic. In response to these risks, NSF has demonstrated strong commitment to ensuring continued operations and maintenance of oversight functions, including ensuring sufficient people and resources to operate in a pandemic, and has established processes to monitor spending of pandemic-related funding. NSF was able to maintain advanced monitoring and oversight activities through virtual site visits, desk reviews, targeted assessments, audit resolution, and new analytic approaches focused on the grant and cooperative agreement award portfolio.

In FY 2021, NSF demonstrated progress in addressing the challenges created by the COVID-19 pandemic in the following areas: (1) policy and outreach, including disseminating new guidance on

the NSF Coronavirus webpage for the grants community to address emerging NSF and government-wide COVID-19 policies; (2) grants oversight, including implementation of internal NSF dashboards to monitor potential grant risk factors around expenditure patterns and post-award adjustments; and (3) risk management and internal controls, including conducting annual testing of grant award expenditures covering April 2020 through March 2021 to update the improper payment risk baseline, which indicated a similarly low risk level as in prior year testing results.

Going forward, NSF will continue to assess and minimize risk through activities such as issuing updated guidance as necessary, monitoring compliance through site visits and desk reviews, updating and enhancing financial reporting, and issuing a final improper payment risk assessment report.

Managing the Intergovernmental Personnel Act (IPA) Program

NSF provides the opportunity for scientists, engineers, and educators to rotate into the Foundation on a temporary basis, bringing fresh perspectives from across all fields of science and engineering supported by the agency. OIG has noted risks related to these rotators remaining involved in their professional research and development activities while working at NSF; and the COVID-19 pandemic has brought new and unique challenges to this program, including recruiting, onboarding, and managing IPAs in a remote work environment. NSF takes a proactive approach to the management of the IPA Program to appropriately consider and mitigate inherent risks associated with its execution, including through an IPA Steering Committee that advises the Foundation's senior leadership on matters that directly concern policy on the use of the IPA Program. NSF engages in continuous improvement of its management of the IPA Program, addressing the management challenges identified by the OIG as well as other agency-identified risks and challenges.

In recent years, NSF has completed numerous actions to address the management challenges identified by the OIG related to the IPA program. Through these actions, NSF is confident it has reduced the inherent risk substantially and that the benefits of the program outweigh the residual risk. Specific accomplishments in FY 2021 include (1) migrating Program Director and Executive IPAs to the USA Performance system for managing performance plans, (2) facilitating a focus group of IPAs who onboarded during the pandemic, to help identify new and unique challenges associated with onboarding in a remote work environment, and (3) establishing a plan to collect and analyze FY 2021 data on IPA recruiting, onboarding, and costs attributed to the COVID-19 pandemic to be included in the FY 2021 IPA Annual Report.

Going forward, NSF will continue to monitor risk and manage the IPA program through actions such as providing annual training for independent research/development (IR/D) experts; collecting quarterly data on IR/D time and travel by both permanent and rotating staff for oversight by NSF senior management; and using the Federal Employee Viewpoint Survey and other mechanisms to help identify challenges to the program, including recruiting, onboarding, and managing IPAs in a remote work environment.

Providing Oversight of the Antarctic Infrastructure Modernization for Science (AIMS) Project

NSF—through the Office of Polar Programs in the Directorate for Geosciences—funds and manages the U.S. Antarctic Program which supports the United States' research and national policy goals in the Antarctic. The U.S. Antarctic Program has two major construction projects to replace multiple

outdated structures and consolidate key functions for more streamlined and efficient operations, one of which is the Antarctic Infrastructure Modernization for Science (AIMS) project. The OIG identified the AIMS project as one that will require continued vigilance, as it will stretch agency resources and may present additional challenges. While NSF agrees there are inherent risks associated with Antarctica's remote location, extreme environment, and the short period of time during which the continent is accessible, NSF has mitigated risk through actions such as extensive planning and coordination to meet equipment delivery dates.

The global pandemic associated with COVID-19 resulted in significant changes to program and construction project plans as deployed construction crews were brought home due to health and safety concerns. In accordance with NSF policy, the magnitude of these impacts will require re-baselining of the AIMS project and the Office of Polar Programs is actively engaged with the contractor; the Office of Budget, Finance, and Award Management; and the Office of the Director for that purpose. In FY 2021, NSF acquired no-cost access to long-term storage for materials, and convened NSF leadership to evaluate options for project re-baselining and to develop a new path forward that transitions AIMS to a long-term Antarctic Infrastructure Recapitalization program.

Going forward, NSF will continue to monitor and oversee AIMS, under established internal management and project execution plans, while working to re-baseline the project cost and schedule. NSF will also conduct quarterly NSF integrated project team meetings to ensure the status of AIMS developments is communicated and to solicit expert feedback.

Increasing Diversity in Science & Engineering Education and Employment

Efforts to increase diversity in science and engineering (S&E) education and employment have been a hallmark of NSF since its founding, and throughout its history. The agency has pursued a variety of program and policy approaches to increasing diversity in S&E. Broadening participation is the focus or emphasis of a number of programs, and this emphasis is demonstrated within the entire NSF portfolio through the broader impacts criterion used in the merit review process. This challenge remains a priority for NSF: while there have been noteworthy areas of progress, such as increases in the shares of individuals in S&E occupations from racial and ethnic groups historically underrepresented in STEM,⁴ the groups and communities that have been underrepresented and underserved in the STEM arena for decades remain so today.

NSF fully recognizes that its efforts to advance diversity and promote inclusion warrant unprecedented urgency, in keeping with the national imperative outlined by the Administration and its Racial Equity Executive Order (Executive Order 13985)⁵ and also the global trends in science and outlined by the NSB in the *Vision 2030* report.⁶ Efforts to address this challenge span across every NSF Directorate and Office. Specific actions in FY 2021 to increase diversity in S&E education and employment included (1) release of the 2021 Women, Minorities, and Persons with Disabilities in Science and Engineering report, providing data on participation of these groups in S&E education and

⁴ National Center for Science and Engineering Statistics data on underrepresented minorities in science and engineering occupations, by broad occupational category: 2003 and 2017
<https://ncses.nsf.gov/pubs/nsb20201/figure/8>

⁵ Executive Order 13985, www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/

⁶ The NSB's *Vision 2030* report is available at www.nsf.gov/nsb/publications/2020/nsb202015.pdf

employment, (2) organizational changes within NSF to streamline processes and procedures related to equity and civil rights issues, and (3) releasing new funding opportunities related to broadening participation and to assessing the impacts of COVID-19 on students from groups historically underrepresented in STEM.⁷

Going forward, NSF will focus attention on milestones in line with its operational and strategic objectives in the area of increasing diversity, including: (1) continuing implementation work to strengthen the engagement of historically Black colleges and universities (HBCUs) in NSF's programs, in line with Executive Order 13985, (2) continuing to examine the challenges of the availability of limited data on certain groups of individuals known to be underrepresented in STEM, and (3) in keeping with the agency's response to Executive Order 13985, finalizing the strategic framing of efforts to ensure accessibility and inclusivity in the NSF Strategic Plan for FY 2022-2026, and its associated performance activities, with public release scheduled for February 2022.

Mitigating Threats Posted by Foreign Government Talent Recruitment Programs

The National Science Foundation seeks to maintain a vibrant science and engineering community for the benefit of the Nation. Participation in this community relies on individuals to uphold core principles and values such as openness, transparency, reciprocity, collaboration, and integrity. However, open scientific exchange and research face a challenge from some foreign governments through the use of talent recruitment programs. Some of these programs deliberately disregard these core principles and incentivize participants to misappropriate U.S.-funded scientific research prior to its open publication. These programs target scientists, engineers, and educators of all nationalities working or educated in the United States.

In FY 2021, NSF took multiple actions to demonstrate progress on this issue, including (1) release of a new training for NSF staff on assessing disclosures required as part of the proposal process, (2) outreach to the academic community through numerous meetings and conferences to raise awareness of the risks posed by foreign government talent recruitment programs, and (3) collaborating with OIG to address threats posed by foreign government talent recruitment programs, including recouping or preventing the loss of millions of taxpayer dollars through actions to suspend or terminate awards.

Going forward, NSF will continue to work diligently to address the risks of foreign government interference in NSF-funded research. This work will include development of a comprehensive plan of additional actions to address threats from foreign government interference, and evaluation of recommendations related to (1) enhancing awareness of research security risks and protections, (2) strengthening disclosure requirements, (3) information sharing across U.S. government agencies, including OIG, and (4) risk identification and analysis.

⁷ The 2021 *Women, Minorities, and Persons with Disabilities in Science and Engineering* report is available at <https://ncses.nsf.gov/pubs/nsf21321>

