Robert Noyce Teacher Scholarship Program

PROGRAM SOLICITATION
NSF 21-578

REPLACES DOCUMENT(S):
NSF 17-541

National Science Foundation

Directorate for Education and Human Resources
Division of Undergraduate Education

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

August 31, 2021

August 30, 2022

August 29, 2023

Last Tuesday in August, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

1. The Definition of Terms section clarifies the meaning of key terms, including STEM majors, STEM professionals, and STEM teachers.
2. Degree completion requirements and allowable periods for scholarship, stipend, and fellowship support are specified.
3. Requirements for Collaboration Incentives, including requirements for substantive partnership engagement and collaboration, are further specified. New Collaboration Incentives are also included.
4. New allowances, scope, and requirements (including page limitations) are specified for Capacity Building submissions.
5. The maximum allowable budget is increased for Track 4: Noyce Research submissions.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 20-1), which is effective for proposals submitted, or due, on or after June 1, 2020.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Robert Noyce Teacher Scholarship Program

Synopsis of Program:

The National Science Foundation **Robert Noyce Teacher Scholarship Program (Noyce)** invites innovative proposals that address the critical need for recruiting, preparing, and retaining highly effective elementary and secondary mathematics and science teachers and teacher leaders in high-need school districts. To achieve this goal, Noyce supports talented science, technology, engineering, and mathematics (STEM) undergraduate majors and professionals to become effective K-12 STEM teachers. It also supports experienced, exemplary K-12 STEM teachers to become teacher leaders in high-need school districts. In addition, Noyce supports research on the effectiveness and retention of K-12 STEM teachers in high-need school districts. Noyce offers four program tracks: **Track 1: The Robert Noyce Teacher Scholarships and Stipends (S&S) Track, Track 2: The NSF Teaching Fellowships (TF) Track, Track 3: The NSF Master Teaching Fellowships (MTF) Track, and Track 4: The Noyce Research Track.** In addition, **Capacity Building** proposals are accepted from proposers intending to develop a proposal in any of the program's tracks.

Table 1: Categories of Noyce Funding*

	Intended Outcome	Eligible Pre-Service or In-Service Teachers	Length of Required Teaching Commitment
Track 1: Scholarships	Develop K-12 STEM teachers in high-need	Noyce-eligible STEM undergraduate	2 years/year of support

and Stipends (S&S) up to $1,200,000 with a duration of up to 5 years	school districts	majors & STEM professionals	
Track 2: Teaching Fellowships (TF) up to $3,000,000, with a duration of up to 6 years		Noyce-eligible STEM professionals	4 years
Track 3: Master Teaching Fellowships (MTF) up to $3,000,000, with a duration of up to 6 years	Develop K-12 STEM teacher leaders in high-need school districts	K-12 STEM teachers with a bachelor's degree or master's degree in their field	5 years
Track 4: Noyce Research up to $1,000,000, with a duration of up to 5 years	Research effectiveness and retention of K-12 STEM teachers in high-need school districts	N/A	N/A
Capacity Building up to $75,000, with a duration of up to 1 year	N/A	N/A	N/A

*Awards may exceed the budget maximums through Collaboration Incentives for engagement of community colleges in Capacity Building or Track 1 projects, engagement with Noyce awards in Track 4 projects, or engagement with minority-serving institutions in any Noyce submission. See Section III: Award Information for additional details.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Sandra Richardson, Program Lead, telephone: (703) 292-4657, email: srichard@nsf.gov
- Kathleen B. Bergin, Program Co-Lead, telephone: (703) 292-5171, email: kbergin@nsf.gov
- Michelle M. Camacho-Walter, telephone: (703) 292-8718, email: mcamacho@nsf.gov
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Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 55 to 70, including 25 - 30 Track 1: S&S awards; 3 - 5 Track 2: TF awards; 7 - 10 Track 3: MTF awards; 5 - 8 Track 4: Noyce Research awards; and 15 - 17 Capacity Building awards, subject to availability of funds.

Anticipated Funding Amount: $67,000,000 annually for new and continuing Noyce awards, subject to the availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- (For all submissions) One or more Institutions of Higher Education (IHEs) (two- and four-year IHEs, including community colleges) accredited in, and having a campus located in the U.S.; consortia of such institutions; or U.S. nonprofit organizations (e.g., nonprofit research institutions, research museums) offering a teacher education or residency program.

  (In addition to the above, for Track 4: Noyce Research submissions only) Professional societies or similar organizations that are directly associated with educational or research activities.

Who May Serve as PI:

- For Track 1: S&S, Track 2: TF, and Track 3: MTF, the PI team must include at least one faculty member from a science, technology, engineering, or mathematics department and at least one education faculty member from an education department at a participating or partnering U.S. institution of higher education.
- For Track 4: Noyce Research, the PI team must include at least one individual with expertise and experience in STEM education research and at least one individual with an advanced degree in a STEM or STEM education discipline.
- For Capacity Building, there are no restrictions on who may serve on the PI team.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via FastLane: *NSF Proposal and Award Policies and Procedures Guide* (PAPPG) guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

B. Budgetary Information

- **Cost Sharing Requirements:**

  Cost Sharing is Required. For purposes of this solicitation, and in accordance with Federal requirements, the terms "matching" and "cost sharing" are synonymous. Please see the full text of this solicitation for further information.

- **Indirect Cost (F&A) Limitations:**

  Not Applicable

- **Other Budgetary Limitations:**

  Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):

  August 31, 2021

  August 30, 2022

  August 29, 2023

  Last Tuesday in August, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria apply.

Award Administration Information

Award Conditions:

Standard NSF award conditions apply.

Reporting Requirements:

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The Robert Noyce Teacher Scholarship Program (Noyce) responds to the critical need for highly effective K-12 STEM teachers and teacher leaders. Noyce supports institutions of higher education to develop and sustain a culture where undergraduate STEM majors and STEM professionals are encouraged and supported to become teachers in high-need school districts. The program especially encourages the recruitment and support of STEM majors and professionals of the highest achievement and ability who might otherwise not have considered a career in K-12 teaching. Noyce also supports experienced, exemplary STEM teachers to become teacher leaders in high-need school districts. In addition to institutions of higher education, Noyce supports professional societies and similar organizations that are directly associated with educational or research activities to conduct research on the effectiveness and retention of K-12 STEM teachers in high-need school districts.

By supporting the recruitment, preparation, and development of effective, diverse, and capable STEM teachers who will teach in high-need school districts serving diverse student populations, Noyce contributes to strategic objective SG3/SO3.1 in the *NSF Strategic Plan for 2018-2022:* "Attract, retain, and empower a diverse workforce." Through programmatic support, Noyce aims to create, enhance, and study teacher preparation learning environments and professional development experiences marked by diversity, equity, and inclusion. As efforts to diversify the K-12 STEM teaching profession, particularly in high-need schools and districts, continue to be a national priority, Noyce encourages the submission of proposals with a concentrated focus on the recruitment, preparation, and retention of STEM teachers from talent pools that have not yet been fully tapped, including Blacks and African Americans, Alaska Natives, American Indians, Hispanics, Native Hawaiians, Native Pacific Islanders, and persons with disabilities. Noyce also supports the role of NSF as central to discovering, studying, and promoting pathways for STEM teacher education through research and development.

The Noyce Program was first authorized under the National Science Foundation Authorization Act of 2002 (P.L. 107-368). It was reauthorized under the America COMPETES Act of 2007 (P.L. 110-69) and the America COMPETES Reauthorization Act of 2010 (P.L. 111-358), and later amended by the STEM Education Act of 2015 (P.L. 114-59), American Innovation and Competitiveness Act (P.L. 114-329), National Defense Authorization Act for Fiscal Year 2018 (P.L. 115-91), Women in Aerospace Education Act (P.L. 115-303), Supporting Veterans in STEM Careers Act (P.L. 116-115), and National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283).

II. PROGRAM DESCRIPTION

The **Robert Noyce Teacher Scholarship Program** consists of four tracks: **Track 1**: The Robert Noyce Teacher Scholarships and Stipends (S&S) Track, **Track 2**: The NSF Teaching Fellowships (TF) Track, **Track 3**: The NSF Master Teaching Fellowships (MTF) Track, and **Track 4**: The Noyce Research Track. In addition, submissions are accepted for **Capacity Building** projects, which are intended to promote the development of future submissions in Track 1: S&S, Track 2: TF, Track 3: MTF, or Track 4: Noyce Research. Submissions from and partnerships among four-year institutions, two-year institutions, and/or minority-serving institutions are encouraged.

Noyce funding may also be requested to support:

- Projects providing STEM research experiences and opportunities for pre-Service and in-service STEM teachers, including STEM experiences at national laboratories and NASA centers and in STEM disciplines identified as critical needs for the Nation. Critical need disciplines include quantum computing and quantum science, robotics, artificial intelligence and machine learning, computer science, data analytics, and possible other timely STEM areas in current need of domestic professionals.
- Conferences consistent with the mission of the Noyce Program.

Definitions of Terms

In this program solicitation:

1. The term "STEM" is an acronym for science, technology, engineering, and mathematics.
2. The terms "mathematics or science teacher" and "STEM teacher" refer to an individual who has teaching certification or licensure to be a science, technology, engineering, mathematics, or computer science (including cybersecurity and artificial intelligence) teacher at the elementary or secondary school level. These teachers do not include teachers without elementary or secondary teacher certification or licensure, vocational or career technical education teachers, substitute teachers, paraprofessionals, or teaching assistants.
3. The term "STEM major" means a college or university major enrolled in a degree program in science, technology, engineering, mathematics, or computer science (including cybersecurity and artificial intelligence). Noyce-eligible STEM majors, degrees, or disciplines are identified based on its Classification of Instructional Programs (CIP) code. STEM majors, degrees, or disciplines that are typically eligible for Noyce cost of attendance support are: biological sciences (CIP code 26), computer sciences (CIP code 11), engineering (CIP code 14), mathematics and statistics (CIP code 27), physical sciences (CIP code 40), or fields related to these disciplines (e.g., biological and physical science CIP code 30.01, data science CIP code

30.70, marine sciences CIP code 30.32, mathematics and computer science CIP code 30.08). Noyce does not provide cost of attendance support for agriculture (CIP code 01), business (CIP code 52), education (CIP code 13), or health professions (CIP codes 51, 60, and 61), unless these majors are coupled with a Noyce-eligible STEM major in a double major.

4. The term "STEM professional" means a person who holds a baccalaureate, master's, or doctoral degree in a Noyce-eligible STEM discipline and either (i) has recently graduated; or (ii) is working in or had a career in a STEM field, including retirees from STEM professions.
5. The term "cost of attendance" means the cost of tuition and fees, room and board, books, supplies, transportation, and miscellaneous personal expenses for a student attending an institution of higher education on at least a half-time basis. For additional guidance on allowances for miscellaneous personal expenses, room and board, students with dependents, students enrolled less than half-time, or other specifics, see the full definition of cost of attendance in Section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll).
6. The term "scholarship" means funds awarded in the Scholarships and Stipends Track to:
    a. an undergraduate Noyce-eligible STEM major who has attained at least junior status in a baccalaureate degree program; or
    b. a post-baccalaureate student with a Noyce-eligible STEM baccalaureate degree (allowable only when the institution requires a post-baccalaureate year to obtain teacher certification or licensure).

    Note: Scholarships are not considered taxable income or loans during the period of the scholarship support.

7. The term "stipend" means funds awarded in the Scholarships and Stipends Track to a STEM professional with a Noyce-eligible STEM degree who enrolls in a teacher certification program.

    Note: Stipends are not considered taxable income or loans during the period of the stipend support.

8. The term "fellowship" means funds awarded:
    a. in the NSF Teaching Fellowships Track to a STEM professional while that individual is enrolled in a master's degree program leading to teacher certification or licensure and, thereafter, while that individual is fulfilling the teaching service commitment (at which point the funds are also referred to as a salary supplement); or
    b. in the NSF Master Teaching Fellowships Track to a STEM teacher (in which case the funds are also referred to as a salary supplement).
9. The term "high-need local educational agency (or high-need LEA)", as defined in section 201 of the Higher Education Act of 1965 (20 U.S.C. 1021), means a U.S. local educational agency (e.g., school district) that has at least one school that:
    a. meets at least one of the following criteria:
        i. has 20% or more of the children served by the agency from low income families;
        ii. serves at least 10,000 children from low-income families;
        iii. is eligible for funding under the Small, Rural School Achievement Program under section 7345(b); or
        iv. is eligible for funding under the Rural and Low-Income School Program under section 7351(b);

    and

    b. meets at least one of the following criteria:
        i. has more than 34% of teachers not teaching in the academic subject area or grade level in which the leaders were trained to teach; or
        ii. has a 15% or more (over the last three school years) teacher attrition rate or a high percentage of teachers with emergency, provisional, or temporary certification or licensure.
10. The term "Noyce recipient" refers to an individual who receives or has received a Noyce scholarship, stipend, or fellowship.

Conferences or Research Experiences in STEM Settings

Proposals for conferences or STEM research experiences for pre-Service or in-service teachers may be submitted at any time following consultation with and consent of a Noyce Program Officer. Typical budgets for such proposals range from $25,000 to $100,000. Successful proposals submitted by the Noyce Program's August deadline will be prioritized for support in the respective year.

Proposals for conferences addressing important issues in undergraduate STEM teacher preparation or education are welcome. The Noyce Program encourages conference proposals that: (1) address diversity, equity, and inclusion in STEM teaching and learning, including recruitment and retention efforts; (2) explore strategies to empower faculty and other stakeholders to create systemic change that improves diversity, equity, and inclusion in undergraduate STEM teacher education; (3) focus on ensuring K-12 STEM teaching reflects modern pedagogical teaching practices; or (4) involve substantive collaborations (e.g., with educational researchers, disciplinary scientists, leaders from K-12 schools). Conference proposals should include a conceptual framework for the conference, draft agenda, possible participant list, the outcomes or products that will result from the conference, and how these products serve the goals of the Noyce Program. See NSF PAPPG Chapter II.E.7 for guidance on the preparation and submission of conference proposals.

Proposals for projects seeking to provide research experiences for pre-Service and in-service STEM teachers are welcome. Such projects must include STEM research experiences in formal or informal U.S. settings, including national laboratories and NASA centers, and must appropriately align with the Noyce Program goals of recruiting, preparing, developing, and retaining effective STEM teachers from diverse backgrounds for high-need LEAs. Such submissions must follow the guidance in PAPPG Chapter II for the preparation and submission of full research proposals to NSF.

Funding for Institutions with Prior Noyce Support

Proposals are welcome from institutions with prior Noyce funding in any track, including prior Capacity Building funding. Such submissions must provide a detailed description of the institution's active Noyce project(s) and any prior Noyce funded project(s) with an end date within five years prior to the Noyce submission deadline. The description of the prior Noyce work at the institution must include evidence of success in meeting project goals, specific information about what was learned, an account of challenges encountered, and/or specific information about how the proposed project will be able to overcome any prior challenges. Additionally, the description should include details of how the proposed project might generate new knowledge, including how the proposed work may inform further improvements in STEM teacher preparation or development. For applicable program tracks, data demonstrating the institution's capacity to recruit and retain candidates should also be included.

Track 1: The Robert Noyce Teacher Scholarships and Stipends (S&S) Track

The Robert Noyce Teacher Scholarships and Stipends Track of the Noyce Program supports institutions to recruit and prepare STEM teachers for high-need LEAs. These projects provide scholarships to undergraduate Noyce-eligible STEM majors and stipends to Noyce-eligible STEM professionals who become STEM teachers.

Required Partners (Track 1: S&S)

To be eligible to receive a grant under Track 1: S&S, the project must have identified partnerships with (1) at least one high-need LEA and a public school, served by the LEA, identified as the location in which clinical teaching experiences will occur and (2) an institution of higher education (IHE). The IHE partnership must include:

1. a department that provides a program of study in a STEM discipline; and
2. either (a) a department, college, or school within the IHE partnership that provides a teacher preparation program; or (b) a two-year IHE that offers a teacher preparation program or dual enrollment program with an IHE participating in the partnership.

Project Features (Track 1: S&S)

Track 1: S&S projects are expected to develop and implement exemplary STEM education programs to recruit and prepare undergraduate Noyce-eligible STEM majors and/or professionals to become STEM teachers. Proposals should include evidence-based teacher preparation approaches and detail how best practices will be infused in the program of study. As learning technologies and environments continuously evolve, proposals are also expected to include effective and modern approaches to teacher education. Proposals should detail how these approaches and other specialized pedagogy will effectively promote the engagement of students in diverse, equitable, and inclusive STEM learning experiences in elementary and secondary schools.

All Track 1: S&S projects must:

1. administer scholarships for undergraduate Noyce-eligible STEM majors and/or stipends for Noyce-eligible STEM professionals;
2. identify the evidence-based strategies to be used in offering:
    a. academic courses and early clinical teaching experiences, including the preparation necessary to meet requirements for teacher certification or licensure designed to prepare Noyce recipients to become STEM teachers in elementary or secondary high-need LEAs; and
    b. activities both before and after Noyce recipients begin teaching to enable them to become effective STEM teachers in high-need LEAs, fulfill the teaching service requirements, and exchange ideas with others in their fields. Project activities should facilitate the transition into teaching and aid retention during and beyond the obligatory teaching service period; and
    c. include a well-developed plan for providing Noyce recipients with the relevant cultural competence, pedagogical knowledge, and disposition to be a successful teacher in a high-need LEA.

Among the identified recruitment strategies, projects may include support for internships for freshman and sophomore undergraduate students with the goal of increasing the number of declared or prospective STEM majors who will enter K-12 STEM teaching as a career. Such experiences may occur in formal or informal U.S. STEM or STEM education settings such as STEM summer camps, STEM museums, science centers, or STEM laboratories.

Selection of Recipients (Track 1: S&S)

Scholarship and stipend recipients must be U.S. citizens, U.S. nationals, or permanent resident aliens. Individuals who have previously served (including concurrent service) as a K-12 teacher are not eligible for scholarship or stipend support.

Scholarship recipients must be undergraduate students who have attained at least junior status in a Noyce-eligible STEM baccalaureate degree program. They are expected to be selected primarily based on academic merit, with consideration given to financial need and the diversity of participants in the program.

Stipend recipients must be STEM professionals (from recent STEM graduates to retirees from STEM professions) who, while receiving the stipend, are enrolled in a teacher preparation program (see Project Features section above). They are expected to be selected primarily based on academic merit and STEM professional achievement, with consideration given to financial need and the diversity of participants in the program.

Track 1: S&S projects are strongly encouraged to engage in recruitment and selection efforts that are informed by evidence-based principles of diversity, equity, and inclusion.

Teaching Service Commitment (Track 1: S&S)

An individual awarded a scholarship must serve as a full-time STEM teacher in a high-need LEA for a total of two years for each full-year of a scholarship received, to be fulfilled within eight years after completing the STEM baccalaureate program or post-baccalaureate program (only when the institution requires a post-baccalaureate year to obtain teacher certification or licensure).

An individual awarded a stipend must serve as a full-time STEM teacher in a high-need local educational agency a total of two years, to be fulfilled within four years after completing teacher certification or licensure.

See Institutional and Recipient Obligations for Projects in Track 1: S&S, Track 2: TF, or Track 3: MTF for details about repayment of scholarships or stipends that revert to loans if the teaching service commitment is not fulfilled.

Amount and Duration of Scholarships and Stipends (Track 1: S&S)

Scholarships awarded must be at least $10,000 per year, except that no individual may receive for any year more than the cost of attendance at the institution. A full-time student may receive an annual scholarship beginning in the junior year and continuing through the completion of the baccalaureate degree program. The scholarship may include summer terms but should not exceed a maximum of three years of support from the start of the junior year. **The final year of support must be at the undergraduate level except in cases where the institution requires the teacher certification or licensure to be completed at the post-baccalaureate level.** A part-time student may receive scholarships that are prorated according to the student's enrollment status but must not receive scholarship support over more than six years, including summer terms. Full-time and part-time scholarship recipients must have completed teacher certification or licensure requirements upon completion of the STEM baccalaureate degree or, if applicable, the post-baccalaureate degree.

Stipends awarded are to be at least $10,000, except that no individual may receive for any year more than the cost of attendance at the institution. Individuals may receive a maximum of one year of stipend support, unless the individual is enrolled in a part-time program, in which case the amount may be prorated according to the length of the program. While there is no restriction on the length of the post-baccalaureate program, the maximum one year of stipend support may only be offered in the final year of the program. Both full-time and part-time stipend recipients must have completed teacher certification or licensure requirements by the end of the stipend support.

Track 2: The National Science Foundation Teaching Fellowships Track (TF)

The NSF Teaching Fellowships Track of the Robert Noyce Teacher Scholarship Program offers awards to institutions to administer fellowships and programmatic support to STEM professionals. These individuals, referred to as Teaching Fellows (TFs), receive support to complete a master's degree program with teacher certification or licensure, and thereafter become a STEM teacher in an elementary or secondary school. In addition, after the completion of the

master's degree program that provides certification or licensure, TFs receive a salary supplement of at least $10,000/year for four years.

Required Partners (Track 2: TF)

To be eligible to receive a grant under Track 2: TF, the project must have identified partnerships with (1) at least one high-need LEA and a public school, served by the LEA, identified as the location in which clinical teaching experiences will occur; (2) at least one nonprofit organization that has a demonstrated capacity to provide expertise or support to meet the goals of the proposed project; and (3) an institution of higher education (IHE).

The IHE partnership must include:

1. a department that provides a program of study in a STEM discipline; and
2. either (a) a department, college, or school within the IHE partnership that provides a teacher preparation program; or (b) a two-year IHE that offers a teacher preparation program or dual enrollment program with an IHE participating in the partnership.

IHEs, K12 schools, or school districts are not eligible to serve as nonprofit partners. Examples of supports the partnering nonprofit organization may provide include, but are not limited to, providing TFs with opportunities for professional development, leadership experience, curriculum design, research experiences, or mentorship. This may include programs that pair TFs with currently employed or recently retired STEM professionals.

Project Features (Track 2: TF)

Track 2: TF projects are expected to develop and implement exemplary STEM education programs for STEM professionals. Proposals should include evidence-based teacher preparation approaches and detail how best practices will be infused in the program of study. As learning technologies and environments continuously evolve, proposals are also expected to include effective and modern approaches to teacher education. Proposals should detail how these approaches and other specialized pedagogy will effectively promote the engagement of students in diverse, equitable, and inclusive STEM learning experiences in elementary and secondary schools.

All Track 2: TF projects must:

1. administer fellowships, including providing the TF salary supplements;
2. identify the evidence-based strategies to be used in offering:
    a. academic courses and clinical teaching experiences to enable TFs to obtain a master's degree that leads to teacher certification or licensure; and
    b. programs or activities, including mentoring, induction, and professional development activities, to enable TFs to become highly effective K-12 STEM teachers in high-need LEAs, fulfill the teaching service requirements, and exchange ideas with others in their fields. Project activities should facilitate the transition into teaching and aid retention during and beyond the obligatory teaching service period.
3. include a well-developed plan for providing TFs with the relevant cultural competence, pedagogical knowledge, and disposition to be a successful teacher in a high-need LEA.

Among the identified recruitment strategies, projects may include support for internships with the goal of increasing the number of prospective TFs who will enter the program or as a means of induction and retention support for the TFs. Such experiences may occur in formal or informal U.S. STEM or STEM education settings such as STEM summer camps, STEM museums, science centers, or STEM laboratories.

Selection of Teaching Fellows (Track 2: TF)

TFs must be U.S. citizens, U.S. nationals, or permanent resident aliens. Individuals who have previously served (including concurrent service) as a K-12 teacher are not eligible for fellowship support. TFs are expected to be selected primarily based on professional achievement, academic merit, and STEM content knowledge, as demonstrated by their performance on a recognized validated assessment of STEM content knowledge. In selecting applicants, consideration should be given to financial need and the diversity of participants in the program. Projects are strongly encouraged to engage in recruitment and selection efforts that are informed by evidence-based principles of diversity, equity, and inclusion.

Teaching Service Commitment and Leadership Role (Track 2: TF)

An individual awarded an NSF Teaching Fellowship must:

1. serve as a full-time STEM teacher in a high-need LEA a total of four years, to be fulfilled within six years of completing the master's degree program; and
2. take on a leadership role within the school or high-need LEA in which the TF is employed, while fulfilling the teaching service commitment in addition to regular classroom activities. Examples of leadership activities include participating in curriculum development, assisting in the planning and implementation of professional development experiences, and participating in preservice teacher education.

See Institutional and Recipient Obligations for Projects in Track 1: S&S, Track 2: TF, or Track 3: MTF for details about repayment of fellowships that revert to loans if the teaching service commitment is not fulfilled.

Amount and Duration of Salary Supplements (Track 2: TF)

A key aspect of the NSF Teaching Fellowship Track is the provision of salary supplements to the TFs as they fulfill their teaching service commitment.

While there is no restriction on the length of the master's degree program leading to teacher certification or licensure, the TF may only receive cost of attendance support in the final year of the master's degree program. The maximum one year of cost of attendance support must be at least $10,000, except that no TF may receive more than the cost of attendance. TFs enrolled part-time may receive prorated cost of attendance support according to the TF's enrollment status but should not receive support over more than two years, including summer terms. Full-time and part-time recipients must have completed certification or licensure requirements upon completion of the master's degree.

Following completion of the master's degree program and teacher certification or licensure, and while teaching in an elementary or secondary school in a high-need LEA, the TF must receive an annual salary supplement of at least $10,000 per year for each of the four years of the teaching commitment period. The high-need LEA must agree not to reduce the base salary of the NSF Teaching Fellow while the salary supplement is being received.

Track 3: The National Science Foundation Master Teaching Fellowships (MTF) Track

The NSF Master Teaching Fellowships Track of the Robert Noyce Teacher Scholarship Program offers awards to institutions to administer fellowships and

programmatic support to experienced and exemplary K-12 STEM teachers, who (1) have already received teacher certification or licensure, (2) possess a master's or bachelor's degree in education or a STEM discipline, and (3) participate in a program for developing teacher leaders. These selected individuals are referred to as Master Teaching Fellows (MTFs).

MTFs must be elementary or secondary STEM teachers who have either a: (1) master's degree in education or a STEM discipline; or (2) bachelor's degree in education or a STEM discipline and concurrent enrollment in an education or STEM master's degree program.

Required Partners (Track 3: MTF)

To be eligible to receive a grant under Track 3: MTF, the project must have identified partnerships with (1) at least one high-need LEA and a public school, served by the LEA, from which the experienced and exemplary teachers will be selected; (2) at least one nonprofit organization that has a demonstrated capacity to provide expertise or support to meet the goals of the proposed project; and (3) an institution of higher education (IHE).

The IHE partnership must include:

1. a department that provides a program of study in a STEM discipline; and
2. either (a) a department, college, or school within the IHE partnership that provides a teacher preparation program; or (b) a two-year IHE that offers a teacher preparation program or dual enrollment program with an IHE participating in the partnership.

IHEs, K12 schools, or school districts are not eligible to serve as nonprofit partners. Examples of supports nonprofit organizations may provide include, but are not limited to, providing MTFs with opportunities for professional development, leadership experience, curriculum design, mentorship, or research experiences. Such experiences may include the pairing of MTFs with currently employed or recently retired STEM professionals.

Track 3: The National Science Foundation Master Teaching Fellowships (MTF) Track

The NSF Master Teaching Fellowships Track of the Robert Noyce Teacher Scholarship Program offers awards to institutions to administer fellowships and programmatic support to experienced and exemplary K-12 STEM teachers, who (1) have already received teacher certification or licensure, (2) possess a master's or bachelor's degree in education or a STEM discipline, and (3) participate in a program for developing teacher leaders. These selected individuals are referred to as Master Teaching Fellows (MTFs).

MTFs must be elementary or secondary STEM teachers who have either a: (1) master's degree in education or a STEM discipline; or (2) bachelor's degree in education or a STEM discipline and concurrent enrollment in an education or STEM master's degree program.

Required Partners (Track 3: MTF)

To be eligible to receive a grant under Track 3: MTF, the project must have identified partnerships with (1) at least one high-need LEA and a public school, served by the LEA, from which the experienced and exemplary teachers will be selected; (2) at least one nonprofit organization that has a demonstrated capacity to provide expertise or support to meet the goals of the proposed project; and (3) an institution of higher education (IHE).

The IHE partnership must include:

1. a department that provides a program of study in a STEM discipline; and
2. either (a) a department, college, or school within the IHE partnership that provides a teacher preparation program; or (b) a two-year IHE that offers a teacher preparation program or dual enrollment program with an IHE participating in the partnership.

IHEs, K12 schools, or school districts are not eligible to serve as nonprofit partners. Examples of supports nonprofit organizations may provide include, but are not limited to, providing MTFs with opportunities for professional development, leadership experience, curriculum design, mentorship, or research experiences. Such experiences may include the pairing of MTFs with currently employed or recently retired STEM professionals.

Project Features (Track 3: MTF)

Track 3: MTF projects are expected to develop and implement exemplary STEM education focused programs for MTFs and must administer fellowships, including providing the MTF salary supplements. Proposals should include evidence-based approaches to developing and retaining effective teacher leaders in high-need LEAs. As learning technologies and environments continuously evolve, proposals are also expected to include effective and modern approaches to developing teacher leaders. Proposals should detail how these approaches and other specialized pedagogy will effectively promote the engagement of students in diverse, equitable, and inclusive STEM learning experiences in elementary and secondary schools.

All Track 3: MTF projects must:

1. administer fellowships, including providing the MTF salary supplements;
2. identify the evidence-based strategies to be used in offering academic courses (or master's degree program for MTFs without a master's degree) and leadership training to prepare exemplary and experienced teachers to become highly-effective teacher leaders;
3. administer project activities, including mentoring and professional development activities, that will enable MTFs to fulfill the teaching service requirement, exchange ideas with others in their field, and become highly-effective teacher leaders; AND
4. provide MTFs with professional development specific to being a successful and culturally competent teacher in a high-need LEA.

Project activities should facilitate teacher leadership growth and aid in retention during and beyond the obligatory teaching service period. Projects may include support for STEM education or STEM research experiences as a means of professional development or retention support for the MTFs. Such experiences may occur in formal or informal U.S. STEM or STEM education settings such as STEM summer camps, STEM museums, science centers, or STEM laboratories.

Selection of Master Teaching Fellows (Track 3: MTF)

MTFs must be U.S. citizens, U.S. nationals, or permanent resident aliens. MTFs are expected to be selected primarily based on professional achievement, academic merit, and STEM content knowledge, as demonstrated by their performance on a recognized validated assessment of STEM content knowledge. In addition, MTFs are expected to be selected based on demonstrated success in improving student academic achievement in STEM disciplines. In selecting applicants, consideration should be given to the diversity of participants in the program. Projects are strongly encouraged to engage in recruitment and selection efforts that are informed by evidence-based principles of diversity, equity, and inclusion.

Teaching Service Commitment and Leadership Role (Track 3: MTF)

A teacher awarded a Master Teaching Fellowship must:

1. serve as a full-time STEM teacher in a high-need LEA for a total of five years, to be fulfilled within seven years of the start of participation in the program; and
2. take on a leadership role within the school or high-need LEA in which the MTF is employed, while fulfilling the teaching service commitment in addition to regular classroom activities. Examples of leadership activities include serving as a mentor, participating in curriculum development, assisting in the planning and implementation of professional development experiences, and participating in pre-service teacher education.

Note: MTFs with elementary certification or licensure should teach mathematics and/or science for at least 50% of their classroom teaching responsibilities.

See Institutional and Recipient Obligations for Projects in Track 1: S&S, Track 2: TF, or Track 3: MTF for details about repayment of fellowships that revert to loans if the teaching service commitment is not fulfilled.

Amount and Duration of Salary Supplements (Track 3: MTF)

A key aspect of the Master Teaching Fellowships Track is the provision of annual salary supplements to the MTFs as they fulfill their five-year teaching service commitment. While participating in the program and teaching in a high-need LEA, MTFs must receive a salary supplement of at least $10,000 per year for each year of the five-year teaching commitment period.

In cases where MTFs do not start the program with a master's degree in education or a STEM discipline, they must be enrolled in and complete an education or STEM master's degree program during their first year of participation. While there is no restriction on the length of the master's degree program, MTFs must complete the master's degree in their first year of the MTF program and a maximum of one year cost of attendance support (counted as the salary supplement for year one) may be offered only in the final year of the master's degree program. MTFs may not begin receiving the other four years of salary supplements until the master's degree has been completed. The high-need LEA must agree not to reduce the base salary of the MTF while the salary supplement is being received.

Institution and Recipient Obligations for Projects in Track 1: S&S, Track 2: TF, or Track 3: MTF

Institution Obligations

An institution receiving a grant under Track 1: S&S, Track 2: TF, or Track 3: MTF agrees to:

1. ensure that Noyce recipients accept the terms of the scholarship, stipend, or fellowship and that recipients provide annual certification of employment and updated contact information;
2. supply to NSF relevant statistical and demographic data on Noyce recipients;
3. cooperate with NSF third-party project monitoring that will require annual data collection; and
4. monitor, track, and report on the compliance of Noyce recipients with their teaching service commitments.

If a recipient is required to repay the scholarship/stipend/fellowship, the institution will:

1. be responsible for determining the repayment amounts, notifying the recipient, and providing documentation in project reports; and
2. collect such repayment amount, including interest, as determined by the repayment policy developed by the institution and agreed upon by the recipient. The institution may retain up to 5 percent of any repayment collected to defray administrative costs associated with the collection.

The institution is responsible for reporting the aforementioned information annually to NSF directly and/or to a designated third party. This reporting responsibility may extend for up to 12 years following the end date of the award and submission of the final project report.

Recipient Obligations

As a condition of acceptance of a scholarship, stipend, or fellowship, Noyce recipients agree to provide the institution with annual certification of employment and updated contact information as well as to participate in activities (e.g., surveys, induction support) conducted as part of institution project-level and NSF program-level evaluation. In addition, the scholarship, stipend, or fellowship may revert to a loan, meaning that the recipient will be required to repay all or a portion of the scholarship, stipend, or fellowship, if the recipient:

1. fails to maintain an acceptable level of academic standing in the program in which the individual is enrolled;
2. is dismissed from the program or institution for disciplinary reasons;
3. withdraws from the institution or program before completion of program requirements;
4. declares that the teaching service commitment will not be fulfilled; or
5. fails to fulfill the teaching service commitment.

If such circumstances occur before the completion of one year of the teaching service commitment under any track, the total amount of scholarship, stipend, or fellowship received by the individual must be repaid. If the circumstance occurs after the completion of one year of the teaching service commitment, the amount to be repaid will be as follows:

Track 1: S&S

- For a scholarship recipient, a proportion of the total scholarship awards received by the individual, prorated appropriately to reflect partial service completed; or
- For a stipend recipient, one-half of the total amount of stipend received by the individual.

Track 2: TF

- the full amount of the fellowship awarded during enrollment in the master's degree program, reduced by one-fourth for each year of service completed, plus one half of the total salary supplements (excluding cost of attendance) received.

Track 3: MTF

- one-half of the total amount of salary supplements received, including fellowship support in year one for MTFs without master's degrees.

For Track 1: S&S, Track 2: TF, and Track 3: MTF, such repayments may not be reused by the institution. Repayments must be returned to the Federal

Government, consistent with the provisions of part B or D of Title IV of the Higher Education Act of 1965. Institutions may return funds via https://www.pay.gov/public/home or by mailing a check to: National Science Foundation, ATTN: NSF Cashier, 2415 Eisenhower Ave, Alexandria, VA 22314.

The institution must establish procedures that ensure compliance with the teaching service requirement, with allowances for extreme hardship or other circumstances under which it is not in the best interests of the school district or not feasible for the recipient to fulfill the teaching service commitment.

Track 4: The Noyce Research Track

The Research Track of the Robert Noyce Teacher Scholarship Program offers awards to support exploratory studies and research projects that address STEM teacher effectiveness and retention in high-need LEAs. Methodologies should be selected based on research questions to be investigated. Qualitative, quantitative, and mixed methodologies are all welcome, as are research syntheses. Submissions should be informed by the *Common Guidelines for Education Research and Development* as well as basic tenets of Design-Based Implementation Research.

Track 4: Noyce Research projects might examine teacher candidate characteristics and/or programmatic features that are shown to result in effective teachers who persist in teaching in high-need LEAs. Approaches to examining STEM teacher effectiveness might include investigating culturally relevant and inclusivity-focused aspects of effectiveness, including individual or institutional factors that contribute to effectiveness. It is imperative that Track 4: Noyce Research projects use evidence-based principles of diversity, equity, and inclusivity in studying the effectiveness and retention of STEM teachers. Track 4: Noyce Research submissions do not require a focus on Noyce teachers. However, projects may study effectiveness and retention of Noyce recipients as teachers in high-need LEAs beyond their service requirement. Studies that identify teacher or school experiences, characteristics, or models that result in retention of STEM teachers, including STEM teachers of color, are encouraged.

Track 4: Noyce Research projects must include substantive collaboration among educational researchers (including those from the social and behavioral sciences, as applicable), faculty members (or persons) with expertise in a STEM discipline, and faculty members (or persons) with expertise in STEM education. Proposals must be theoretically grounded and include appropriate methodologies and strategies. The use of qualitative methodologies, as well as quantitative approaches, is welcome and should be selected based on the research questions to be investigated. Studies that involve examination of only a single institution's teacher preparation program are discouraged unless the study may produce findings or theory with the potential to contribute to understanding of a broader community. Submissions are expected to contribute to the knowledge base of scholarly research in STEM education.

Capacity Building Submissions

Capacity Building awards are intended to support institutions to prepare a future competitive Noyce submission in Track 1: S&S, Track 2: TF, Track 3: MTF, or Track 4: Noyce Research. Capacity Building projects may include a focus on collecting data, developing partnerships, building infrastructure, developing evidence-based models and strategies for recruiting, preparing and supporting STEM teachers, or other related development and planning efforts. Noyce particularly encourages Capacity Building submissions that focus on (1) new or revised curricula that apply modern approaches to teacher education, (2) specialized pedagogy required to effectively teach STEM in high-need elementary and secondary schools and school districts, or (3) other prevalent and timely needs in STEM teacher preparation. Collaborations between successful funded Noyce projects and institutions seeking to develop capacity are encouraged. Capacity Building projects are not eligible to award scholarships, stipends, fellowships, or internships.

Examples of possible Capacity Building project activities include, but are not limited to:

- identifying or developing models, research designs, or collaborative partnerships to study STEM teacher effectiveness and retention;
- conducting pilot programs to study or improve teacher effectiveness and retention;
- conducting needs assessments to determine areas of teacher shortages and interest among STEM professionals;
- strengthening partnerships with high-need LEAs;
- strengthening collaborations among faculty in STEM and education departments;
- strengthening collaborations among institutions of higher education, including two-year colleges;
- establishing partnerships or methods for recruiting a diverse pool of Noyce recipients, including those from talent pools that have not yet been fully tapped (e.g., African Americans, Alaska Natives, American Indians, Hispanics, Native Hawaiians, Native Pacific Islanders, and persons with disabilities);
- developing tools to identify skills, knowledge, and aptitude of veterans who have potential to become STEM teachers;
- re-imagining teacher preparation, education, and retention efforts to reflect current school needs;
- developing new courses, early field experiences, degree requirements, or induction supports for new STEM teachers;
- establishing or refining practices related to the preparation and retention of STEM teachers in rapidly emerging areas (e.g., computer science, engineering) in elementary and secondary schools;
- developing or implementing teacher leadership models to support experienced and exemplary STEM teachers; or
- planning for matching funds, agreements, and collaborations to support cost sharing (only for projects focused on Track 2: TF or Track 3: MTF capacity development).

Partners for Capacity Building Submissions: There are no partnership requirements for Capacity Building submissions. However, when possible, projects are encouraged to include participation of both a STEM and education faculty member from a participating or partnering institution.

References and Notes

Information about current awards funded under the Robert Noyce Teacher Scholarship Program can be found at the Robert Noyce Teacher Scholarship Program website. Additional resources can be found at https://www.nsfnoyce.org.

National Academies of Sciences, Engineering, and Medicine (2020). *Changing Expectations for the K12 Teacher Workforce: Policies, Pre-service Education, Professional Development, and the Workplace*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25603.

National Academies of Sciences, Engineering, and Medicine (2016). *Barriers and Opportunities for 2-Year and 4-Year STEM Degrees: Systemic Change to Support Students' Diverse Pathways*. Washington, DC: The National Academies Press. https://doi.org/10.17226/21739.

National Research Council (2012a). *A framework for K-12 science education practices, crosscutting concepts, and core ideas*. Committee on a Conceptual Framework for New K-12 Science Education Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

National Research Council (2012b). *Discipline-based education research: Understanding and improving learning in undergraduate science and engineering*. Committee on the Status, Contributions, and Future Directions of Discipline-Based Education Research. Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

National Research Council (2012dc). *Monitoring progress toward successful K-12 STEM education: A nation advancing?* Committee on the Evaluation Framework for Successful K-12 STEM Education. Board on Science Education and Board on Testing and Assessment, Division of Behavioral and Social Sciences and Education.

National Science Board (2020) *Science and Engineering Indicators*. Arlington, VA: National Science Foundation. https://ncses.nsf.gov/pubs/nsb20201.

National Science Foundation (2013). *Common Guidelines for Education Research and Development*. A Report from the Institute of Education Sciences, U.S. Department of Education and the National Science Foundation (NSF 13-126).

III. AWARD INFORMATION

Pending availability of funds, the anticipated funding amount is approximately $67,000,000 for new and continuing Noyce awards. Depending on the quality of submissions, NSF expects to make an estimated 55 to 70 new awards, including 25 - 30 Track 1: S&S awards; 3 - 5 Track 2: TF awards; 7 - 10 Track 3: MTF awards; 5 - 8 Track 4: Noyce Research awards, and 15 - 17 Capacity Building awards, subject to availability of funds.

Estimated amounts per award:

NOTE: The maximum funding amount (including both direct and indirect costs) for submissions is outlined below. However, additional funding is available through **Collaboration Incentives** for engagement of community colleges in Track 1: S&S or Capacity Building projects, Noyce awards in Track 4: Noyce Research projects, or minority-serving institutions in any Noyce project.

- Track 1: S & S - up to $1,200,000, with a project duration of up to 5 years;
- Track 2: TF and Track 3: MTF - up to $3,000,000, with a project duration of up to 5 years (for proposals supporting one cohort of NSF Teaching Fellows or NSF Master Teaching Fellows) or 6 years (only for proposals supporting two cohorts of NSF Teaching Fellows or NSF Master Teaching Fellows);
- Track 4: Noyce Research - up to $1,000,000, with a project duration of up to 5 years; and
- Capacity Building - up to $75,000, with a project duration of 1 year.

Collaboration Incentives: In Track 1: S&S, projects that involve a substantive collaboration between four-year institutions and either two-year institutions, minority-serving institutions, or both may request up to an additional $250,000. Capacity Building projects involving substantive collaboration between four-year institutions and either two-year institutions, minority-serving institutions, or both may request up to a total of an additional $50,000. The Collaboration Incentive is intended to foster and promote partnerships with two-year institutions and/or minority-serving institutions. Hence, the incentive is not applicable for projects where the submitting or lead institution is the two-year institution or minority-serving institution, unless the partnering institution is also either a two-year institution or minority-serving institution.

In Track 4: Noyce Research, projects that involve a substantive collaboration with current or prior Noyce awards at other institutions may request up to an additional $100,000 for each Noyce project that is substantively engaged in the research endeavor, with a maximum overall budget request not to exceed $2,500,000.

A reasonable percentage of the collaboration incentive is expected to directly support project activities and participants involving the collaborating institution(s). The types of substantive collaboration or engagement may vary across projects in different tracks (e.g., serving as a recruitment pipeline, providing access to needed data, participating in project activities, serving on project leadership team). Moreover, support for substantive engagement with two-year institutions may include tuition support for courses for prospective Noyce recipients, hosting summer experiences for prospective Noyce recipients, or salary support for faculty engaged in the project.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- (For all submissions) One or more Institutions of Higher Education (IHEs) (two- and four-year IHEs, including community colleges) accredited in, and having a campus located in the U.S.; consortia of such institutions; or U.S. nonprofit organizations (e.g., nonprofit research institutions, research museums) offering a teacher education or residency program.

  (In addition to the above, for Track 4: Noyce Research submissions only) Professional societies or similar organizations that are directly associated with educational or research activities.

Who May Serve as PI:

- For Track 1: S&S, Track 2: TF, and Track 3: MTF, the PI team must include at least one faculty member from a science, technology, engineering, or mathematics department and at least one education faculty member from an education department at a participating or partnering U.S. institution of higher education.
- For Track 4: Noyce Research, the PI team must include at least one individual with expertise and experience in STEM education research and at least one individual with an advanced degree in a STEM or STEM education discipline.
- For Capacity Building, there are no restrictions on who may serve on the PI team.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Additional Eligibility Info:

Each proposal must address only one track.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via FastLane or Grants.gov.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via FastLane. PAPPG Chapter II.D.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.C.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

The following instructions supplement and do not supplant guidelines in the NSF PAPPG. All submissions must adhere to the instructions below.

1. Cover Sheet

On the cover sheet in FastLane, choose the Robert Noyce Teacher Scholarship Program solicitation number indicated on the cover of this document. Select Robert Noyce Teacher Scholarship Program from the list of programs in the "NSF Unit Consideration" section. This choice should be specified to have access to the Project Data Form, which is required for Noyce Program proposals. If using Grants.gov, the program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page.

All proposals submitted to the Robert Noyce Teacher Scholarship Program must have the Human Subjects box checked, with the applicable IRB status of the project indicated.

2. Project Summary

The Project Summary must be prepared in accordance with the guidance in the NSF PAPPG and individually address the project's Intellectual Merit and Broader Impacts, with the following supplemental guidance:

- indicate the specific type of proposal (Track 1: S&S, Track 2: TF, Track 3: MTF, Track 4: Noyce Research, Capacity Building);
- name all partnering institutions, nonprofit organizations (applicable in Tracks 2&3 only), schools, and school districts involved in the project; and
- (for Capacity Building projects only) The first sentence of the Overview Section must identify, if known, the intended future Noyce track and a description of how it is aligned with the Capacity Building project's goals.

3. Project Description

In addition to a separate section labeled "Broader Impacts" as required by the NSF PAPPG, the Project Description should include appropriate evidence-based strategies or literature to support the proposed work and must include the following sections, not necessarily in the order presented but clearly identified.

1. **Track 1: S&S, Track 2: TF, and Track 3: MTF Submissions**

   The Project Description for Track 1: S&S, Track 2: TF, and Track 3 MTF submissions must not exceed 15 pages.

   i. **Scope:** Provide details on the (a) number and amount of scholarships, stipends, and/or fellowships, along with the rationale for the number and amount; and (b) projected cumulative number of new STEM teachers to be produced (for S&S and TF) or NSF Master Teaching Fellows (for MTF) developed over the duration of the program with a comparison to number of STEM teachers or teacher leaders currently produced by the proposing institution(s).
   ii. **Degree, Preparation, or Leadership Program:** Provide details on the (a) teacher preparation and certification program (for S&S), (b) master's degree program that allows an individual to obtain certification or licensure (for TF), (c) master's degree program and leadership training to prepare exemplary and experienced teachers with a bachelor's degree to become teacher leaders (for MTF), or (d) professional

development program for exemplary and experienced teachers with a master's degree to become teacher leaders (for MTF). This description should include the academic requirements and other components of the program in which the Noyce recipients will participate, the extent to which the proposed strategies reflect effective practices based on research, and any modifications or course revisions that will be developed and implemented. For projects involving more than one institution, the proposal should describe the relevant program at participating institutions and the roles and responsibilities of other institutions in the project. Aspects of the teacher certification or leadership development that are distinctive beyond traditional preparation or development programs should be identified.

iii. **Recruitment and Selection:** Describe the recruitment activities, marketing strategies, and selection criteria. The recruitment and selection process must be designed to attract a diverse and qualified pool of applicants, with attention given to those who may not have previously considered a career in K-12 STEM teaching (for Track 1: S&S and Track 2: TF), are veterans, or are from talent pools that have not yet been fully tapped, including Blacks and African Americans, Alaska Natives, American Indians, Hispanics, Native Hawaiians, Native Pacific Islanders, and persons with disabilities. The recruitment and selection plan must include evidence of ability to recruit the proposed number of program participants from the available pool of potential applicants, including baseline data that include, as applicable, the number of Noyce-eligible STEM majors at the institution(s), number of students in the respective teacher preparation program(s), institutional STEM teacher production, and/or teacher attrition or retention rates in partnering schools or school districts.

iv. **Project Administration:** Describe the management and administrative structure for administering the program.

v. **Collaborations:** Provide details on a genuine collaboration between the project and required partners. Specifically, identify the role of and collaborative efforts with partners, including the partnering high-need LEA; project faculty in STEM departments and education faculty; and nonprofit organizations (for Track 2: TF and Track 3: MTF).

vi. **Teacher Induction and Development:** Describe the plan for supporting new teachers during their induction years (for S&S and TF) or developing teacher leaders (for MTF).

vii. **Project Activities and Supports:** Provide details on activities and support mechanisms that will be available to Noyce recipients to ensure that they will be able to fulfill their teaching service commitment and will have the needed cultural competence, pedagogical knowledge, and disposition to be successful STEM teachers in high-need LEAs.

viii. **Monitoring and Compliance:** Provide details on plans to monitor Noyce recipients' compliance with the teaching service commitment. This must include a plan for (a) tracking the recipients during the period in which they are fulfilling their teaching service commitment, (b) collecting demographic data and statistics on recipients, (c) how the institution will proceed if the recipient does not complete the teaching service commitment, and (d) how the institution will be able to report on the teaching retention of recipients beyond their teaching service commitment.

ix. **Evaluation:** Provide an evaluation plan that will assess the effectiveness of the project in attracting, preparing, and retaining Noyce-eligible STEM majors and/or professionals in teaching careers (for S&S and TF) or developing and retaining teacher leaders in teaching careers (for MTF) in high-need LEAs. The evaluation should include ways to measure the effectiveness of the recipients as teachers and teacher leaders. The proposal must identify an independent evaluator with the expertise to conduct an objective evaluation.

x. **Dissemination:** Describe plans for disseminating the results of the project and for contributing to the knowledge base about teacher preparation, recruitment, and retention, especially in high-need LEAs.

xi. **Cost Sharing (for TF and MTF only):** Provide details on the source, amount, and timeline of the cost sharing commitment, with explicit identification of the cash and in-kind portions of the match. Cost share may supplement but not supplant the salary supplement (including cost of attendance for completion of a master's degree program), as such cost share must be in addition to the minimum Noyce-supported $10,000/year salary supplement support.

xii. **Prior Support:** See Section "Funding for Institutions with Prior Noyce Support" in Section II of this solicitation for specific program requirements for prior Noyce awards.

2. **Track 4: Noyce Research**

The Project Description for Track 4: Noyce Research submissions must not exceed 15 pages.

i. **Literature and Theoretical Framework:** Provide details on the research literature and theory on which the research design is based.

ii. **Research Question(s):** Identify the research question(s) to be investigated.

iii. **Methods:** Provide details on the data to be collected and how it will be analyzed. Additionally, detail the methods to be used to answer the research question(s) as well as a description of the sample to be studied. Methods should be directly linked to the theory or theories being used and build on relevant research. The proposed research design must be described in sufficient detail to allow for evaluation of its appropriateness in addressing the research question(s).

iv. **Knowledge Generation:** Provide details on the contribution to knowledge and theory to be made, including a coherent and persuasive chain of reasoning that shows how the research claims will be supported and how the results have potential to add new evidence-based insights to theory and practice.

v. **Evaluation:** Provide details on the project's plan for external feedback, including a plan for soliciting ongoing objective input and overall assessment of project progress (formative) and success (summative). While various mechanisms (e.g., advisory board, independent evaluator) may be used for project evaluation, an explicit rationale for the mechanism must be included.

vi. **Dissemination:** Provide details on the communication strategy, including a set of strategies for reaching relevant audiences for the findings of the project, including (where appropriate) researchers in education and other fields, practitioners, and the public. The potential results of the proposed research are expected to be of sufficient significance to merit peer-review and broader publication.

3. **Capacity Building Submissions**

The Project Description for Capacity Building submissions must not exceed 10 pages.

i. **Rationale:** Justify why a Capacity Building grant is needed at the institution and identify what capacity is currently lacking but needed for submission of a competitive Noyce Track 1, 2, 3, or 4 submission. Describe the current infrastructure available and the aspects that will be considered in developing capacity at the institution to meet the prospective Noyce project needs.

ii. **Project Plan:** Describe the project's goals, timeline, and plan for collecting data to determine need, interest, and capacity, as applicable. Additionally, either describe (1) how the project will be used to develop a future Noyce Track 1, 2, 3, or 4 submission, including identifying the respective track that aligns with the Capacity Building project's goals or (2) a plan for identifying the appropriate track for a future submission, for cases where the project is focused on gathering or analyzing needed data to determine which track would be most plausible for a future Noyce submission. While Capacity Building projects are encouraged to share any outcomes with communities of interest, a formal dissemination plan is not required.

iii. **Partnerships:** Describe the entities to be engaged and processes to be employed in designing a plan for meeting project goals.

iv. **Assessment of Project Outcomes:**: Describe plans for assessing the impact, success, or outcomes of the project. Project assessment should include formative and summative components, and may be carried out by an independent evaluator, an advisory board, or other party qualified to provide independent feedback.

v. **Prior Support:** See Section "Funding for Institutions with Prior Noyce Support" for specific program requirements for prior Noyce awards.

vi. **Project Management:** Describe the management and administrative structure for administering the program.

4. **Current and Pending Support**

See PAPPG Chapter II.C.2.h. For Track 2 and Track 3 proposals with a duration of six years, current and pending support should be reported for the first five years of the project.

5. **Additional Requirements for All Submissions**

   i. **Letters of Collaboration:** Letters of collaboration should provide evidence of commitment for the project as outlined in the Project Description and, except for Capacity Building submissions, should include details beyond the template letter of collaboration outlined in the NSF PAPPG.

   Track 1: S&S, Track 2: TF, and Track 3: MTF submissions should include a minimum of four letters of collaboration, including (1) separate letters from the deans of the participating or partnering STEM and education college/school, (2) a letter from at least one partnering school district superintendent or comparable school district administrator, and (3) a letter from the principal or comparable administrator from at least one partnering school. School district letters submitted in support of a Track 2: TF or Track 3: MTF proposal must specify that the district will support the award of salary supplements and will not lower the base salary of Fellows receiving the salary supplements.

   For Track 2: TF and Track 3: MTF, a letter of collaboration must also be provided from the identified nonprofit partner.

   For Track 4: Noyce Research submissions involving substantive engagement of Noyce projects, letters of collaboration (that confirm access to appropriate data) must be included.

   For Capacity Building submissions, letters of collaboration are permitted but not required for Capacity Building submissions unless a Collaboration Incentive is requested. Any included Capacity Building letters must be prepared in accordance with the guidance in the NSF PAPPG. No additional information may be provided as an appendix or as supplementary documents. Proposals that are not compliant with these guidelines may be returned without review.

   For any submission (including Capacity Building) that includes a Collaboration Incentive in the budget because of collaborations with a two-year institution and/or minority-serving institution, a letter of collaboration from an administrator at the partnering institution(s) must also be included.

   Submission of additional letters of collaboration is prohibited.

   Letters should be uploaded into the Supplementary Documentation section in FastLane. For Grants.gov users, supplementary documents should be attached in Field 12 of the R&R Other Project Information Form.

   ii. **Supplementary Documents:** The Supplementary Documents section of the proposal should include only the: (1) letters of collaboration from project affiliates, (2) biosketch of the project's independent evaluator (if applicable), (3) Postdoctoral Research Mentoring Plan (if applicable), and (4) Data Management Plan. See the NSF PAPPG for specific requirements for these documents. Inclusion of any other documents in this section may result in the return of the proposal without review.

   iii. **Project Data Form:** A Project Data Form must be submitted as part of all proposals. The information on this form is used to direct proposals to appropriate reviewers and to determine the characteristics of projects supported by the NSF Division of Undergraduate Education (DUE). In FastLane, this form will appear in the list of forms for a proposal only after (1) selecting the Noyce Program solicitation number on the Cover Sheet and (2) saving the Cover Sheet. Grants.gov users should refer to Section VI.5.2. of the NSF Grants.gov Application Guide for specific instructions on how to submit the DUE Project Data Form.

B. Budgetary Information

Cost Sharing:

Cost sharing is required.

Cost sharing is required **only** for Track 2: TF and Track 3: MTF projects. For Track 2: TF and Track 3: MTF submissions with a budget request less than $1.5 million, cost sharing of at least 30% of the total budget amount of the grant request is required. Submissions with a budget request of $1.5 million or more must provide cost sharing of at least 50% of the amount of the total budget request. At least half of the cost share amount must be a cash matching.

Cost sharing is neither required nor allowed for Track 1: S&S, Track 4: Noyce Research, or Capacity Building projects.

The proposed cost sharing must be shown on Line M on the proposal budget. For purposes of budget preparation, the cumulative cost sharing amount must be entered on Line M of the first year's budget. Should an award be made, the organization's cost sharing commitment, as specified on the first year's approved budget, must be met prior to award expiration.

Such cost sharing will be an eligibility, rather than a review criterion. Proposers are advised not to exceed the mandatory cost sharing level or amount specified in the solicitation.

When mandatory cost sharing is included on Line M, and accepted by the Foundation, the commitment of funds becomes legally binding and is subject to audit. When applicable, the estimated value of any in-kind contributions also should be included on Line M. An explanation of the source, nature, amount and availability of any proposed cost sharing must be provided in the budget justification. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind. 2 CFR § 200.306 describes criteria and procedures for the allowability of cash and in-kind contributions in satisfying cost sharing and matching requirements. It should be noted that contributions derived from other Federal funds or counted as cost sharing toward projects of another Federal agency must not be counted towards meeting the specific cost sharing requirements of the NSF award.

Failure to provide the level of cost sharing required by the NSF solicitation and reflected in the NSF award budget may result in termination of the NSF award, dis-allowance of award costs and/or refund of award funds to NSF by the awardee.

Other Budgetary Limitations:

For Track 1: S&S, Track 2: TF, and Track 3: MTF proposals, at least 60% of the proposed total Direct Costs (budget Line H) must be allocated and used for only scholarships, stipends, or fellowships and reported on budget Line *F.1. STIPENDS* in FastLane (or Section E.2. on the Grants.gov R&R Budget Form). No other expenses may be included on budget Line *F.1* in FastLane (or Section E.2. in Grants.gov). While allowable in the budget, requests for other types of Noyce recipient support (e.g., undergraduate tuition support outside of the eligible 3-year period beginning in the junior year, post-baccalaureate or graduate level

tuition support outside of the allowable one year of support, travel, internships, professional development, materials) may not be included with scholarship, stipend, or fellowship expenses on Line F.1. of the budget (or Section E.2. on the Grants.gov R&R Budget Form). Such expenses should be entered in section *F. Participant Support Costs*, on Lines F.2, F.3, or F.4 in FastLane (or Sections E.3, E.4, or E.5 on the Grants.gov R&R Budget Form). This limitation does not apply to Track 4: Noyce Research or Capacity Building submissions.

Budget Preparation Instructions:

For all submissions, the number of participants supported in each budget year should be entered in section F of the budget form in FastLane (or Section E. on the Grants.gov R&R Budget Form). All budgets should include funds for one PI or an appointed designee to attend an annual meeting of Noyce grantees and other researchers. Additionally, budgets for Track 1: S&S, Track 2: TF, and Track 3: MTF projects should also include funds in each year of the budget for one current or former Noyce recipient to attend this annual meeting.

For Track 2: TF and Track 3: MTF submissions, the budget justification should clearly identify the source and nature of cost sharing funds. Proposals in these tracks being submitted through Grants.gov should enter the cost share amount on line *15.b. Total Non-Federal Funds* on the SF 424 (R&R) form, which will then be entered on Line M of the NSF budget when the proposal is transferred to the NSF FastLane System. **In addition, proposals in Track 2: TF or Track 3: MTF requesting a six-year budget to support two cohorts of fellows will need to be submitted through FastLane because Grants.gov will not accommodate a six-year budget.**

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):

  August 31, 2021

  August 30, 2022

  August 29, 2023

  Last Tuesday in August, Annually Thereafter

D. FastLane/Research.gov/Grants.gov Requirements

For Proposals Submitted Via FastLane or Research.gov:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: https://www.fastlane.nsf.gov/a1/newstan.htm. To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For FastLane or Research.gov user support, call the FastLane and Research.gov Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov or rgov@nsf.gov. The FastLane and Research.gov Help Desk answers general technical questions related to the use of the FastLane and Research.gov systems. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

Proposers that submitted via FastLane or Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through

activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Panel Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)*; or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding

increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

All projects are required to participate in program monitoring (including tracking) that will require annual data collection reported to a third party as part of Noyce program monitoring. In addition, projects are required to participate in evaluation activities conducted by a third party or NSF.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Sandra Richardson, Program Lead, telephone: (703) 292-4657, email: srichard@nsf.gov
- Kathleen B. Bergin, Program Co-Lead, telephone: (703) 292-5171, email: kbergin@nsf.gov
- Michelle M. Camacho-Walter, telephone: (703) 292-8718, email: mcamacho@nsf.gov
- Susan Carson, telephone: (703) 292-8094, email: scarson@nsf.gov
- Michael J. Ferrara, telephone: (703) 292-2635, email: mferrara@nsf.gov
- Bonnie Green, telephone: (703) 292-4386, email: bongreen@nsf.gov
- John R. Haddock, telephone: (703) 292-2671, email: jhaddock@nsf.gov
- Thomas D. Kim, telephone: (703) 292-4458, email: tkim@nsf.gov
- Jennifer Lewis, telephone: (703) 292-2938, email: jenlewis@nsf.gov
- Robert Mayes, telephone: (703) 292-7267, email: rmayes@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: fastlane@nsf.gov
- Research.gov Help Desk e-mail: rgov@nsf.gov.

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

Related Programs:

- Discovery Research PreK-12 (DRK-12)
- EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR: BCSER)
- Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
- Improving Undergraduate STEM Education (IUSE)
- Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)
- Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
- Tribal Colleges and Universities Program (TCUP)

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.E.6 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

  Send an e-mail to: nsfpubs@nsf.gov

  or telephone: (703) 292-8134
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314

National Science Foundation, 2415 Eisenhower Avenue, Alexandria, Virginia 22314, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (703) 292-5090 or (800) 281-8749