

Robert Noyce Teacher Scholarship Program

PROGRAM SOLICITATION

NSF 17-541

REPLACES DOCUMENT(S):

NSF 16-559



National Science Foundation

Directorate for Education & Human Resources
Division of Undergraduate Education

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

August 29, 2017

Last Tuesday in August, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

1. Partnership requirements are specified for Track 1: Scholarships & Stipends, Track 2: Teaching Fellowships, and Track 3: Master Teaching Fellowships.
2. Definition of the term STEM teacher is further defined and scholarship/stipend eligibility criteria for STEM majors and STEM professionals is further specified.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 18-1), which is effective for proposals submitted, or due, on or after January 29, 2018.

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** seeks to encourage talented science, technology, engineering, and mathematics (STEM) majors and professionals to become K-12 mathematics and science (including engineering and computer science) teachers. The program invites creative and innovative proposals that address the critical need for recruiting and preparing highly effective elementary and secondary science and mathematics teachers in high-need local educational agencies. The program offers four tracks: **Track 1: The Robert Noyce Teacher Scholarships and Stipends Track, Track 2: The NSF Teaching Fellowships Track, Track 3: The NSF Master Teaching Fellowships Track, and Track 4: Noyce Research Track.** In addition, **Capacity Building** proposals are accepted from proposers intending to develop a future Track 1, 2, or 3 proposal.

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, Lead Program Director, telephone: (703) 292-4657, email: srichard@nsf.gov
- Kathleen B. Bergin, Co-Lead Program Director, telephone: (703) 292-5171, email: kbergin@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 29 - 31 Track 1: Scholarships & Stipends; 4 - 6 Track 2: Teaching Fellowships; 10 - 12 Track 3: Master Teaching Fellowships; 9 - 14 Capacity Building; and 3 - 7 Track 4: Noyce Research.

Anticipated Funding Amount: \$58,000,000

annually for new Noyce awards, subject to the availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- One or more universities, four-year colleges, and/or two-year colleges (including community colleges, tribal colleges, and minority-serving institutions) accredited in, and having a campus located in, the United States, or consortia of such institutions, or U.S. nonprofit entities that have established consortia among such institutions of higher education.

In addition to institutions of higher education, professional societies and similar organizations that are directly associated with educational or research activities may submit proposals related to Track 4: Noyce Research.

Who May Serve as PI:

The PI/Co-PI team must include at least one faculty member from a science, technology, engineering, or mathematics department in an institution of higher education and at least one education faculty member in an institution of higher education.

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 29, 2017

Last Tuesday in August, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

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 responds to the critical need for highly effective K-12 mathematics, science (including computer science), and engineering teachers. The program seeks to encourage institutions of higher education to develop and sustain a culture where undergraduate STEM majors and STEM professionals, especially those of the highest achievement and ability who might otherwise not have considered a career in K-12 teaching, are encouraged and supported to become teachers in high-need local educational agencies.

The program was first authorized under the National Science Foundation Authorization Act of 2002 (P.L. 107-368). It was reauthorized

in 2007 under the America COMPETES Act (P.L. 110-69) and the America COMPETES Reauthorization Act of 2010 (P.L. 111-358), and amended by the STEM Education Act of 2015 (P.L. 114-59). By supporting the recruitment and preparation of strong STEM teachers who will teach in high-need local educational agencies, serving diverse student populations, the program supports the strategic objective (G1/O2) in the *NSF Strategic Plan for 2014-2018*: "Integrate education and research to support development of a diverse STEM workforce with cutting-edge capabilities." The Noyce Program supports the role of NSF as central to discovering, studying, and promoting pathways for STEM teacher education through research and development.

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, funds for **Capacity Building** awards, which may lead to the development of full proposals in Track 1: S&S, Track 2: TF, or Track 3: MTF, are also supported. Partnerships between four-year institutions and two-year institutions, providing pathways leading to STEM teacher certification, are particularly encouraged. Conferences and workshops consistent with the mission of the intent of the Noyce program are also supported in accordance with the most recent published NSF Proposal & Award Policies & Procedures Guide (PAPPG).

Definitions of Terms

NOTE: Individuals who are eligible for Noyce scholarship/stipend support must earn or have a baccalaureate degree in a STEM discipline and must be positioned to earn teaching certification/licensure in mathematics or science (including engineering and computer science) at the secondary level or be prepared to teach mathematics or science at the elementary level. Medicine, nursing, and allied health majors or professionals are not eligible for Noyce scholarship/stipend support.

In this program solicitation:

1. The acronym *STEM* stands for science, technology, engineering, and mathematics, and includes computer science.
2. The term *STEM teacher* means an individual who is certified/licensed to teach mathematics or science (including engineering and computer science) at the secondary level or prepared to teach mathematics or science at the elementary level.
3. The term *STEM professional* means a person who holds a baccalaureate, master's, or doctoral degree in a science or mathematics discipline and has recently graduated, or who is working in or had a career in such a field or related area, including retirees from STEM professions.
4. The term *cost of attendance* has the meaning given to such term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087I).
5. The term *scholarship* means funds awarded in the Scholarships and Stipends Track to:
 - a. an undergraduate STEM major who has attained at least junior status in a baccalaureate degree program; or
 - b. a post-baccalaureate student (only when the program requires a fifth year to obtain teacher certification or licensing).
6. The term *stipend* means funds awarded in the Scholarships and Stipends Track to a *STEM professional* who enrolls in a teacher certification program.
7. 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 licensing and 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*).
8. The term *high-need local educational agency* as defined in section 201 of the Higher Education Act of 1965 (20 U.S.C. 1021) means a local educational agency (for example, a school district) that serves an elementary or secondary school located in an area which is characterized by at least one of the following:
 - a. a high percentage of individuals from families with incomes below the poverty line;
 - b. a high percentage of secondary school teachers not teaching in the content area in which they were trained to teach; or
 - c. a high teacher turnover rate.
9. The term *Noyce recipient* refers to an individual that receives or has received scholarship, stipend or fellowship support through a Noyce grant.
10. The term *grantee* refers to the organizations that receive or have received a Noyce award.

Funding for Previously Funded Noyce Grantee Institutions

NSF welcomes proposals from previously funded Noyce grantee institutions in any track. However, such submissions must provide a detailed description of the previously funded work, including: evidence of the project's success, specifics about what was learned, an account of challenges encountered, and/or specifics about how the proposed project will be able to overcome the prior project's challenges. The proposed new Noyce project must also present data to demonstrate the workforce need in high-need local educational agencies and the capacity to recruit candidates, as well as provide a plan for following Noyce recipients longitudinally. Previous grantees must detail what new may be learned from the proposed project, including how this information may inform further improvement in STEM teacher preparation. These proposals must include plans for monitoring (including tracking) and evaluation of new cohorts. Proposals must include plans for evaluating the impact of the program on recruitment and retention of STEM teachers, the impact on the institution(s) of higher education (IHE), and the effectiveness of the Noyce scholarship/stipend recipients as K-12 STEM teachers.

Capacity Building Proposals

Funds for Capacity Building awards, which may lead to the development of full proposals in Track 1: S&S, Track 2: TF, or Track 3: MTF, are supported. These funds are for institutions to develop evidence-based innovative models and strategies for recruiting, preparing, and supporting teachers and to establish the infrastructure for implementing a future Noyce project. Examples of possible project activities include, but are not limited to: conducting needs assessments to determine areas of teacher shortages and interest

among STEM professionals; strengthening partnerships with high-need local educational agencies; strengthening collaborations among faculty in STEM departments and faculty in education; strengthening collaborations among institutions of higher education, including two-year colleges; designing/developing new courses as well as early field experiences, new degree requirements, and/or programs to support new teachers. Activities related to TF or MTF Capacity Building projects may also include the identification of matching funds and securing agreements with high-need local educational agencies regarding salary supplements. Collaborations between currently funded successful Noyce projects and institutions seeking to develop capacity for recruiting and preparing STEM teachers (S&S), Teaching Fellows, or Master Teaching Fellows are encouraged. Capacity Building projects do not award scholarships, stipends, fellowships, or internships.

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

The Robert Noyce Teacher Scholarships and Stipends Track (S&S) of the Noyce Program offers awards to institutions to recruit and prepare *STEM teachers*. These projects provide scholarships to undergraduate STEM majors and offer stipends to STEM professionals who become certified STEM teachers.

- **Required Partners (Track 1: S&S)**

In order to be eligible to receive a grant under the S&S Track, the partnership must include:

1. a department within an institution of higher education (IHE) that provides an advanced program of study within a specific discipline in mathematics or the sciences, including engineering and computer science, and either -
 - a. a department or entity within an IHE that provides a teacher preparation program; or
 - b. a two-year IHE that has a teacher preparation offering or a dual enrollment program with an IHE; and
2. at least one high-need local educational agency and a public school served by the agency identified as the location in which clinical teaching experiences will occur.

Project Features (Track 1: S&S)

S&S Projects are expected to develop and implement exemplary STEM education programs to recruit and prepare undergraduate STEM majors and/or STEM professionals to become qualified as STEM teachers by:

1. administering scholarships for undergraduate STEM majors or stipends for STEM professionals; and
2. building evidence-based strategies to offer:
 - a. academic courses and early clinical teaching experiences, including the preparation necessary to meet requirements for teacher certification or licensing, designed to prepare them to teach mathematics or science in elementary or secondary high-need local educational agencies; and
 - b. programs both before and after candidates begin teaching to enable the students to become highly effective STEM teachers in high-need local educational agencies, fulfill the teaching service requirements of the S&S track and exchange ideas with others in their fields. As Noyce Scholars will be teaching in high-need local educational agencies, proposals must include a description of how the proposed project will provide Noyce Scholars with the relevant cultural competence, pedagogical knowledge, and disposition to be a successful teacher in a high-need local educational agency. Project activities that follow the preservice component should facilitate the transition into teaching and aid retention during and beyond the obligatory teaching service period.

Proposals may address the undergraduate scholarship component, the STEM professional stipend component, or both. Among the recruitment strategies, proposals 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 STEM education settings such as summer STEM camps, summer school, STEM museums, nature centers, or STEM research laboratories.

- **Selection of Recipients (Track 1: S&S)**

Scholarship recipients and stipend recipients must be U.S. citizens or nationals, or permanent resident aliens.

Scholarship recipients are expected to be undergraduate students who have attained at least junior status in a STEM baccalaureate degree program. They are expected to be selected primarily on the basis of academic merit, with consideration given to financial need and the diversity of participants in the program. These students must graduate with a major in a STEM discipline and obtain teacher certification or licensing upon completion of the program. Efforts to attract undergraduate STEM majors who may not have previously considered a career in K-12 STEM teaching are particularly encouraged.

Stipend recipients are expected to be STEM professionals (from recent STEM graduates to retirees from STEM professions) who, while receiving the stipend, are enrolled in a program referred to in the Project Features (Track 1: S&S) section above. They are expected to be selected primarily on the basis of academic merit and STEM professional achievement, with consideration given to financial need and the diversity of participants in the program.

- **Teaching Service Commitment (Track 1: S&S)**

An individual awarded a scholarship is expected to serve as a STEM teacher in a high-need local educational agency for two years, for each full-year of a scholarship received, to be fulfilled within eight years after completing the program.

An individual awarded a stipend is expected to serve as a STEM teacher in a high-need local educational agency for two years, to be fulfilled within four years after completing the program.

See **Institutional and Recipient Obligations for Projects in Tracks 1, 2, or 3** for details about repayment of scholarships/stipends that revert to loans.

- **Amount and Duration (Track 1: S&S)**

Scholarships awarded are to 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 through the completion of a baccalaureate degree

program, not to exceed a maximum of three years (for students enrolled in institutions requiring a fifth year or post-baccalaureate program for teacher certification/licensing). A part-time student may receive scholarships that are prorated according to the student's enrollment status, not to receive scholarship support over more than six years.

Stipends awarded are to 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. 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.

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

The NSF Teaching Fellowships Track (TF) of the Robert Noyce Teacher Scholarship Program offers awards to institutions to administer fellowships and programmatic support to STEM professionals as defined in the Definitions of Terms section. These individuals, referred to as NSF Teaching Fellows, may receive one-year of support while enrolled in a master's degree program leading to teacher certification or licensing to teach a STEM discipline in an elementary or secondary school. In addition, TFs may receive up to four years of at least a \$10,000 salary supplement/year.

• Required Partners (Track 2: TF)

In order to be eligible to receive a grant under the TF Track, the partnership must include:

1. a department within an institution of higher education (IHE) that provides an advanced program of study within a specific discipline in mathematics or the sciences, including engineering and computer science, and either -
 - a. a department or entity within an IHE that provides a teacher preparation program; or
 - b. a two-year IHE that has a teacher preparation offering or a dual enrollment program with an IHE;
2. at least one high-need local educational agency and a public school served by the agency identified as the location in which clinical teaching experiences will occur; and
3. at least one nonprofit organization that has a demonstrated record of capacity to provide expertise or support to meet the goals of the proposed project.

• Project Features (Track 2: TF)

Track 2: TF projects are expected to develop and implement exemplary STEM education programs for National Science Foundation Teaching Fellows by:

1. administering fellowships, including providing the TF salary supplements; and
2. building on evidence-based strategies to offer:
 - a. academic courses and clinical teaching experiences to enable TFs to obtain a master's degree and teacher certification or licensing within one year; 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 local educational agencies, to fulfill the teaching service requirements of the TF Track and to exchange ideas with others in their fields. As Noyce recipients will be teaching in high-need local educational agencies, proposals must include a description of how the proposed project will provide these Noyce recipients with the cultural competence, pedagogical knowledge, and dispositions to be a successful teacher in a high-need school district. Project activities that follow the preservice component should facilitate the transition into teaching and aid retention during and beyond the obligatory teaching service period.

• Selection of Teaching Fellows (Track 2: TF)

TF recipients must be U.S. citizens or nationals, or permanent resident aliens. TF recipients are expected to be selected primarily on the basis of professional achievement, academic merit, and STEM content knowledge, as demonstrated by their performance on rigorous, nationally recognized assessments of advanced STEM content knowledge.

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

An individual awarded an NSF Teaching Fellowship is expected to:

1. serve as a STEM teacher in a high-need local educational agency for 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 local educational agency in which the individual is employed, while fulfilling the teaching service commitment above and 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 preservice teacher education.

See **Institutional and Recipient Obligations for Projects in Tracks 1, 2, or 3** for details about repayment of fellowships that revert to loans.

• Salary Supplements (Track 2: TF)

A key aspect of the NSF Teaching Fellowship Track, required under the America COMPETES Act (P.L. 111-358), is the provision of salary supplements to the TFs as they are fulfilling their teaching service commitment.

1. While enrolled full-time in the master's degree program, the TF will receive a one-year stipend of at least \$10,000, except that no individual may receive for any year more than the cost of attendance. TFs enrolled part-time may receive a prorated stipend.
2. Following completion of the master's degree program and teacher certification or licensing, and while teaching in an elementary or secondary school served by a high-need local educational agency, the TF will receive an annual salary supplement of at least \$10,000 per year for the four years of the teaching service commitment. The high-need local educational agency 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 Track (MTF)

The NSF Master Teaching Fellowships Track (MTF) 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 are certified/licensed teachers, who possess a master's or bachelor's degree in their field, and who participate in a program for developing master teachers and teacher leaders. These selected individuals are referred to as Master Teaching Fellows.

Master Teaching Fellows must be (1) teachers with master's degrees in their field or (2) teachers with bachelor's degrees in their field who are enrolled in a master's degree program in their field.

• Required Partners (Track 3: MTF)

In order to be eligible to receive a grant under the MTF Track, the partnership must include:

1. a department within an institution of higher education (IHE) that provides an advanced program of study within a specific discipline in mathematics or the sciences, including engineering and computer science, and either -
 - a. a department or entity within an IHE that provides a teacher preparation program; or
 - b. a two-year IHE that has a teacher preparation offering or a dual enrollment program with an IHE;
2. at least one high-need local educational agency and a public school served by the agency from which the experienced and exemplary teachers will be selected; and
3. at least one nonprofit organization that has a demonstrated record of capacity to provide expertise or support to meet the goals of the proposed project.

• Project Features (Track 3: MTF)

MTF Projects are expected to develop and implement exemplary STEM education focused programs for Master Teaching Fellows by:

1. administering fellowships, including providing the MTF salary supplements; and
2. building on evidence-based strategies to offer:
 - a. a master's degree program and leadership training to prepare exemplary and experienced teachers with a bachelor's degree to become master teachers; or
 - b. academic courses and leadership development to prepare exemplary and experienced teachers with a master's degree to become a master teacher and teacher leader in a high-need local educational agency; and
 - c. programs or activities, including mentoring and professional development activities, to enable a Master Teaching Fellow to become a highly effective master teacher and teacher leader in a high-need local educational agency, to fulfill the teaching service requirements of the MTF Track, and to exchange ideas with others in their fields.

• Selection of Master Teaching Fellows (Track 3: MTF)

MTF recipients must be U.S. citizens or nationals, or permanent resident aliens. MTF recipients are expected to be selected primarily on the basis of professional achievement; academic merit; and STEM content knowledge, as demonstrated by their performance on rigorous, nationally recognized assessments used to determine whether individuals applying for fellowships have advanced STEM content knowledge. In addition, MTF recipients are expected to be selected on the basis of demonstrated success in improving student academic achievement in mathematics or science.

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

A teacher awarded a Master Teaching Fellowship is expected to:

1. serve as a STEM teacher in an elementary or secondary school served by a high-need local educational agency for 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 local educational agency in which the individual is employed, while fulfilling the teaching service commitment above and 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 preservice teacher education.

See **Institutional and Recipient Obligations for Projects in Tracks 1, 2, or 3** for details about repayment of fellowships that revert to loans.

• Salary Supplements (Track 3: MTF)

A key aspect of the Master Teaching Fellowships Track, required under the America COMPETES Act (P.L. 111-358), is the provision of salary supplements to the Master Teaching Fellows as they are fulfilling their teaching service commitment. While participating in the program and teaching in an elementary or secondary school served by a high-need local educational agency, a Master Teaching Fellow will receive a salary supplement of at least \$10,000 per year for the five years of the teaching service commitment. In the case of individuals with a bachelor's degree, MTF Fellows may receive a maximum of 1 year fellowship support (salary supplement) while enrolled in a master's degree program and up to four years of salary supplements while continuing to teach in a high-need local educational agency once they have received their master's degree; this obligation must be completed within seven years of the grant start date. The high-need local educational agency must agree not to reduce the base salary of the Master Teaching Fellow while the salary supplement is being received.

Institutional and Recipient Obligations for Projects (not including Capacity Building) in Track 1: S&S, Track 2: TF, or Track 3: MTF

Institution: A grantee receiving a grant under Track 1, 2, or 3 (S&S, TF, or MTF, not including Capacity Building projects) of the Robert Noyce Teacher Scholarship Program agrees to:

1. ensure that scholarship/stipend/fellowship recipients accept the terms of the scholarship/stipend/fellowship and that the recipients provide annual certification of employment and current contact information;
2. supply relevant statistical and demographic data on recipients as requested, including information on employment required

- under the track; and
3. monitor (including tracking) and report on the compliance of scholarship/stipend/fellowship recipients with their teaching service commitments. In the event that a recipient is required to repay the scholarship/stipend/fellowship, the institution (the grantee) will:
 - a. be responsible for determining the repayment amounts and for notifying the recipient and providing documentation in project reports; and
 - b. collect such repayment amount, including interest, as determined by the repayment policy developed by the institution and agreed upon by the recipient. The institution (the grantee) may retain up to 5 percent of any repayment collected to defray administrative costs associated with the collection.

The grantee is responsible for reporting the aforementioned information annually to the National Science Foundation directly and/or to a designated third party. In some cases, the grantee responsibility to report may extend for up to 12 years following the end date of the award and submission of the final project report.

Recipient: As a condition of acceptance of a scholarship/stipend/fellowship, the recipient agrees to provide the institution with annual certification of employment and up-to-date contact information as well as to participate in activities (e.g., surveys) conducted as part of institution project-level and NSF program-level evaluation. In addition, the scholarship/stipend/fellowship may revert to a loan, meaning that the recipient will be required to repay all or a portion of the scholarship/stipend/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 program before the completion of such program;
4. declares that the individual does not intend to fulfill the teaching service commitment; 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 or stipend received by the individual must be repaid. If the circumstance described 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 received.

Track 3 – MTF: one-half of the total amount of salary supplements received.

For **Tracks 1, 2, and 3**, any such repayment will be returned to the Federal Government (the Treasury of the United States), consistent with the provisions of part B or D of Title IV of the Higher Education Act of 1965. These funds may not be re-used by the awardee institution.

The institution is expected to establish procedures that ensure compliance with the teaching service requirement, with allowances for extreme hardship or other circumstances for which it is not in the best interests of the school district or not feasible for the scholarship, stipend, or fellowship recipient to fulfill the teaching service commitment. The institution may establish procedures for waiving or suspending repayment of scholarships/stipends/fellowships in cases of extreme hardship or other circumstances that would preclude the fulfillment of the teaching service commitment.

Track 4: The Noyce Research Track

The Noyce Research Track of the Robert Noyce Teacher Scholarship Program offers awards to institutions, professional societies, and similar organizations that are directly associated with educational or research activities, to support planning, exploratory research, and research proposals that address the issue of STEM teacher effectiveness, persistence, or retention in high-need local educational agencies.

The Noyce Research Track is interested in research studies related to teacher effectiveness and persistence, as well as teacher retention by high-need local educational agencies. The program will support proposals that investigate effectiveness and/or persistence of STEM teachers in high-need local educational agencies. Such studies might examine the teacher candidate characteristics and/or programmatic features that are shown to result in highly effective teachers who persist in teaching in high-need local educational agencies. Studies on persistence of Noyce scholarship, stipend, or fellowship recipients as teachers in high-need school districts beyond their service requirement are strongly encouraged. Studies that identify characteristics of high-need schools or districts that result in retention of STEM teachers are welcomed.

Research studies may range from research synthesis to experimental investigations in order to show relationships between teacher preparation and learning (National Research Council report, *Preparing Teachers: Building Evidence for Sound Policy*, 2010, p. 6).

Noyce Research Track projects must include substantive collaboration among STEM faculty, STEM education faculty, and researchers in education (and/or the social, behavioral, and economic sciences). Proposals must include the theory which underlies the research design and provide appropriate methodologies and strategies and are expected to contribute to the knowledge base of scholarly research in STEM education. Studies that involve examination of only a single institution's teacher preparation program are discouraged unless the proposal provides a compelling argument that the results can be generalized to the larger community.

Track 4 proposals are encouraged to be informed by the *Common Guidelines for Education Research and Development* as well as basic tenets of Design-Based Implementation Research (DBIR).

References

Information about current [awards](#) funded under the Robert Noyce Teacher Scholarship Program can be found at the [NSF EHR Division](#)

of Undergraduate Education website. Additional resources can be found at <http://www.nsfnoyce.org>.

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).

National Research Council (2010). *Preparing Teachers: Building Evidence for Sound Policy*. Committee on the Study of Teacher Preparation Programs in the United States, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

III. AWARD INFORMATION

Pending availability of funds, the anticipated funding amount is approximately \$58,000,000 for new Noyce awards. Depending on the quality of submissions, NSF expects to make an estimated 55-70 Robert Noyce Teacher Scholarships Program awards under this solicitation, including 29 - 31 Track 1: Scholarships & Stipends; 4-6 Track 2: Teaching Fellowships; 10 - 12 Track 3: Master Teaching Fellowships; 9 - 14 Capacity Building; and 3 - 7 Track 4: Noyce Research.

Estimated amounts per award:

NOTE: **Collaboration Incentives** for engagement of community colleges in Capacity Building or Tracks 1, 2, and 3 projects, or for engagement with Noyce awardees in Track 4 projects, may exceed these maximums (maximum funding amount requests include both direct and indirect cost).

- 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 (for proposals supporting two cohorts of NSF Teaching Fellows or NSF Master Teaching Fellows);
- Track 4: Noyce Research - up to \$800,000, with a project duration of up to 5 years.
- Capacity Building -up to \$75,000, with a project duration of up to 1 year

Collaboration Incentives: In Track 1 - S&S, Track 2 - TF, and Track 3 - MTF, projects that involve a substantive collaboration between two-year institutions and four-year institutions, may request up to an additional \$250,000 over 5 years (or 6, as appropriate). Capacity Building projects involving collaboration between two-year and four-year institutions may request up to an additional \$50,000 for 1 year. In Track 4: Noyce Research, projects that involve a collaboration with current or past Noyce awardee projects may request up to an additional \$100,000 for each Noyce project that is substantively engaged in the research endeavor, with a maximum overall request not to exceed \$2,300,000 over 5 years.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- One or more universities, four-year colleges, and/or two-year colleges (including community colleges, tribal colleges, and minority-serving institutions) accredited in, and having a campus located in, the United States, or consortia of such institutions, or U.S. nonprofit entities that have established consortia among such institutions of higher education.

In addition to institutions of higher education, professional societies and similar organizations that are directly associated with educational or research activities may submit proposals related to Track 4: Noyce Research.

Who May Serve as PI:

The PI/Co-PI team must include at least one faculty member from a science, technology, engineering, or mathematics department in an institution of higher education and at least one education faculty member in an institution of higher education.

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 Grants.gov or via the NSF FastLane system.

- 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) 292-7827 or by e-mail from nspubs@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) 292-7827 or by e-mail from nspubs@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 the NSF FastLane system. 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 the guidelines in the PAPPG and NSF Grants.gov Application Guide. Proposals in all tracks must adhere to the guidelines and 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 must be specified in order to have access to the DUE Project Data Form, which is required for Noyce Program proposals. If using Grants.gov, the program solicitation number will be prepopulated 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 and the applicable IRB status of the project indicated. Additional guidance on the use of Human Subjects is available in the [PAPPG, Chapter II.D.5](#).

2. Project Summary

The first sentence of the Overview section of the Project Summary must:

- indicate the specific type of proposal (Track 1: S&S, Track 2: TF, Track 3: MTF, Track 4: Noyce Research, or Capacity Building); and
- name all institutions, including high-need local educational agencies and non-profit organizations as appropriate that are involved in the proposal.

3. Project Description

- a. Proposals in Track 1: S&S, Track 2: TF, and Track 3: MTF are expected to include the items listed below in Section V.A.3.a.i – V.A.3.a.xiii, not necessarily in the order presented, but clearly identified. In addition, proposals should include evidence that the institution is committed to making the program a central institutional focus. In the Project Description, proposals must describe:
 - i. The number and size of scholarships, internships, and stipends (for S&S) or fellowships (for TF and MTF); the rationale for the number and size of scholarships and/or stipends (for S&S) or fellowships (for TF and MTF); and projected cumulative number of new STEM teachers (for S&S and TF) or NSF Master Teaching Fellows (for MTF) to be produced over the duration of the program with a comparison to number of STEM teachers or master teachers currently produced by the proposing institution(s).
 - ii. The teacher preparation program (for S&S), master's degree program which allows an individual to obtain certification or licensing within one year (for S&S and/or TF), master's degree program and leadership training to prepare exemplary and experienced teachers with a bachelor's degree to become master teachers (for MTF), or professional development program for exemplary and experienced teachers with a master's degree to become master teachers (for MTF). This description should include the academic requirements and other components of the program in which the scholarship/stipend or fellowship 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 proposals involving more than one institution, the proposal should describe the program at each

- participating institution and the roles and responsibilities of each institution in the project.
- iii. The recruitment activities and specific marketing strategies designed to attract a large and diverse pool of applicants, with special attention to undergraduate STEM majors who might not otherwise have considered a career as a K-12 STEM teacher. These plans must include evidence of ability to recruit the proposed number of program participants from the available pool of potential applicants, including (a) baseline data in regard to STEM majors and institutional STEM teacher production and (b) justification of the workforce need in the area.
 - iv. The selection process that will ensure that the most qualified applicants are selected based on academic merit, with consideration given to financial need and increasing participation of minorities, persons with disabilities, and underrepresented genders relative to specific teaching areas.
 - v. The management and administrative structure and the capability for administering the program.
 - vi. A genuine collaboration between faculty in STEM departments and education faculty.
 - vii. An infrastructure that will be supportive of new teachers, especially during their induction years.
 - viii. Activities and support mechanisms that will be available to Noyce recipients to ensure that they become highly effective STEM teachers in high-need local educational agencies and are able to fulfill their teaching service commitment.
 - ix. Plans to monitor and enforce compliance with the teaching service commitment. These plans must include mechanisms for tracking the recipients during the period in which they are fulfilling their teaching service commitment and a plan for collecting demographic data and statistics on recipients.
 - x. An evaluation plan that will assess the effectiveness of the project in attracting, preparing, and retaining STEM majors and/or STEM professionals in teaching careers (for S&S and TF) or developing and retaining Master Teaching Fellows in teaching careers (for MTF) in high-need local educational agencies. The plan 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.
 - xi. 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 local educational agencies.
 - xii. Cost sharing (for Track 2: TF and Track 3: MTF only), including source and amount.
 - xiii. Results from Prior NSF Support for all PIs and Co-PIs as described in the NSF PAPPG, as well as for all prior Noyce awards to the grantee that have received funding during the past five years.
- b. Proposals in Track 4: Noyce Research are expected to include the items listed below in Section V.A.3.b.i – V.A.3.b.v, not necessarily in the order presented, but clearly identified. In the Project Description, proposals must describe:
- i. Relevant research literature and theory upon which the research design is based, the research questions to be investigated, the data to be collected, and how the data will be analyzed.
 - ii. the methods to be used to answer the research questions as well as a description of the sample to be studied. Methods should be directly linked to the theory or theories being used. As described in the *Common Guidelines for Education Research and Development*, the Noyce Program will support different research designs.
 - iii. 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 the potential to add new evidence-based insights to theory and practice.
 - iv. 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.
 - v. Objective external feedback, including a plan for soliciting ongoing objective input should be documented. A number of vehicles such as an advisory board or formal evaluation may be used.
- c. Capacity Building proposals are expected to include the items listed below in Section V.A.3.c.i – V.A.3.c.iii, not necessarily in the order presented, but clearly identified. In the Project Description, proposals must describe:
- i. The entities to be engaged and processes to be employed in designing a plan for recruiting, preparing, and supporting new or current STEM teachers in high-need local educational agencies and the potential for expanding and diversifying the pool of teacher candidates.
 - ii. Plans for collecting data (baseline) to determine need, interest, and capacity for recruiting STEM majors to become STEM teachers.
 - iii. The current infrastructure available and the aspects that will be taken into account in designing a credible, effective STEM teacher preparation program for candidates who will serve in high-need local educational agencies.

4. Additional Requirements for All Proposals

Letters of collaboration from deans of STEM colleges and education colleges, department chairs, school district superintendent(s), comparable administrators, and nonprofit partners (for Track 2 and 3 proposals) must be submitted as evidence of institutional commitment for the project and should include substantive commitment details beyond the requirements outlined in the NSF PAPPG. 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 4 proposals involving substantive engagement of Noyce projects, letters of collaboration, inclusive of details supporting access to appropriate data, must be included. 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.

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.

5. Supplementary Documents

The Supplementary Documents section of the proposal should consist of letters of collaboration from project affiliates that include substantive detail beyond the requirements outlined in the NSF PAPPG, a biosketch of the project's independent evaluator, a Postdoctoral Research Mentoring Plan (if applicable), and a Data Management Plan. See the NSF PAPPG for additional details. Inclusion of any other documents in this section may result in the return of the proposal without review. NOTE: While letters documenting collaborative arrangements of significance to the proposal (i.e. letters of collaborations) are expected, letters of support are not allowed. Letters of support typically convey a sense of enthusiasm for the project and/or highlight the qualifications of individuals

involved in the proposed work.

B. Budgetary Information

Cost Sharing:

Cost sharing is required.

Cost sharing is required **only** for Track 2: TF and Track 3: MTF projects. Cost sharing is neither required nor allowed for Track 1: S&S, Track 4: Noyce Research, or Capacity Building projects and therefore should not be included in the proposal.

For Track 2: TF and Track 3: MTF proposals requesting less than \$1.5 million, cost sharing of at least 30% of the amount of the grant request is required, at least half of which must be in cash. Proposals requesting \$1.5 million or more must provide matching funds of at least 50% of the amount of the request, at least half of which must be cash. For Track 2: TF and Track 3: MTF proposals associated with partnerships between two-year institutions and four-year institutions (including doctorate, masters, and baccalaureate granting), the Director has waived the cost sharing requirement for the additional \$250,000 funds.

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, disallowance 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 for support directly received by the participants in the form of scholarship, stipends, or salary supplements as reported on budget line *F.1. STIPENDS* in FastLane (or Section E.2. on the Grants.gov R&R Budget Form). Funds requested specifically for other types of scholarship/stipend/fellowship recipient support, such as travel, internships or materials, should be entered in section *F. Participant Support Costs*, on lines 2., 3., or 4. in FastLane (or Sections E.3., 4., or 5. on the Grants.gov R&R Budget Form) as appropriate, but are not included in the 60%. This limitation does not apply to Capacity Building or Noyce Research proposals.

Budget Preparation Instructions:

Scholarships, stipends, and fellowships should be indicated on budget line *F.1. STIPENDS* in FastLane (or Section E.2. on the Grants.gov R&R Budget Form). Enter the number of participants supported in each budget year in section F of the budget form in FastLane (or Section E. on the Grants.gov R&R Budget Form).

Funds should also be included for the PI or another member of the leadership team and one current or former Noyce Scholar, NSF Teaching Fellow, or NSF Master Teaching Fellow to attend meetings of grantees and other researchers that may be organized by community stakeholders such as professional societies or other scholarly interest groups.

The budget justification for a proposal submitted under Track 2: TF or Track 3: MTF should clearly identify the source and nature of matching 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 29, 2017

Last Tuesday in August, Annually Thereafter

D. FastLane/Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of

the FastLane system. 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: <http://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 are strongly encouraged to use FastLane 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 underrepresented minorities 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.

Additional Solicitation Specific Review Criteria

In addition to the Intellectual Merit and Broader Impact criteria, for proposals in Track 1: S&S, Track 2: TF, and Track 3: MTF, reviewers will be asked to consider the evidence of the following central issues (including results of prior Noyce awards, if applicable):

- The extent to which the proposed work attends to the expectations and requirements discussed in *Section II. Program Description and Section V. Project Description* relevant to the track to which the proposal is being submitted.
- The potential of the project to recruit, prepare, and retain STEM majors and/or STEM professionals (for S&S and TF Tracks) or develop and retain Master Teaching Fellows (for MTF Track), in teaching careers in high-need local educational agencies.
- The quality of the academic requirements and other components of the program, the extent to which the proposed preparation, recruitment, and retention strategies reflect effective practices based on research.
- That the institution is committed to sustaining the program beyond the period of NSF funding (with the possible exception of funds for scholarships/stipends/fellowships).

For **Track 4: Noyce Research**, in addition to the Intellectual Merit and Broader Impacts criteria, reviewers will be asked to consider the evidence of the following central issue (including results of prior Noyce awards, if applicable):

- The extent to which the proposed work attends to the expectations and requirements discussed in *Section II. Program Description and Section V. Project Description* relevant to this track as regards teacher effectiveness, persistence, or retention in teaching in high-need school districts.

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) 292-7827 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 will be required to participate in program monitoring (including tracking) and evaluation activities conducted by a third party as part of the Directorate for Education and Human Resources program evaluation efforts that will require annual data collection.

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, Lead Program Director, telephone: (703) 292-4657, email: srichard@nsf.gov
- Kathleen B. Bergin, Co-Lead Program Director, telephone: (703) 292-5171, email: kbergin@nsf.gov
- Michelle M. Camacho-Walter, telephone: (703) 292-8718, email: mcamacho@nsf.gov
- Karen A. Keene, telephone: (703) 292-2482, email: kkeene@nsf.gov
- Jennifer Lewis, telephone: (703) 292-2938, email: jenlewis@nsf.gov
- Andrea L. Nixon, telephone: (703) 292-5323, email: anixon@nsf.gov
- R. Steven Turley, telephone: (703) 292-2207, email: rturley@nsf.gov
- Talitha M. Washington, telephone: (703) 292-4640, email: twashing@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@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 <http://www.grants.gov>.

Related Programs:

- Improving Undergraduate STEM Education (IUSE)
- STEM + Computing Partnerships (STEM + C)
- Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
- Louis Stokes Alliances for Minority Participation (LSAMP)
- Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
- Tribal Colleges and Universities Program (TCUP)
- Advanced Technical Education (ATE)
- Discovery Research PreK-12 program (DRK-12)
- EHR-wide EHR Core Research (ECR) program

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 (FASSED) 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) 292-7827
- **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 Systems of Records, *NSF-50*, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and *NSF-51*, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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

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