NATIONAL SCIENCE FOUNDATION RESEARCH INFRASTRUCTURE GUIDE OMB Clearance No. 3145-0239

1 PART A | JUSTIFICATION

1.1 Background

The National Science Foundation Act of 1950 (Public Law 81-507) sets forth NSF's mission and purpose:

"To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense...."

The Act, and subsequent amendments, authorizes NSF to support:

- basic scientific research and research fundamental to the engineering process,
- programs to strengthen scientific and engineering research potential,
- •science and engineering education programs at all levels and in all the various fields of science and engineering,
- •programs that provide a source of information for policy formulation, and other activities to promote these ends.

Among Federal agencies, the U.S. National Science Foundation (NSF) is a leader in providing the academic community with the advanced research infrastructure (RI) needed to conduct stateof-the-art research and to educate the next generation of scientists, engineers, and technical workers. The knowledge generated by these tools sustains U.S. leadership in science and engineering to drive the U.S. economy and secure a future of scientific excellence. NSF's responsibility is to ensure that the research and education communities have access to these infrastructures and to provide the support needed to utilize them optimally and implement needed upgrades.

The scale of investment ranges from small laboratory research instruments to national shared resources and facilities that entire communities can use. The demand for RI is very high and continues to grow, along with the pace of discovery, as the U.S. competes globally. The need for Major Facilities and Mid-scale RI is exceptionally high, and this trend is expected to continue as increasing numbers of U.S. researchers and educators rely on NSF-funded RI to make the next intellectual leaps.

NSF supports RI investments from two accounts: the Major Research Equipment and Facility Construction (MREFC) account and the Research and Related Activities (R&RA) account. The MREFC account, established in FY 1995, is a separate budget line item that serves as an agency-wide mechanism, enabling directorates to undertake Major Facility projects exceeding \$100M and Mid-scale RI projects ranging from \$20M to \$100M to construct, acquire or implement. Equally important, the R&RA Account continues to support smaller Mid-scale RI and research instrumentation programs, ensuring a comprehensive approach to funding, as well

as on-going operations and maintenance.

Major Facilities are shared-use infrastructure, instrumentation and equipment that are accessible to a broad community of researchers and/or educators. These Facilities can be single-sited or widely distributed installations and often incorporate large-scale networking and computational infrastructure, multi-user instruments or networks of such instruments, or other infrastructure and equipment having a positive impact on a broad segment of a scientific or engineering discipline. NSF-funded Major Facilities include accelerators, detectors, optical and radio telescopes, research vessels and aircraft, and geographically distributed observatories comprised of networked sensors.

The diverse portfolio of Major Facilities and Mid-scale RI requires that NSF remain attentive to the ever-changing issues and challenges inherent across the full life cycle. Competent and sufficient NSF and Awardee staff are necessary to manage and oversee these awards to ensure proper stewardship of taxpayer dollars and maximize the return on investment to the U.S. science community.

The *Research Infrastructure Guide* (*RIG*) provides information related to NSF's expectations on Awardee management, and agency oversight of, the development, design, construction/ implementation, operations, and disposition of Major Facilities and Mid-scale RI. The RIG is designed for use by the research community and NSF staff. The 2025 version is intended to be award instrument neutral, applying to financial assistance and contracts in a tailored and scaled manner that aligns with the technical nature of the project or science support program.

A revised version of the *RIG* (including a listing of significant changes), effective June 2025, is included as **Exhibit 1** to this Supporting Statement.

1.2 Use of the Information Collection

NSF makes awards to external entities—including universities, consortia of universities, nonprofit and for-profit organizations—to undertake the design, construction, and operation of Major Facilities and Mid-scale RI, using a variety of award instruments.

The *RIG* is intended to:

- Provide guidance for NSF staff and Awardees on award management and agency oversight practices for Major Facilities and Mid-scale RI that are tailored and scaled to the technical nature of the project or science support program.
- Clearly state NSF policies, processes, and expectations pertinent at each life cycle stage from initial development through final disposition.
- Document and disseminate project and program management "good practices" so NSF and Awardees can effectively carry out their oversight and management responsibilities, respectively.

This version of the *RIG* enhances guidance for planning across all life cycle stages, and provides detailed instructions on tailoring, scaling, and progressively elaborating related plans to align with the scope and complexity of the RI. Additionally, it also expands key project and program

management elements to improve the quality of proposal submission.

NSF considers the *RIG* agency guidance; however, the requirements outlined in award instrument regulations—for example 2 CFR 200 (Uniform Guidance) and the Federal Acquisition Regulation —take precedence. Internal NSF guidance and regulations, such as the *Proposal & Award Policies and Procedures Guide* (*PAPPG*) and the NSF Acquisition Regulation, reference the *RIG* and are complementary. The level of review and approval for these awards differs significantly from standard research grants awarded by NSF, as does the degree of oversight necessary to ensure proper stewardship of federal funds.

NSF updates the *RIG* periodically to reflect changes to requirements, policies, and/or procedures. NSF expects Awardees to monitor and adopt the requirements and best practices included in the *RIG*, which aim to improve pre-award proposal submission and post-award management of Major Facility and Mid-scale RI awards and enable the most efficient and cost-effective delivery of research tools to the U.S. scientific community.

Submitting proposals and subsequent post-award documentation related to the development, design, construction/implementation, and operations of a Major Facility or Mid-scale RI to NSF is part of the information collected that NSF uses to fulfill its oversight responsibilities. NSF is also committed to balancing information collection and administrative burden, which is the primary driver in allowing tailoring and scaling of oversight to the size and complexity of the project or science support program.

1.3 Use of Information Technology

All required information is submitted electronically, using information technology (IT) systems designated by NSF or other Federal agencies. For financial assistance awards, submission tools include NSF's online platform Research.gov as well as Grants.gov. These systems support the submission of proposals, progress reports, financial reports, and other post-award documentation.

For contract-related information, submissions follow the terms outlined in the contract. While email may be used for certain deliverables, Contracting Officers primarily utilize governmentwide acquisition platforms such as GSA eBuy, GSA Schedules, and Government-Wide Acquisition Contracts (GWACs) to solicit and receive proposals. These platforms provide secure, centralized portals for proposal submission, procurement tracking, and contract documentation management. NSF is actively working to modernize and consolidate contractrelated submissions through standard electronic systems to improve efficiency and oversight.

Automation reduces respondent burden by streamlining submission and review through features like pre-populated fields, automated data validation, compliance checks, and submission confirmations. These tools enhance accuracy, reduce follow-up, and minimize time and effort—supporting the Paperwork Reduction Act goals to ensure efficient, high-quality information collection.

1.4 Efforts to Identify Duplication

No duplication exists since no other federal agency collects data pertaining to NSF RI proposals and awards.

1.5 Impacts on Small Business or Entities

This information collection does not impose impacts on small businesses or other small entities.

1.6 Consequences of Less Frequent Collection

NSF requires periodic reporting and reviews to monitor the status of RI throughout its life cycle. The *RIG* provides detailed guidance on the proposal expectations, type and frequency of reports and reviews, which can vary significantly with the life cycle stage and each Major Facility or Mid-scale RI's unique details. The required reporting, reviews, and NSF approvals are then codified in the award terms and conditions. All reports are collected electronically and are timed to support NSF's oversight responsibilities.

Failure to follow with the practices, reporting and review schedules outlined in the RIG can result in significant consequences, including:

- Noncompliance with federal statute, such as Section 110 of the *American Innovation and Competitiveness Act (AICA) of 2017*, which mandates NSF provide rigorous oversight and accountability for major research infrastructure investments.
- Misalignment with Government Accountability Office (GAO) leading practices for capital project management, which can reduce transparency, increase the likelihood of cost overruns and delays, and compromise the overall return on investment.
- Weakened program oversight, as delayed or incomplete reporting limits NSF's ability to make timely, informed funding decisions; identify and address emerging risks; and respond appropriately to changes in project scope, cost, or performance.
- Increased administrative burden or enforcement actions, such as escalated reviews, restricted funding, or conditions placed on future awards.
- Erosion of stakeholder trust, as incomplete or inconsistent reporting undermines NSF's responsibility to ensure the effective use of taxpayer dollars and weakens accountability to the broader research community and the public.

Maintaining timely, accurate, and complete reporting is essential not only for meeting obligations under the award, but also for enabling effective project management, supporting scientific progress, and sustaining public trust in NSF's stewardship of federal investments.

1.7 Collection Inconsistent with Guidelines in 5 CFR 1320.6

There are no inconsistencies with 5 CFR 1320.6.

1.8 Consultation Outside the Agency

Public Notice for the *revised RIG* was published in the Federal Register on 18 November 2024, at 89 FR 84634, and 8 January 2025 at 90 FR 1550, and comments were received from

fourteen (14) sources. A summary of the ninety-five (95) comments received in response to NSF's request for public comment as follows:

- Fifty-three (53) requested clarifications and updates on the processes and requirements associated with NSF oversight of the various stages of the facility lifecycle.
- One (1) update in response to Executive Order 14173—Ending Illegal Discrimination and Restoring Merit-Based Opportunity, Section 2, Policy, signed January 21, 2025, minor edits made to remove references to diversity, equity, inclusion, and accessibility (DEIA).
- Eight (8) requested clarifications regarding NSF's information assurance program.
- Thirty-three (33) provided positive feedback on the changes and improvements on previous guidance in the 2021 RIG.

Exhibit 2 contains the full text of the comments received in response to both Federal Register Notices and the associated NSF responses.

NSF has developed the policies and guidelines for managing and overseeing awards related to Major Facilities and Mid-scale RI over many years, with assistance and guidance from many external sources. These sources include other Federal agencies, GAO, Award recipients, and industry experts with expertise in areas applicable to project and program management good practices and the unique technical nature of NSF-funded facilities.

In addition, many NSF Program Officers who are responsible for making funding recommendations and interacting with the research community are from the research community itself. These individuals bring experience and practical knowledge of constructing and operating NSF-funded RI and have provided significant input on improving the guidance in the 2025 RIG.

1.9 Gifts or Remuneration to Respondents

This information collection does not include any payment or provision of gifts to respondents.

1.10 Assurance of Confidentiality

This information collection does not involve any confidential data.

1.11 Justification for Sensitive Questions

This information collection does not include sensitive questions.

1.12 Estimate of Hour Burden to Respondents

NSF oversees approximately twenty-five (25) Major Facilities at various stages of development, design, construction, operations, and disposition. Upgrades to Major Facilities may take place as discrete design and construction projects or as part of on-going operations and maintenance. On average, two to four Major Facility awards (new or renewals) are made every five years, depending on the science community's infrastructure needs and available funding.

Among the twenty-five (25) Major Facilities, five to nine (5-9) are typically in the Design or Construction Stage at any given time. These stages require the most extensive project management documentation and routine reporting to NSF, due to the inherent risks and complexity of design and construction activities and the agency oversight required to help ensure the full scope is delivered on budget.

Approximately eighteen (18) Major Facilities are in the Operations Stage, where reporting and documentation requirements focus on day-to-day management of the Facility, performance monitoring against science support objectives, and financial oversight.

In addition to Major Facilities, there are approximately thirty (30) Mid-scale RI implementation projects actively underway at any given time. These smaller projects still require structured project management and reporting to ensure delivery of the scientific scope and prevent waste of taxpayer dollars.

NSF estimates annual Awardee level of effort to meet NSF's project and program management, performance monitoring, and financial reporting requirements as follows:

- For each Major Facility in the Design or Construction Stage, approximately five (5) Full-Time Equivalents (FTEs), totaling 10,400 hours per year.
- For a Major Facility in the Operations Stage, approximately one-and-a-half (1.5) FTEs, totaling 3,120 hours per year.
- For a Mid-scale RI, approximately one (1) FTE, totaling 2,080 hours per year.
- Based on the current projects and science support programs described above, the total estimate annual public burden hours are as follows:
 - Seven (7) Major Facilities in Design or Construction = 72,800 annual burden hours
 - Eighteen (18) Major Facilities in Operations = 56,160 annual burden hours
 - Thirty (30) Mid-scale RI implementation projects = 62,400 annual burden hours
 - Total Annual Public Burden = **191,360 hours**

1.13 Annualized Estimates of Cost Burden to Respondents

The cost to respondents, the individuals, organizations, or institutions required to provide information, varies by geographic location and the size and complexity of the project or program funded under the award. For this calculation, cost per FTE is assumed to be the equivalent of a full-time associate professor, roughly \$100,000 per year in 2025, or \$48.10/hour, which is also roughly equivalent to the average salary for a project manager. Total annualized cost across all respondents equate to \$48.10/hr x 191,360hrs = \$9.2M/year for the entire enterprise. This represents approximately 0.6% of NSF's total annual investment of \$1.5B in Major Facilities and Mid-scale RI activities.

1.14 Annualized Estimate of Cost to the Federal Government

The cost estimate for developing the revised 2025 RIG, which NSF anticipates will be issued in June 2025, is \$616,000. The science community's primary method of accessing the RIG is by downloading it from the NSF website. NSF will print a limited number of hard copies for internal use at a cost of \$720. The following calculations are the basis for developing the cost estimate to assess, edit, coordinate, and review a full revision of the *RIG*. Individuals and/or offices instrumental in this process were polled to determine the staff estimates used below.

Office of Budget, Finance & Award Management (BFA)

1600 hours	Estimated Contractor cost \$280,000
Contractor Services	Total NSF Salaries \$336,000
Program Directorates BIO, GEO, MPS, ENG Staff Combined CISE Staff combined	75 days x AD-5 (avg.) = \$52,500 10 days x AD-5 (avg.) = \$7,000 Total Directorate salaries = \$168,000
ISB Staff combined	1 week x GS-14 (avg.) = \$3,000 Total BFA salaries = \$168,000
RIO, Head RIO Staff combined	1 month x SES = \$20,000 10 months x GS-15 (avg.) = \$145,000

Total Cost: \$616,000

Estimated printing costs: \$0.10 per page x 360-page document x 20 copies = \$720

1.15 Explanation for Program Changes or Adjustments

The annual public burden hours have increased modestly from approximately 153,920 in 2021 to 191,360 in 2025. This increase reflects continued growth in the number of Major Facilities and Mid-scale Research Infrastructure made available to the scientific community—not the overall burden to fulfill award requirements based on the RIG.

The burden on respondents is expected to remain unchanged. However, NSF anticipates that the enhanced and clarified guidance included in the revised RIG will improve the quality of proposals and the efficiency of the review and reporting processes. Although the overall reporting requirements have not changed substantively, updates to the organization, terminology, and guidance are intended to reduce ambiguity, minimize the need for follow-up inquiries, and facilitate more streamlined preparation of required documentation, including the initial proposal. As such, while the formal burden estimate remains the same, these revisions are expected to improve the user experience and reduce the practical burden on respondents by promoting clarity and consistency—aligned with the goals of the Paperwork Reduction Act to minimize unnecessary respondent effort.

1.16 Plans for Publication of Collection

The collection will not be published.

1.17 Expiration Date for OMB Approval

The Research Infrastructure Guide (NSF 21-107) officially expired on December 31, 2024. However, NSF obtained an OMB extension through June 30, 2025, to allow continued use of the Guide while the updated 2025 version is finalized and published.

1.18 Exceptions for Certifications

There are no exceptions to the certification.

2 PART B | STATISTICAL METHODS

Not applicable.

2.1 Data collection instrument, including corresponding instructions

See Exhibit 1

2.2 Attachments

National Science Foundation Act of 1950 (Public Law 81-507)

2.3 Exhibits

- **Exhibit 1:** Revised version of the *NSF Research Infrastructure Guide*, effective June 2025
- **Exhibit 2:** Public Comments Received on the *NSF Research Infrastructure Guide* along with associated NSF response.