June 6, 2017

NOTICE OF FUNDING OPPORTUNITY (NOFO)
Professional Research Experience Program (PREP Program)

<u>EXECUTIVE SUMMARY</u>

- **Federal Agency Name:** National Institute of Standards and Technology (NIST), United States Department of Commerce (DoC)

- **Funding Opportunity Title:** Professional Research Experience Program (PREP Program) with two distinct sub-programs. In this NOFO, PREP Program or PREP program refers to both of the following sub-programs:

    - PREP operating on the Boulder, Colorado campus (**PREP Boulder**); and
    - PREP operating on the Gaithersburg, Maryland campus (**PREP Gaithersburg**, which also covers operations in Charleston, South Carolina)

- **Announcement Type:** Initial

- **Funding Opportunity Number:** 2017-NIST-PREP-01

- **Catalog of Federal Domestic Assistance (CFDA) Number:** 11.620, Science, Technology, Business and/or Education Outreach

- **Dates:** For both PREP Boulder and PREP Gaithersburg, applications must be received by NIST electronically through Grants.gov no later than 11:59 p.m. Eastern Time, Friday, August 4, 2017. Paper applications will not be accepted. Applications received after the deadline will not be reviewed or considered. Awards for this Program are anticipated to be made in October or November, 2017.

    Applicants should be aware, and factor in their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance at these times: from 12:01 Eastern Time, Saturday, June 17, 2017 until Monday, June 19, 2017 at 6:00 a.m. Eastern Time; and again from 12:01 Eastern Time, Saturday, July 15, 2017 until Monday, July 17, 2017 at 6:00 a.m. Eastern Time. Applications cannot be submitted when Grants.gov is closed.

    Applicants are strongly urged to read Section IV.2.b., Attachment of Required Application Documents, with great attention. Applicants should carefully follow the instructions and recommendations regarding attachments and using Grants.gov's Download Submitted Applications feature to check that all required attachments

were contained in their submission. Applications submitted without the required documents will not pass the Initial Administrative Review, described in Section V.3.a. of this NOFO.

When developing your submission timeline, please keep in mind that (1) all applicants are required to have a current registration in the System for Award Management (SAM.gov); (2) the free annual registration process in the electronic System for Award Management (SAM.gov) (see Section IV.3. and Section IV.7.a.(1).(b) of this NOFO) may take between three and five business days, or as long as more than two weeks; (3) applicants are required to have a current registration in Grants.gov; and (4) applicants will receive a series of e-mail messages from Grants.gov over a period of up to two business days before learning whether a Federal agency's electronic system has received its application. Please note that a federal assistance award cannot be issued if the designated recipient's registration in the System for Award Management (SAM.gov) is not current at the time of the award.

- **Application Submission Address:** Applications must be submitted using Grants.gov. PREP Boulder and PREP Gaithersburg receive and process applications separately. **Applicants applying to both PREP Boulder and PREP Gaithersburg must submit a separate application for each location** *(see* Section IV. in the Full Announcement Text of this NOFO).

- **Funding Opportunity Description:** NIST is soliciting applications from eligible institutions of higher education in the U.S. and its territories that offer two- or four-year degrees in academic science, technology, engineering and mathematics (STEM) disciplines, which include but are not limited to biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical sciences, physics, and statistics, to establish and manage a program to support collaborative research relationships among NIST staff, undergraduate and graduate students, individuals with bachelor's or master's degrees, post-doctoral fellows, and academic affiliates[1], (herein referred to as PREP researchers) and the PREP researchers' academic institutions. These collaborative relationships will include research opportunities at the relevant NIST campuses in Boulder, Colorado (CO) (PREP Boulder), or Gaithersburg, Maryland (MD), and/or Charleston, South Carolina (SC) (PREP Gaithersburg). Eligible applicants may apply to establish and manage a PREP Boulder program or a PREP Gaithersburg program or may apply to establish and manage programs for both.

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[1] Academic affiliate designation refers to individuals holding appointments at academic institutions. These appointments include, but are not limited to, the following designations: faculty, research faculty, adjunct faculty, research associates, instructors, and lecturers.

- **Anticipated Funding Amounts:** NIST expects approximately $36 million may be made available in FY 2018 for the first year of multi-year awards to eligible applicants. New awards are expected to range from approximately $250,000 to $12,000,000 annually at PREP Boulder and from $500,000 to $24,000,000 at PREP Gaithersburg annually, with project performance periods of up to five (5) years, consistent with the multi-year funding policy described in Section II.2. of this NOFO. NIST may fund up to approximately $180 million for PREP operating across the NIST campuses in Boulder, CO, Gaithersburg, MD and Charleston, SC over five years. The specific number of awards will be determined during the selection process, based on the nature and quality of the proposals NIST receives and funding availability.

- **Funding Instrument:** Cooperative Agreement.

- **Who is Eligible:** Eligibility for PREP Boulder and PREP Gaithersburg is limited to accredited institutions of higher education that offer two- or four-year degrees in the U.S. and its territories in academic disciplines relevant to the technical programs of the NIST laboratories and major programs (http://www.nist.gov/laboratories.cfm). For the purposes of this NOFO, these disciplines include (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical sciences, physics, and statistics. *See* Section III.1. of this NOFO for more information on eligibility requirements.

- **Cost Sharing Requirements:** This Program does not require cost sharing.

Table of Contents

FULL ANNOUNCEMENT TEXT

I. Program Description

The statutory authority for the PREP Program is 15 U.S.C. § 272(b)(4), 15 U.S.C. § 278g-1(e)(1) and (e)(3) and 15 U.S.C. § 272(b) and (c).

The National Institute of Standards and Technology (NIST), a non-regulatory Federal agency within the U.S. Department of Commerce, is one of the nation's premiere research institutions for the physical and engineering sciences. NIST provides a strong interface between government, industry and academia. NIST embodies a science culture, developed from a large and well-equipped research staff that enthusiastically blends programs that address the immediate needs of industry and the nation with longer-term research that anticipates future needs.

1. NIST Expectations of the Recipient

The recipient will establish and manage a program to support collaborative research relationships among NIST staff, the following categories of researchers, herein referred to as PREP researchers:
* undergraduate and graduate students,
* individuals with bachelor's or master's degrees,
* post-doctoral fellows, and
* academic affiliates[2],

and the PREP researchers' academic institutions. These collaborative relationships will include research opportunities at the relevant NIST campuses in Boulder, Colorado (CO) (PREP Boulder), or Gaithersburg, Maryland (MD), and/or Charleston, South Carolina (SC) (PREP Gaithersburg). Eligible applicants may apply to establish and manage a PREP Boulder program or a PREP Gaithersburg program or may apply to establish and manage programs for both.

A recipient is expected to meet the objectives of the PREP Program, which are to:
* encourage the growth and progress of science and engineering in the United States by providing research opportunities for PREP researchers with NIST scientists and engineers and exposing them to cutting-edge research and development (R&D) and
* promote the pursuit of degrees or professional development, as applicable, for PREP researchers.

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[2] Academic affiliate designation refers to individuals holding appointments at academic institutions. These appointments include, but are not limited to, the following designations: faculty, research faculty, adjunct faculty, research associates, instructors, and lecturers.

The PREP Program is conducted in English and it is expected that a recipient will recruit and successfully place PREP researchers in research opportunities at a relevant NIST campus who are proficient in both writing and speaking English. PREP researchers are also expected to have the ability to work with others, a commitment to honesty, and a committed, enthusiastic interest in learning measurement science (metrology), standards, data and technology and using their own innovativeness to develop new science through experimental or theoretical determinations.

The management of the NIST PREP Program relies on a NIST PREP Program Coordinator, a NIST PREP Program Director for Boulder, a NIST PREP Program Director for Gaithersburg, and a recipient's PREP Program Coordinator. The recipient's PREP Program Coordinator position is expected to be established by the recipient within their organization to lead and provide oversight of the PREP Program.

The **NIST PREP Program Coordinator** is a NIST employee stationed in Gaithersburg, MD who is responsible for ensuring consistency with the application processes and the administration of the program across the Institute following award. In addition, the NIST PREP Program Coordinator shall work with NIST PREP Program Directors in Boulder and Gaithersburg to resolve issues that arise throughout the period of the cooperative agreement.

The **NIST PREP Program Director for Gaithersburg** is a NIST employee stationed in Gaithersburg, MD responsible for day to day administration and execution of PREP Gaithersburg, including the application process and selections for PREP Gaithersburg researchers, and acts as a single point of contact for coordination with the PREP Gaithersburg Recipient PREP Program Coordinators.

The **NIST PREP Program Director for Boulder** is a NIST employee stationed in Boulder, CO responsible for day to day administration and execution of PREP Boulder, including the application process and selections for PREP Boulder researchers, and acts as a single point of contact for coordination with the PREP Boulder Recipient PREP Program Coordinators.

Each recipient will be required to have a **Recipient PREP Program Coordinator**. This Coordinator will work closely with the NIST PREP Program Coordinator for Gaithersburg or Boulder as applicable to recruit and select PREP researchers for research opportunities at a NIST campus. A recipient's PREP Program Coordinator should be a permanent employee within the recipient's organization and will be responsible for establishing and managing the PREP program within their organization, including but not limited to:
    (a) advertise the PREP program within their organization;

(b) work with the NIST PREP Program Director for Boulder or Gaithersburg, as applicable, to identify and secure opportunities for PREP researchers at a NIST campus;

(c) serve as a single point of contact for Recipient staff, PREP Program applicants and researchers, and the NIST PREP Program Director for Boulder or Gaithersburg, as applicable;

(d) resolve any difficulties that may arise for PREP researchers when they are applying to the program and once they are engaged in the program and working on a NIST campus;

Once PREP researchers are selected and stationed at a NIST campus, they will be required to receive general research guidance and laboratory training from NIST staff as part of the collaboration.

Applicants must be able to ensure the availability of PREP researchers for on-site collaborative research experiences within the NIST Laboratories operating at the NIST campuses in Boulder, CO, Gaithersburg, MD, or Charleston, SC concurrent with their academic studies.

Participating undergraduate or graduate students must be enrolled full-time in an academic program, and it is recommended that participating students have an un-weighted grade point average of 3.0 on a 4-point scale, or equivalent, or better. Participating individuals with terminal bachelor's degrees[3] must have completed their bachelor's degree within five (5) years of starting as a PREP researcher. Participating individuals with graduate degrees may be a PREP researcher within any timeframe after finishing their degrees.

A Recipient must ensure that, for the duration of their participation in the PREP program, any PREP researcher who is not a United States (US) citizen or lawful permanent resident is in possession of an appropriate nonimmigrant visa and, if applicable, authorization to work in the United States; verification may be through the Department of Homeland Security's E-Verify system[4] or another method, before a Recipient provides the PREP researcher with award funds. Recipients may not provide federal funding to a PREP researcher who no longer has valid immigration status or employment authorization. Any applicant assisting a PREP researcher who is not a US citizen or lawful permanent resident with visa or employment authorization applications is expected to take into consideration U.S. Department of State and Department of

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[3] A participating individual with a terminal bachelor's degree is one who holds a bachelor's degree and is not currently enrolled in a graduate program. For individuals with bachelor's degrees, the intent of the NIST PREP program is to offer a post-baccalaureate program that serves as a bridge for recent bachelor degree recipients who are considering a professional research career through pursuit of a graduate degree. As such, bachelor degree recipients must be within 5 years of receiving their bachelor's degree.

[4] https://www.uscis.gov/e-verify

Homeland Security processing times for obtaining the appropriate authorizations, including changing from one visa status to another and renewals of required documentation. If, at any time, a PREP researcher's visa or employment authorization is no longer valid, the PREP researcher may no longer receive funding under the PREP program, until the issue is resolved.

Expenses related to obtaining a PREP researcher's visa are allowable only at the time a Recipient initially hires a PREP researcher. Fees for expediting visa processing are not allowable costs and may not be included in the applicant's budget.

Applicants may include reasonable travel and related costs in their program budget for PREP researchers to attend scientific meetings, technical events, educational professional development events, or other events that are relevant to the PREP Program, the PREP topical research areas, the PREP objectives, or the NIST mission, as described above in this NOFO. These costs should be reasonable and reflected in the budget form "SF-424A" (*see* Section IV.2.a.(2). of this NOFO) and described in the budget narrative (*see* Section IV.2.a.(7). of this NOFO) and will be evaluated as part of the application review process (*see* Section V.1.d. for a description of the Budget Narrative evaluation criteria and how this information will be evaluated and scored).

Applicants are encouraged to promote the participation of underrepresented minorities in any research conducted under an award pursuant to this NOFO.

2. NIST Laboratories and Facilities

NIST operates several laboratories to carry out its mission to promote innovation and industrial competitiveness by advancing technology in ways that enhance economic security and improve our quality of life[5]:
1) Communications Technology Laboratory (CTL),
2) Engineering (EL),
3) Information Technology (ITL),
4) Material Measurement (MML), and
5) Physical Measurement (PML).

In addition, NIST operates two unique and valuable laboratory facilities[6]: the NIST Center for Neutron Research (NCNR) and the Center for Nanoscale Science and Technology (CNST). Applicants are encouraged to visit the websites listed in Footnotes 5 and 6 of this NOFO to learn about the multi-disciplinary nature of the NIST laboratories and laboratory facilities.

All the laboratories identified above participate in the PREP Program. Each is

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[5] https://www.nist.gov/labs-major-programs/laboratories
[6] https://www.nist.gov/labs-major-programs/user-facilities

described below along with descriptions of the research topic areas for each of the laboratories that are relevant to the PREP Program, in the order they are presented above.

NIST's Communications Technology Laboratory (CTL) (in Boulder, CO and Gaithersburg, MD) promotes the development and deployment of advanced communications technologies, through the conduct of leading edge Research and Development (R&D) on both the metrology and understanding of physical phenomena, materials capabilities, and complex systems relevant to advanced communications. CTL performs research in high-speed electronics, wireless systems metrology, antennas, advanced optics, network design and optimization, spectrum monitoring and resource sharing, and public safety communications. CTL also performs research supporting a multi-level test bed facility, including the development of precision instrumentation, validated test-protocols, models, and simulation tools necessary to support the testing and validation of new communications technologies. More information about CTL can be found at https://www.nist.gov/ctl.

NIST's Engineering Laboratory (EL) (in Gaithersburg, MD only) promotes U.S. innovation and industrial competitiveness in areas of critical national priority by anticipating and meeting the measurement science and standards needs for technology-intensive manufacturing, construction, and cyber-physical systems, including the Smart Grid Program Office in ways that enhance economic prosperity and improve the quality of life. EL research in building and fire research covers a full range of materials issues, from design to processing to performance. Separate research initiatives address concrete, coating, earthquake resistance of structures, fire science and engineering, the theory and modeling of materials, and materials reliability.   More information about EL can be found at https://www.nist.gov/el.

NIST's Information Technology Laboratory (ITL) (in Boulder, CO and Gaithersburg, MD) develops and disseminates standards, measurements, and testing for interoperability, security, usability, and reliability of information systems, including cybersecurity standards and guidelines for Federal agencies and U.S. industry, supporting these and measurement science at NIST through fundamental and applied research in computer science, mathematics and statistics. Additional information about ITL can be found at https://www.nist.gov/itl.

NIST's Material Measurement Laboratory (MML) (in Boulder, CO, Gaithersburg, MD and Charleston, SC) serves as the national reference laboratory for measurements in the chemical, biological and material sciences through activities ranging from fundamental and applied research, to the development and dissemination of certified reference materials, critically evaluated data, and other programs and tools to assure the quality of measurement results. MML is also responsible for coordinating the NIST-wide Standard Reference Material and Standard Reference Data programs.   Additional

information about MML can be found at https://www.nist.gov/mml.

NIST's Physical Measurement Laboratory (PML) (in Boulder, CO and Gaithersburg, MD) develops and disseminates the national standards of length, mass, force and shock, acceleration, time and frequency, electricity, temperature, humidity, pressure and vacuum, liquid and gas flow, and electromagnetic, optical, microwave, acoustic, ultrasonic, and ionizing radiation. PML applies its measurement capabilities to problems of national significance through collaborations with industry, universities, professional and standards setting organizations, and other agencies of government. It supports the research community in such areas as communication, defense, electronics, energy, environment, health, lighting, manufacturing, microelectronics, radiation, remote sensing, space, and transportation. PML establishes spectroscopic methods and standards for infrared, visible, ultraviolet, x-ray, and gamma-ray radiation; investigates the structure and dynamics of atoms, molecules, and biomolecules; develops the electrical, thermal, dimensional, mechanical, and physical metrology for measuring the properties of precision measurement devices and exploratory semiconductor, quantum electronic, nanoelectronic, bioelectronic, biooptical, optoelectronic, and quantum information devices and systems; and examines the thermophysical and interfacial properties of streams of flowing fluids, fluid mixtures, and solids. It develops and disseminates national standards by means of calibrations, measurement quality assurance, standard reference materials, technology transfer, education/training, and a comprehensive weights and measurement program to promote uniformity and accuracy at the international, federal, state, and local levels. It generates, evaluates, and compiles atomic, molecular, optical, ionizing radiation, electronic, and electromagnetic data in response to national needs; measures and improves accuracy of the fundamental physical constants; and develops and operates major radiation sources for measurement science and metrology. To learn more about PML, visit https://www.nist.gov/pml.

NIST's Center for Neutron Research (NCNR) (in Gaithersburg, MD only) is a national resource for industry, universities, and government agencies, focused on providing neutron-measurement capabilities to the U.S. research community. Neutrons are powerful probes of the structure and dynamics of materials ranging from molecules inserted into membranes mimicking cell walls to protons migrating through fuel cells. The unique properties of neutrons can be exploited by a variety of measurement techniques to provide information not available by other means. Neutron-based research covers a broad spectrum of disciplines, including engineering, biology, material science, polymers, chemistry, and physics. The NCNR is also operated as a major national user facility. Additional information can be found at https://www.nist.gov/ncnr.

NIST's Center for Nanoscale Science and Technology (CNST) (in Gaithersburg, MD only) supports the U.S. nanotechnology enterprise from discovery to production by

providing industry, academia, NIST, and other government agencies with access to world-class nanoscale measurement and fabrication methods and technology. The CNST's shared-use NanoFab gives researchers access to and training on commercial state-of-the-art tools and clean room facilities required for cutting-edge nanotechnology development. The CNST's NanoLab does research on creating and using the next generation of nanoscale measurement instruments and methods. Current research topics include theory and modeling of nanomaterials for renewable energy, nanoplasmonics, nanophotonics, nanofluidics, *in situ* electron spectroscopy and microscopy of nanodevices, novel sources for focused-ion beams, and electron transport in graphene. Additional information about CNST can be found at www.nist.gov/cnst.

II. Federal Award Information

1. **Funding Instrument.** The funding instrument that will be used is a cooperative agreement. The nature of NIST's "substantial involvement" will generally be NIST collaboration and involvement in the direction of the scope of work.

2. **Multi-Year Funding Policy.** When a proposal for a multi-year award is approved, funding will usually be provided for only the first year of the program. If a project is selected for funding, NIST has no obligation to provide any additional funding in connection with that award. Continuation of an award to increase funding or extend the period of performance is at the sole discretion of NIST. Continued funding will be contingent upon satisfactory performance, continued relevance to the mission and priorities of NIST, and the availability of funds.

3. **Funding Availabilit**y. NIST expects approximately $36 million may be made available in FY 2018 for the first year of multi-year awards to eligible applicants. New awards are expected to range from approximately $250,000 to $12,000,000 annually at PREP Boulder and from $500,000 to $24,000,000 at PREP Gaithersburg annually, with project performance periods of up to five (5) years, consistent with the multi-year funding policy described in Section II.2. of this NOFO. NIST may fund up to approximately $180 million for PREP operating across the NIST campuses in Boulder, CO, Gaithersburg, MD and Charleston, SC over five years. The specific number of awards will be determined during the selection process, based on the nature and quality of the proposals NIST receives and funding availability.

III. Eligibility Information

1. **Eligible Applicants.** Eligibility for PREP Boulder and PREP Gaithersburg is limited to accredited institutions of higher education that offer two- or four-year degrees in

the U.S. and its territories in academic disciplines relevant to the technical programs of the NIST laboratories and major programs (http://www.nist.gov/laboratories.cfm). For the purposes of this NOFO, these disciplines include (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical sciences, physics, and statistics. *See* Section III.3. of this NOFO for more information on eligibility requirements.

Applicants must be able to ensure the availability of PREP researchers for on-site collaborative research experiences within the NIST Laboratories operating at the NIST campuses in Boulder, CO, Gaithersburg, MD, or Charleston, SC concurrent with their academic studies.

An eligible organization may work individually or include proposed sub-awardees, contractors or other collaborators in a project, effectively forming a team or consortium.

Applicants are encouraged, but are not required, to promote the participation of underrepresented minorities in any research conducted under an award pursuant to this NOFO.

2. **Cost Sharing or Matching.** This Program does not require cost sharing.

3. **Eligible PREP Researchers.** Participating undergraduate or graduate students must be enrolled full-time in an academic program, and it is recommended that participating students have an un-weighted grade point average of 3.0 on a 4-point scale, or equivalent, or better. Participating individuals with terminal bachelor's degrees[7] must have completed their bachelor's degree within five (5) years of starting as a PREP researcher. Participating individuals with graduate degrees may be a PREP researcher within any timeframe after finishing their degrees.

A Recipient must ensure that, for the duration of their participation in the PREP program, any PREP researcher who is not a United States (US) citizen or lawful permanent resident is in possession of an appropriate nonimmigrant visa and, if applicable, authorization to work in the United States; verification may be through the Department of Homeland Security's E-Verify system[8] or another method, before a Recipient provides the PREP researcher with award funds. Recipients may not provide

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[7] A participating individual with a terminal bachelor's degree is one who holds a bachelor's degree and is not currently enrolled in a graduate program. For individuals with bachelor's degrees, the intent of the NIST PREP program is to offer a post-baccalaureate program that serves as a bridge for recent bachelor degree recipients who are considering a professional research career through pursuit of a graduate degree. As such, bachelor degree recipients must be within 5 years of receiving their bachelor's degree.
[8] https://www.uscis.gov/e-verify

federal funding to a PREP researcher who no longer has valid immigration status or employment authorization. Any applicant assisting a PREP researcher who is not a US citizen or lawful permanent resident with visa or employment authorization applications is expected to take into consideration U.S. Department of State and Department of Homeland Security processing times for obtaining the appropriate authorizations, including changing from one visa status to another and renewals of required documentation. If, at any time, a PREP researcher's visa or employment authorization is no longer valid, the PREP researcher may no longer receive funding under the PREP program, until the issue is resolved.

IV. <u>Application Submission Information</u>

1. **Address to Request Application Package.** The application package is available at www.grants.gov under Funding Opportunity Number 2017-NIST-PREP-01.

2. **Content and Format of Application Submission**

a. **Required Forms and Documents**

   Applicants applying to both PREP Boulder and PREP Gaithersburg must submit a separate application for each location.

   (1) SF-424, Application for Federal Assistance. The SF-424 must be signed by an authorized representative of the applicant organization.

   - o SF-424, Item 8.d. Zip/Postal Code field, should reflect the Zip code + 4 (#####-####) format.

   - o SF-424, Item 12, should list the NOFO number as 2017-NIST-PREP-01.

   - o SF-424, Item 15, must specify either "PREP Boulder" or "PREP Gaithersburg" depending on the sub-program to which the particular application is directed.

   - o SF-424, Item 18, should list the total Federal budget amount requested for the entire project.

   - o For SF-424, Item 21, the list of certifications and assurances is contained in the SF-424B.

   (2) SF-424A, Budget Information – Non-Construction Programs. For both PREP Boulder and PREP Gaithersburg:

(a) The budget should reflect anticipated expenses for the project, considering all potential cost increases, including cost of living adjustments.

(b) The Grant Program Function or Activity on Line 1 under Column (a) should be entered as Science, Technology, Business and/or Education Outreach. The Catalog of Federal Domestic Assistance Number in on Line 1 under Column (b) should be entered as 11.620.

(c) These sections of the SF-424A should reflect funds for the first year of the award: Section A; Section B; Section C; and Section D. The budget estimate for the second year of the award should be entered in Section E, field 16, column (b), and the budget estimate for the third year of the award should be entered in Section E, field 16, column (c). The budget estimate for the fourth year of the award should be entered in Section E, field 16, column (d), and the budget estimate for the fifth year of the award should be entered in Section E, field 16, column (e). Further details about this form can be can be found at: http://www.grants.gov/web/grants/form-instructions/sf-424a-instructions.html.

(3) SF-424B, Assurances – Non-Construction Programs

(4) CD-511, Certification Regarding Lobbying. Enter "2017-NIST-PREP-01" in the Award Number field. Enter either "PREP Boulder" or "PREP Gaithersburg", depending on the sub-program to which the particular application is directed, in the Project Name field.

(5) SF-LLL, Disclosure of Lobbying Activities (if applicable)

(6) Technical Proposal. The Technical Proposal is a word-processed document of no more than twenty-five (25) pages responsive to the program description (see Section I. of this NOFO) and the evaluation criteria (*see* Section V.1. of this NOFO). The Technical Proposal should contain the following information:

(a) Cover Page. *See* Section IV.2.c.(1). below in this NOFO (does not count toward the Technical Proposal page limit).

(b) Executive Summary. The Executive Summary should briefly describe the applicant's plan to establish and manage a program to support collaborative research relationships among NIST staff, PREP researchers and the PREP researchers' academic institutions (*see* Section I. of this NOFO), consistent with the evaluation criteria (*see* Section V.1. of this NOFO). The Executive Summary should not

exceed one (1) single-sided page (does not count toward the Technical Proposal page limit).

(c) Program Approach and Management Plan. A description of the proposed approach to plan, implement, and manage the program to meet the objectives of the PREP Program, as described in Section I. of this NOFO, sufficient to permit evaluation of the application in accordance with the *Program Approach and Management Plan* evaluation criterion (*see* Section V.1.a. of this NOFO).

(d) Qualifications and Experience. A description of the applicant's qualifications and experience for implementing the program to support collaborative research relationships among NIST staff, PREP researchers and the PREP researchers' academic institutions, sufficient to permit evaluation of the proposal in accordance with the *Qualifications and Experience* evaluation criterion (*see* Section V.1.b. of this NOFO).

(e) Success Metrics. A description of three or more metrics and other mechanisms by which the recipient will evaluate success in meeting the PREP Program objectives described in Section I. of this NOFO. Outputs of the proposed program may be quantified to ascertain program results, such as: the number and quality of publications by PREP researchers; the number and types of patents, tools, or software developed by PREP researchers; the ability of students to earn college credits and work towards their undergraduate or graduate degree; and/or the number of science and technology jobs obtained by PREP researchers once they complete their participation in the PREP Program. The metrics and mechanisms should provide a sound basis for evaluating the technical success of specific projects, the quality of the research experiences provided to PREP researchers, and the extent to which collaborations have been formed or strengthened between the Recipient institution and NIST, sufficient to permit evaluation of the proposal in accordance with the *Success Metrics* evaluation criterion (*see* Section V.1.c. of this NOFO).

(7) Budget Narrative. The Budget Narrative should provide a detailed breakdown of each of the object class categories as reflected on the SF-424A and explain fully and justify all proposed expenses, including each level of PREP researchers which will be supported each year of the program. In addition, the applicant should determine its required costs for managing the PREP researchers, including the processing necessary for administrative functions such as their applications, salary, and travel.

The annual budget for the proposed program should contain support for any number of (1) undergraduates, (2) graduates, (3) post-baccalaureate individuals, (4) post-doctoral fellows and (5) academic affiliates. Applicants should include the following costs for the proposed program and provide a description and justification of the costs in the budget narrative section of the Technical Proposal:

- Stipend or wage for PREP researchers (commensurate to what a researcher in the individual's given department would receive),
- Full tuition assistance for graduate students calculated at the in-state rate, if applicable,
- Fringe benefits (which may include fees and health insurance),
- Relocation expenses for post-doctoral fellows and academic affiliates (optional and limited up to $5000 per individual), and
- Any indirect costs.

Applicants may include reasonable travel and related costs in their program budget for PREP researchers to attend scientific meetings, technical events, educational professional development events, or other events that are relevant to the PREP Program, the PREP topical research areas, the PREP objectives, or the NIST mission, as described above in this NOFO. These costs should be reasonable and reflected in the budget form "SF-424A" (*see* Section IV.2.a.(2) of this NOFO).

Please note, overhead rates are required to be calculated at the appropriate off-campus rate.

Additionally, as stated in Section I.1. of this NOFO, institutions are required to verify that any PREP researcher who is not a US citizen or lawful permanent resident is in possession of an appropriate nonimmigrant visa and, if applicable, authorization to work in the United States, either through DHS's E-Verify system or another method. If costs related to the administration of this aspect of the program are not captured in your organizations negotiated indirect cost (F&A) rate, please provide sufficient information to demonstrate how these costs will be charged to the award while being consistent with 2 C.F.R. § 200.412, Classification of Costs.

This section should respond to the *Budget Narrative* evaluation criterion (*see* Section V.1.d. of this NOFO).

(8) Indirect Cost Rate Agreement. If indirect costs are included in the proposed budget, provide a copy of the approved negotiated agreement if this rate was negotiated with a cognizant Federal audit agency. If the rate was not established

by a cognizant Federal audit agency, provide a statement to this effect. If a successful applicant includes indirect costs in the budget and has not established an indirect cost rate with a cognizant Federal audit agency, the applicant will be required to obtain such a rate in accordance with the Department of Commerce Financial Assistance Standard Terms and Conditions (https://go.usa.gov/xXRxK).

Alternatively, in accordance with 2 C.F.R. § 200.414(f), applicants that have never received a negotiated indirect cost rate may elect to charge indirect costs to an award pursuant to a de minimis rate of 10 percent of modified total direct costs (MTDC), in which case a negotiated indirect cost rate agreement is not required. Applicants proposing a 10 percent de minimis rate pursuant to 2 C.F.R. § 200.414(f) should note this election as part of the budget and budget narrative portion of the application.

(9) Data Management Plan. Consistent with NIST Policy 5700.00[9], *Managing Public Access to Results of Federally Funded Research,* and NIST Order 5701.00[10], *Managing Public Access to Results of Federally Funded Research*", applicants should include a Data Management Plan (DMP).

The DMP is a supplementary document of not more than two pages that must include, at a minimum, a summary of activities that generate data, a summary of the types of data generated by the identified activities, a plan for storage and maintenance of the data generated by the identified activities, and a plan describing whether and how data generated by the identified activities will be reviewed and made available to the public. So long as the DMP meets these NIST requirements, it may take the form specified by the applicant's institution or some other entity (e.g., the National Science Foundation[11] or the National Institutes of Health[12]).

All applications for activities that will generate scientific data using NIST funding are required to adhere to a DMP or explain why data sharing and/or preservation are not within the scope of the project.

For the purposes of the DMP, NIST adopted the definition of "research data" at 2 C.F.R. § 200.315(e)(3) (available at http://go.usa.gov/3sZvQ).

Reasonable costs for data preservation and access may be included in the application.

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[9] https://www.nist.gov/sites/default/files/documents/2017/05/09/Final-P-5700.pdf
[10] https://www.nist.gov/sites/default/files/documents/2017/05/09/Final-O-5701_0.pdf
[11] http://www.nsf.gov/bfa/dias/policy/dmp.jsp
[12] http://grants.nih.gov/grants/policy/data_sharing/data_sharing_guidance.htm

The inclusion of the DMP will be considered as part of the administrative review (see Section V.3.a. of this NOFO); however, the DMP will not be evaluated against any evaluation criterion.

b. Attachment of Required Application Documents

Items IV.2.a.(1) through IV.2.a.(5) above are part of the standard application package in Grants.gov and can be completed through the download application process.

Items IV.2.a.(6) through IV.2.a.(9) must be completed and attached by clicking on "Add Attachments" found in item 15 of the SF-424, Application for Federal Assistance. This will create a zip file that allows for transmittal of the documents electronically via Grants.gov.

Applicants should carefully follow specific Grants.gov instructions at www.grants.gov to ensure the attachments will be accepted by the Grants.gov system. *A receipt from Grants.gov indicates only that an application was transferred to a system. It does not provide details concerning whether all attachments (or how many attachments) transferred successfully.* Applicants using Grants.gov will receive a series of e-mail messages over a period of up to two business days before learning whether a Federal agency's electronic system has received its application.

The Grants.gov Online Users Guide available at the Grants.gov site (http://go.usa.gov/cjaEh) provides vital information on checking the status of applications. See especially the "Check My Application Status" option, found by clicking first on Applicants, and then by clicking on Applicant Actions.

Applicants can track their submission in the Grants.gov system by following the procedures at the Grants.gov site (http://go.usa.gov/cjamz). It can take up to two business days for an application to fully move through the Grants.gov system to NIST, however, applicants can immediately check that they properly submitted the application in Grants.gov by following the Grants.gov tracking procedures cited above.

NIST uses the Tracking Numbers assigned by Grants.gov, and does not issue Agency Tracking Numbers.

c. Application Format

Applicants applying to both PREP Boulder and PREP Gaithersburg must submit a separate application for each location.

(1) Cover Page. In an effort to route an application to the appropriate program official, applicants must specify either "PREP Boulder" or "PREP Gaithersburg" depending on the sub-program to which the particular application is directed.

(2) Application language. English.

(3) Mail, e-mail, and facsimile (fax) submissions. Will not be accepted.

(4) Figures, graphs, images, and pictures. Should be of a size that is easily readable or viewable and may be landscape orientation.

(5) Font. Easy to read font (10-point minimum). Smaller type may be used in figures and tables but must be clearly legible.

(6) Line spacing. Single.

(7) Margins. One (1) inch top, bottom, left, and right.

(8) Page layout. Portrait orientation except for figures, graphs, images, and pictures. Paragraphs are to be clearly separated from each other by double spacing, paragraph formatting or equivalent.

(9) Page limit. The Technical Proposal is limited to twenty-five (25) pages, excluding the Cover Page and the Executive Summary.

   (a) **Page limit includes:** Table of contents (if included), Technical Proposal with all suggested information, including figures, graphs, tables, images, and pictures.

   (b) **Page limit excludes:** SF-424, Application for Federal Assistance; SF- 424A, Budget Information – Non-Construction Programs; SF-424B, Assurances – Non-Construction Programs; CD-511, Certification Regarding Lobbying; SF-LLL, Disclosure of Lobbying Activities; Cover Page; Executive Summary; Budget Narrative; Indirect Cost Rate Agreement; and Data Management Plan.

(10) Page numbering. Number pages sequentially.

(11) Paper size. 21.6 centimeters by 27.9 centimeters (8 ½ inches by 11 inches).

d. Application Replacement Pages. Applicants may not submit replacement pages and/or missing documents once an application has been submitted. Any revisions

must be made by submission of a new application that must be received by NIST by the submission deadline.

e. Pre-Applications. NIST is not accepting pre-applications or white papers under this NOFO.

f. Certifications Regarding Federal Felony and Federal Criminal Tax Convictions, Unpaid Federal Tax Assessments and Delinquent Federal Tax Returns. In accordance with Federal appropriations law, an authorized representative of the selected applicant(s) may be required to provide certain pre-award certifications regarding federal felony and federal criminal tax convictions, unpaid federal tax assessments, and delinquent federal tax returns.

3. Unique Entity Identifier and System for Award Management (SAM). Pursuant to 2 C.F.R. part 25, applicants and recipients (as the case may be) are required to: (i) be registered in SAM before submitting its application; (ii) provide a valid unique entity identifier in its application; and (iii) continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency, unless otherwise excepted from these requirements pursuant to 2 C.F.R. § 25.110. NIST will not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements and, if an applicant has not fully complied with the requirements by the time that NIST is ready to make a Federal award pursuant to this NOFO, NIST may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

4. Submission Dates and Times. For both PREP Boulder and PREP Gaithersburg, applications must be received by NIST electronically through Grants.gov no later than 11:59 p.m. Eastern Time, Friday, August 4, 2017. Applications not received by the specified due date and time will not be considered and will be returned without review. NIST will consider the date and time recorded by www.grants.gov as the official submission time.

Applicants should be aware, and factor into their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance from 12:01 Eastern Time, Saturday, June 17, 2017 until Monday, June 19, 2017 at 6:00 a.m. Eastern Time, and again from 12:01 Eastern Time, Saturday, July 15, 2017 until Monday, July 17, 2017 at 6:00 a.m. Eastern Time. Applications cannot be submitted when Grants.gov is closed.

When developing your submission timeline, please keep in mind that (1) all applicants are required to have a current registration in the System for Award

Management (SAM.gov); (2) the free annual registration process in the electronic System for Award Management (SAM.gov) (*see* Sections IV.3. and IV.7.a.(1).(b). of this NOFO) often takes between three and five business days and may take as long as two weeks; (3) applicants are required to have a current registration in Grants.gov; and (4) applicants using Grants.gov will receive email notifications over a period of up to two business days as the application moves through intermediate systems before the applicant learns via a validation or rejection notification whether NIST has received the application. (*See* http://www.grants.gov for full information on application and notification through Grants.gov.). Please note that a federal assistance award cannot be issued if the designated recipient's registration in the System for Award Management (SAM.gov) is not current at the time of the award.

5. **Intergovernmental Review.** Applications under this Program are not subject to Executive Order 12372.

6. **Funding Restrictions**. Profit or fee is not an allowable cost.

7. **Other Submission Requirements**

a. **Applications must be submitted electronically.**

   (1) Applications must be submitted via www.grants.gov. NIST will not accept applications submitted by mail, facsimile, or e-mail.

   (a) Applicants should carefully follow specific Grants.gov instructions to ensure that all attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating an application is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2017-NIST-PREP-01 announcement, contact Christopher Hunton by phone at 301-975-5718 or by e-mail at grants@nist.gov.

   (b) Applicants are strongly encouraged to start early and not wait until the approaching due date before logging on and reviewing the instructions for submitting an application through Grants.gov. The Grants.gov registration process must be completed before a new registrant can apply electronically. If all goes well, the registration process takes three to five business days. If problems are encountered, the registration process can take up to two weeks or more. Applicants must have a valid unique entity identifier number and must maintain a current registration in the Federal government's primary registrant database, the System for Award Management (https://www.sam.gov/), as explained on the Grants.gov Web site. *See also* Section IV.3. of this NOFO. After registering, it may

take several days or longer from the initial log-on before a new Grants.gov system user can submit an application. Only individuals authorized as organization representatives will be able to submit the application, and the system may need time to process a submitted application. Applicants should save and print the proof of submission they receive from Grants.gov. If problems occur while using Grants.gov, the applicant is advised to (a) print any error message received and (b) call Grants.gov directly for immediate assistance. If calling from within the United States or from a U.S. territory, please call 800-518-4726. If calling from a place other than the United States or a U.S. territory, please call 606-545-5035. Assistance from the Grants.gov Help Desk will be available around the clock every day, with the exception of Federal holidays. Help Desk service will resume at 7:00 a.m. Eastern Time the day after Federal holidays. For assistance using Grants.gov, you may also contact support@grants.gov.

(c) To find instructions on submitting an application on Grants.gov, Applicants should refer to the "Applicants" tab in the banner just below the top of the www.grants.gov home page. Clicking on the "Applicants" tab produces two exceptionally useful sources of information, Applicant Actions and Applicant Resources, which applicants are advised to review.

Applicants will receive a series of e-mail messages over a period of up to two business days before learning whether a Federal agency's electronic system has received its application. Closely following the detailed information in these subcategories will increase the likelihood of acceptance of the application by the Federal agency's electronic system.

Applicants should pay close attention to the guidance under "Applicant FAQs," as it contains information important to successful submission on Grants.gov, including essential details on the naming conventions for attachments to Grants.gov applications.

All applicants should be aware that adequate time must be factored into applicants' schedules for delivery of their application. Applicants are advised that volume on Grants.gov may be extremely heavy leading up to the deadline date.

The application must be both received and validated by Grants.gov. The application is "received" when Grants.gov provides the applicant a confirmation of receipt and an application tracking number. If an applicant does not see this confirmation and tracking number, the application has not been received. After the application has been received, it must still be validated. During this process, it may be "validated" or "rejected with errors." To know whether the application was rejected with errors and

the reasons why, the applicant must log in to Grants.gov, select "Applicants" from the top navigation, and select "Track my application" from the drop-down list. If the status is "rejected with errors," the applicant may still seek to correct the errors and resubmit your application before the deadline. If the applicant does not correct the errors, the application will not be forwarded to NIST by Grants.gov.

Refer to important information in Section IV.4. Submission Dates and Times, to help ensure your application is received on time.

b. **Amendments.** Any amendments to this NOFO will be announced through Grants.gov. Applicants may sign up for Grants.gov NOFO amendments or may request copies from Dr. Brandi Toliver at (301) 975-2371; email: brandi.toliver@nist.gov.

V. Application Review Information

1. **Evaluation Criteria**. The evaluation criteria that will be used in evaluating applications are as follows; for evaluation criteria that include sub-criteria, all sub-criteria will be given equal weight:

a. **Program Approach and Management Plan (0 – 35 points)**. Reviewers will evaluate the comprehensiveness and quality of the applicant's proposed approach to plan, implement, and manage a program that meets the objectives of the PREP Program. Specifically, reviewers will evaluate the comprehensiveness of the applicant's program approach and management plan and the likelihood that the approach and plan can effectively and efficiently:
   i.   provide research opportunities for PREP researchers with NIST scientists and engineers and expose them to cutting-edge research and development activities;
   ii. promote the pursuit of degrees or professional development, as applicable, for PREP researchers;
   iii. sustainably recruit and place students within the NIST Laboratories for collaborative research experiences throughout the award period; and
   iv. manage the program.

b. **Qualifications and Experience (0 – 35 points).** Reviewers will evaluate the applicant's demonstrated experience in placing undergraduate and graduate students, individuals with bachelor's or master's degrees, post-doctoral fellows, and/or academic affiliates, as defined in Section I.1. of this NOFO, in research laboratories, or other appropriate settings, consistent with furthering the pursuit of degrees or professional development. The extent to which the applicant's institutional degree programs and academic emphases align with the technical areas

outlined in Section I. of this NOFO will also be considered. If this will be a new or developing activity for an applicant, the applicant's qualifications to plan and implement the new program and meet the objectives of the PREP Program as described in their proposal will be evaluated.

c. **Success Metrics (0 – 20 points).** Reviewers will evaluate the clarity and quality of proposed metrics and other mechanisms for evaluating the effectiveness of outputs from the proposed Program.

d. **Budget Narrative. (0 – 10 points).** Reviewers will assess the budgeted costs against the proposed activities to determine the practicality and cost effectiveness of the proposed budget with respect to developing and implementing the proposed Program, as described in Section I. of this NOFO.

2. **Selection Factors.** The Selecting Official, who is the NIST PREP Program Coordinator, will make recommendations to the NIST Grants Management Division regarding the final application selections. The Selecting Official shall generally recommend applications for awards based upon the rank order of the applications (*see* Section V.3.b. of this NOFO), but may recommend applications out of rank based on one or more of the following selection factors:

   a. The results of the reviewers' evaluations.

   b. The objectives as set forth in this NOFO (*see* Section I. of this NOFO).

   c. The availability of Federal funds.

3. **Review and Selection Process**

Applications submitted to NIST and/or relating to financial assistance awards issued by NIST will be reviewed and considered by Federal employees, Federal agents and contractors, and/or by non-Federal personnel who have entered into nondisclosure agreements covering such information, when applicable.

a. **Initial Administrative Review of Applications.** An initial review of timely received applications will be conducted to determine eligibility, completeness, and responsiveness to this NOFO and the scope of the stated program objectives. Applications determined to be ineligible, incomplete, and/or non-responsive may be eliminated from further review. However, NIST, in its sole discretion, may continue the review process for an application that is missing non-substantive information, the lack of which may easily be rectified or cured.

b. **Full Review of Eligible, Complete, and Responsive Applications.** Applications

that are determined to be eligible, complete, and responsive will proceed for full reviews in accordance with the review and selection process below:

At least three (3) independent, objective reviewers knowledgeable in the subject matter of this NOFO and its objectives will evaluate and score each application based on the evaluation criteria (*see* Section V.1. of this NOFO). If non-Federal reviewers are used, the reviewers may discuss the applications with each other, but scores will be determined on an individual basis, not as a consensus. Based on the reviewers' scores, a rank order will be prepared and provided to the Selecting Official, along with the reviewers' narrative comments, for further consideration. The Selecting Official will then recommend funding recipients based upon the rank order and the selection factors (*see* Section V.2. of this NOFO).

NIST reserves the right to negotiate the budget costs with the selected applicant. Negotiations may include requesting that the applicant remove certain costs. Additionally, NIST may request that the applicant modify objectives or work plans and provide supplemental information required by the agency prior to award. NIST also reserves the right to reject an application where information is uncovered that raises a reasonable doubt as to the responsibility of the applicant. NIST may select some, all, or none of the applications, or part(s) of any particular application. In some cases, NIST may ask applicants to consider combining projects. The final approval of selected applications and issuance of awards will be by the NIST Grants Officer. The award decisions of the NIST Grants Officer are final.

c. **Federal Awarding Agency Review of Risk Posed by Applicants.** After applications are proposed for funding by the Selecting Official, the NIST Grants Management Division (GMD) performs pre-award risk assessments in accordance with 2 C.F.R. § 200.205, which may include a review of the financial stability of an applicant, the quality of the applicant's management systems, the history of performance, and/or the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities.

In addition, prior to making an award where the total Federal share is expected to exceed the simplified acquisition threshold (currently $150,000), NIST GMD will review and consider the publicly available information about that applicant in the Federal Awardee Performance and Integrity Information System (FAPIIS). An applicant may, at its option, review and comment on information about itself previously entered into FAPIIS by a Federal awarding agency. As part of its review of risk posed by applicants, NIST GMD will consider any comments made by the applicant in FAPIIS in making its determination about the applicant's integrity, business ethics, and record of performance under Federal awards. Upon completion of the pre-award risk assessment, the NIST Grants Officer will make a responsibility determination concerning whether the applicant is qualified to receive

the subject award and, if so, whether appropriate special conditions that correspond to the degree of risk posed by the applicant should be applied to an award.

4. **Anticipated Announcement and Award Dates.** Awards for this Program are anticipated to be made in October or November, 2017.

5. **Additional Information**

a. **Notification to Unsuccessful Applicants**. Unsuccessful applicants will be notified in writing.

b. **Retention of Unsuccessful Applications.** An electronic copy of each non-selected application will be retained in accordance with Federal records retention requirements.

VI. Federal Award Administration Information

1. **Federal Award Notices.** Successful applicants will receive an award package from the NIST Grants Officer.

2. **Administrative and National Policy Requirements**

a. **Uniform Administrative Requirements, Cost Principles and Audit Requirements**. Through 2 C.F.R. § 1327.101, the Department of Commerce adopted Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200, which apply to awards in this program. Refer to http://go.usa.gov/SBYh and http://go.usa.gov/SBg4.

b. **Department of Commerce Financial Assistance Standard Terms and Conditions**. The Department of Commerce will apply the Financial Assistance Standard Terms and Conditions dated March 31, 2017, accessible at https://go.usa.gov/xXRxK, to this award. Refer to Section VII. of this NOFO, Federal Awarding Agency Contacts, Grant Rules and Regulations, if you need more information.

c. **Pre-Award Notification Requirements.** The Department of Commerce will apply the Pre-Award Notification Requirements for Grants and Cooperative Agreements dated December 30, 2014 (79 FR 78390), accessible at http://go.usa.gov/hKkR. Refer to Section VII. of this NOFO, Federal Awarding Agency Contacts, Grant Rules and Regulations, if you seek the information at this link and it is no longer working or you need more information.

d. Funding Availability and Limitation of Liability. Funding for the program listed in this NOFO is contingent upon the availability of appropriations. In no event will NIST or the Department of Commerce be responsible for application preparation costs if this program fails to receive funding or is cancelled because of agency priorities. Publication of this NOFO does not oblige NIST or the Department of Commerce to award any specific project or to obligate any available funds.

e. Collaborations with NIST Employees. The PREP Program Description specifically anticipates that students, post-doctoral fellows, and professors will collaborate with NIST. Applicants are not required to identify such collaboration with specific NIST employees; however, if the applicant wishes to propose collaboration with a specific NIST employee, the statement of work should include a statement of this intention, a description of the collaboration, and prominently identify the NIST employee(s) involved, if known. Any collaboration by a NIST employee must be approved by appropriate NIST management and is at the sole discretion of NIST. Prior to beginning the merit review process, NIST will verify the approval of the proposed collaboration. Any unapproved collaboration will be stricken from the application prior to the merit review. Any collaboration with an identified NIST employee that is approved by appropriate NIST management will not make an application more or less favorable in the competitive process.

f. Use of NIST Intellectual Property. If the applicant anticipates using any NIST-owned intellectual property to carry out the work proposed, the applicant should identify such intellectual property. This information will be used to ensure that no NIST employee involved in the development of the intellectual property will participate in the review process for that competition. In addition, if the applicant intends to use NIST-owned intellectual property, the applicant must comply with all statutes and regulations governing the licensing of Federal government patents and inventions, described in 35 U.S.C. §§ 200-212, 37 C.F.R. Part 401, 2 C.F.R. §200.315, and in Section D.03 of the Department of Commerce Financial Assistance Terms and Conditions dated March 31, 2017, accessible at https://go.usa.gov/xXRxK.

Any use of NIST-owned intellectual property by an applicant is at the sole discretion of NIST and will be negotiated on a case-by-case basis if a project is deemed meritorious. The applicant should indicate within the statement of work whether it already has a license to use such intellectual property or whether it intends to seek one.

g. Research Activities Involving Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects Including Software Testing. Any application that includes research activities involving human subjects, human tissue/cells, or data or recordings from or about human subjects, must satisfy the

requirements of the Common Rule for the Protection of Human Subjects ("Common Rule"), codified for the Department of Commerce at 15 C.F.R. Part 27. Research activities involving human subjects who fall within one or more of the classes of vulnerable subjects found in 45 C.F.R. Part 46, Subparts B, C and D must satisfy the requirements of the applicable subpart(s). In addition, any such application that includes research activities on these subjects must be in compliance with all applicable statutory requirements imposed upon the Department of Health and Human Services (DHHS) and other Federal agencies, all regulations, policies and guidance adopted by DHHS, the Food and Drug Administration (FDA), and other Federal agencies on these topics, and all Executive Orders and Presidential statements of policy on applicable topics. (Regulatory Resources: http://www.hhs.gov/ohrp/humansubjects/index.html which includes links to FDA regulations, but may not include all applicable regulations and policies).

NIST uses the following Common Rule definitions for research and human subjects research:

Research: A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities.

Human Subject: A living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention or interaction with the individual or identifiable private information.

   (1) *Intervention* includes both physical procedures by which data are gathered and manipulations of the subject or the subject's environment that are performed for research purposes.

   (2) *Interaction* includes communication or interpersonal contact between investigator and subject.

   (3) *Private information* includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator associated with the

information) in order for obtaining the information to constitute research involving human subjects.

See 15 C.F.R. § 27.102 (Definitions).

1) **Requirement for Federalwide Assurance.** If the application is accepted for [or awarded] funding, organizations that have an IRB are required to follow the procedures of their organization for approval of exempt and non-exempt research activities that involve human subjects. Both domestic and foreign organizations performing non-exempt research activities involving human subjects will be required to have protocols approved by a cognizant, active IRB currently registered with the Office for Human Research Protections (OHRP) within the DHHS that is linked to the engaged organizations. All engaged organizations must possess a currently valid Federalwide Assurance (FWA) on file from OHRP. Information regarding how to apply for an FWA and register an IRB with OHRP can be found at http://www.hhs.gov/ohrp/assurances/index.html. NIST relies only on OHRP-issued FWAs and IRB Registrations for both domestic and foreign organizations for NIST supported research involving human subjects. NIST will not issue its own FWAs or IRB Registrations for domestic or foreign organizations.

2) **Administrative Review.** The NIST Human Subjects Protection Office (HSPO) reserves the right to conduct an administrative review[13] of all applications that potentially include research involving human subjects and were approved by an authorized non-NIST institutional entity (an IRB or entity analogous to the NIST HSPO) under 15 C.F.R. § 27.112 (Review by Institution). If the NIST HSPO determines that an application includes research activities that potentially involve human subjects, the applicant will be required to provide additional information to NIST for review and approval. The documents required for funded proposals are listed in each section below. Most documents will need to be produced during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. Research involving human subjects may not start until the NIST Grants Officer issues an award explicitly authorizing such research. In addition, all amendments, modifications, or changes to approved research and requests

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[13] Conducting an "administrative review" means that the NIST HSPO will review and verify the performing institution's determination for research not involving human subjects or exempt human subjects research. In addition, for non-exempt human subjects research, the NIST HSPO will review and confirm that the research and performing institution(s) are in compliance with 15 C.F.R. Part 27, which means HSPO will 1) confirm the engaged institution(s) possess, or are covered under a Federalwide Assurance, 2) review the research study documentation submitted to the IRB and verify the IRB's determination of level of risk and approval of the study for compliance with 15 C.F.R. Part 27, 3) review and verify IRB-approved substantive changes to an approved research study before the changes are implemented, and 4) review and verify that the IRB conducts an appropriate continuing review at least annually.

for continuing review and closure will be reviewed by the NIST HSPO.

3) **Required documents for proposal review. All applications involving human subject research must clearly indicate, by separable task, all research activities believed to be exempt or non-exempt research involving human subjects, the expected institution(s) where the research activities involving human subjects may be conducted, and the institution(s) expected to be engaged in the research activities.**

   a. **Not research determination.** If an activity/task involves human subjects as defined in the Common Rule, but the applicant participant(s) indicates to NIST that the activity/task is not research as defined in the Common Rule, the following information may be requested for that activity/task:

      (1) Justification, including the rationale for the determination and such additional documentation as may be deemed necessary by NIST to review and/or support a determination that the activity/task in the application is not research as defined in the Common Rule.
      (2) If the applicant participant(s) used a cognizant IRB that provided a determination that the activity/task is not research, a copy of that determination documentation must be provided to NIST. The applicant participant(s) is not required to establish a relationship with a cognizant IRB if they do not have one.

   NIST will review the information submitted and may coordinate further with the applicant before determining whether the activity/task will be defined as research under the Common Rule in the applicable NIST financial assistance program or project.

   b. **Research not involving human subjects**. If an activity/task is determined to be research and involves human subjects, but is determined to be *not human subjects research* (or *research not involving human subjects*) under the Common Rule, the following information may be requested for that activity/task:

      (1) Justification, including the rationale for the determination and such additional documentation as may be deemed necessary by NIST to review and/or support a determination that the activity/task in the application is not research as defined in the Common Rule.
      (2) If the applicant participant(s) used a cognizant IRB that provided a determination that the activity/task is research not involving human subjects, a copy of that determination documentation must be provided to NIST. The applicant participant(s) is not required to establish a

relationship with a cognizant IRB if they do not have one.

c. **Exempt research determination with no IRB.** If the application appears to NIST to include exempt research activities, and the performer of the activity or the supplier and/or the receiver of the biological materials or data from human subjects **does not** have a cognizant IRB to provide an exemption determination, the following information may be requested during the review process so that NIST can evaluate whether an exemption under the Common Rule applies (*see* 15 C.F.R. § 27.101(b), (c) and (d)):

(1) The name(s) of the institution(s) where the exempt research will be conducted.
(2) The name(s) of the institution(s) providing the biological materials or data from human subjects.
(3) A copy of the protocol for the research to be conducted; and/or the biological materials or data from human subjects to be collected/provided, not pre-existing samples (*i.e.,* will proposed research collect only information without personal identifiable information, will biological materials or data be de-identified and when and by whom was the de-identification performed, how were the materials or data originally collected).
(4) For pre-existing biological materials or data from human subjects, provide copies of the consent forms used for collection and a description of how the materials or data were originally collected and stripped of personal identifiers. If copies of consent forms are not available, explain.
(5) Any additional clarifying documentation that NIST may deem necessary in order to make a determination whether the activity/task or use of biological materials or data from human subjects is exempt under the Common Rule.

d. **Research review with an IRB.** If the application appears to NIST to include research activities (exempt or non-exempt) involving human subjects, and the proposed performer of the activity has a cognizant IRB registered with OHRP, and linked to their Federalwide Assurance, the following information may be requested during the review process:

(1) The name(s) of the institution(s) where the research will be conducted.
(2) The name(s) and institution(s) of the cognizant IRB(s), and the IRB registration number(s).
(3) The FWA number of the applicant linked to the cognizant IRB(s);
(4) The FWAs associated with all organizations engaged in the planned research activity/task, linked to the cognizant IRB.

(5) If the IRB review(s) is pending, the estimated start date for research involving human subjects.

(6) The IRB approval date (if currently approved for exempt or non-exempt research).

(7) If any of the engaged organizations has applied for or will apply for an FWA or IRB registration, those details should be clearly provided for each engaged organization.

If the application includes research activities involving human subjects to be performed in the first year of an award, additional documentation may be requested by NIST during pre-award review for those performers, and may include the following for those research activities:

(1) A signed (by the study principal investigator) copy of each applicable final IRB-approved protocol.

(2) A signed and dated approval letter from the cognizant IRB(s) that includes the name of the institution housing each applicable IRB, provides the start and end dates for the approval of the research activities, and any IRB-required interim reporting or continuing review requirements.

(3) A copy of any IRB-required application information, such as documentation of approval of special clearances (*i.e.,* biohazard, HIPAA, etc.) conflict-of-interest letters, or special training requirements.

(4) A brief description of what portions of the IRB submitted protocol are specifically included in the application submitted to NIST, if the protocol includes tasks not included in the application, or if the protocol is supported by multiple funding sources. For protocols with multiple funding sources, NIST will not approve the study without a non-duplication-of-funding letter indicating that no other federal funds will be used to support the tasks proposed under the proposed research or ongoing project

(5) If a new protocol will only be submitted to an IRB if an award from NIST is issued, a draft of the proposed protocol.

(6) Any additional clarifying documentation that NIST may request during the review process to perform the NIST administrative review of research involving human subjects. (*See* 15 C.F.R. § 27.112 (Review by Institution)).

This clause reflects the existing NIST policy and requirements for Research Involving Human Subjects. Should the policy be revised prior to award, a clause reflecting the policy current at time of award may be incorporated into the award.

If the policy is revised after award, a clause reflecting the updated policy may be incorporated into the award.

For more information regarding research projects involving human subjects, contact Anne Andrews, Director, NIST Human Subjects Protection Office (e-mail: anne.andrews@nist.gov; phone: (301) 975-5445).

h. Research Activities Involving Live Vertebrate Animals or Pre-Existing Cell Lines/Tissues From Vertebrate Animals. Any application that proposes research activities involving live vertebrate animals that are to be cared for, euthanized, or used by award recipients to accomplish research goals, teaching, or testing must meet the requirements of the Animal Welfare Act (AWA) (7 U.S.C. § 2131 et seq.), and the AWA final rules (9 C.F.R. Parts 1, 2, and 3), and if appropriate, the Good Laboratory Practice for Nonclinical Laboratory Studies (21 C.F.R. Part 58). In addition, such research activities should be in compliance with the *"U.S. Government Principles for Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training"* (Principles). The Principles and guidance on these Principles are available in the National Research Council's "Guide for the Care and Use of Laboratory Animals," which can be obtained from National Academy Press, 500 5th Street, N.W., Department 285, Washington, DC 20055, or as a free PDF online at http://www.nap.edu/catalog/12910/guide-for-the-care-and-use-of-laboratory-animals-eighth.

   1) Administrative Review. NIST reserves the right to conduct an administrative review[14] of all applications that potentially include research activities that involve live vertebrate animals, or custom samples from, or field studies with live vertebrate animals. If the application includes research activities, field studies, or custom samples involving live vertebrate animals, the applicant will be required to provide additional information for review and approval. In addition, NIST will verify the applicant's determination(s) of excluded samples from vertebrate animals. The documents required for funded proposals are listed in each section below. Some may be requested for a pre-review during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. If an award is issued, no research activities involving live vertebrate animals shall be initiated or costs incurred for those activities under the award until the NIST Grants Officer

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[14] Conducting an "administrative review" means that the NIST HSPO will review and verify the performing institution's IACUC's approval of research with live vertebrate animals, and confirm that the research and performing institution(s) have an appropriate assurance and are in compliance with applicable regulations. HSPO will 1) confirm the engaged institution(s) possess, or are covered under an applicable assurance, 2) review the research study documentation submitted to the IACUC and verify the IACUC's determination of level of risk and approval of the study for compliance with applicable regulations, 3) review and verify IACUC-approved substantive changes to an approved research study before the changes are implemented, and 4) review and verify that the IACUC receives an annual report for the study and conducts an appropriate continuing review at least every three years.

issues written approval. In addition, all re-approvals, amendments, modifications, changes, annual reports and closure will be reviewed by NIST.

2) **Required documents for NIST proposal review.** *The applicant should clearly indicate in the application, by separable task, all research activities believed to include research involving live vertebrate animals and the institution(s) where the research activities involving live vertebrate animals may be conducted. In addition, the applicant should indicate any activity/task that involves an excluded or custom collection from vertebrate animals, or a field study with animals.*

   a) **Excluded Collections from Vertebrate Animals:** The requirements for review and approval by an Institutional Animal Care and Use Committee (IACUC) do not apply to proposed research using preexisting images of animals or to research plans that do not include live animals. These regulations also do not apply to obtaining stock or pre-existing items from animal material suppliers (*e.g.,* tissue banks), such as pre-existing cell lines and tissue samples, or from commercial food processors, where the vertebrate animal was euthanized for food purposes and not for the purpose of sample collection.

   For pre-existing cell lines and tissue samples originating from vertebrate animals, NIST requires that the proposer provide documentation or the rationale for the determination that the cell line or tissue is pre-existing and not a custom collection from live vertebrate animals for an activity/task within the proposal. NIST may require additional documentation to review and/or support the determination that the cells and/or tissues from vertebrate animals are excluded from IACUC review.

   b) **Custom Collections Harvested from Live Vertebrate Animals:** NIST requires documentation for obtaining custom samples from live vertebrate animals from animal material suppliers and other organizations (*i.e.,* universities, companies, and government laboratories, etc.). Custom samples includes samples from animal material suppliers, such as when a catalog item indicates that the researcher is to specify the characteristics of the live vertebrate animal to be used, or how a sample is to be collected from the live vertebrate animal.

   c) **Field Studies of Animals:** Some field studies of animals may be exempt under the Animal Welfare Act from full review and approval by an animal care and use committee, as determined by each institution. Field study is defined as "*… a study conducted on free-living wild animals in their natural habitat...*". 9 C.F.R. § 1.1. However, this term excludes any study that

involves an invasive procedure or that harms or materially alters the behavior of an animal under study. Field studies, with or without invasive procedures, may also require obtaining appropriate federal or local government permits (marine mammals, endangered species, etc.). If the applicant's institution requires review and approval by an animal care and use committee, NIST will require that documentation to be provided as described below.

d) **For custom collections or studies with live vertebrate animals that require review and approval by an animal care and use committee the following documentation is required:**

(1) **Requirement for Assurance.** An applicable assurance for the care and use of the live vertebrate animal(s) to be used in the proposed research is required. NIST may request documentation to confirm an assurance, if adequate confirmation is not available through an assuring organization's website. The cognizant IACUC where the research activity is located may hold one or more assurances applicable to the research activity that are acceptable to NIST. These three assurances are:
   i. Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) indicated by the OLAW assurance number, *i.e.,* A-1234;
   ii. USDA Animal Welfare Act certification indicated by the certification number, *i.e.,* 12-R-3456;
   iii. Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) indicated by providing the organization name accredited by AAALAC as listed in the AAALAC Directory of Accredited Organizations.

(2) **Documentation of Research Review by an IACUC:** If the applicant's application appears to include research activities, field studies, or custom sample collections involving live vertebrate animals the following information regarding review by an applicable IACUC may be requested during the application review process:

   1. The name(s) of the institution(s) where the research involving live vertebrate animals will be conducted and/or custom samples collected.
   2. The assurance type and number, as applicable, for the cognizant Institutional Animal Care and Use Committee (IACUC) where the research activity is located. [For example: Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW)

should be indicated by the OLAW assurance number, i.e. A-1234; an USDA Animal Welfare Act certification should be indicated by the certification number i.e. 12-R-3456; and an Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) should be indicated by AAALAC.]

3. The IACUC approval date for the Animal Study Protocol (ASP) (if currently approved).
4. If the review by the cognizant IACUC is pending, the estimated start date for research involving vertebrate animals.
5. If any assurances or IACUCs need to be obtained or established, that should be clearly stated.
6. If any special permits are required for field studies, those details should be clearly provided for each instance, or indicated as pending.

If the application includes research activities involving vertebrate animals to be performed in the first year of an award, additional documentation may be requested by NIST during pre-award review for those performers, and may include the following for those research activities, which may also include field studies, custom sample collections involving live vertebrate animals:

1. A signed (by the Principal Investigator) copy of the IACUC approved ASP.
2. Documentation of the IACUC approval indicating the approval and expiration dates of the ASP.
3. If applicable, a non-duplication-of-funding letter if the ASP is funded from several sources.
4. If a new ASP will only be submitted to an IACUC if an award from NIST is issued, a draft of the proposed ASP may be requested.
5. Any additional clarifying documentation that NIST may request during review of applications to perform the NIST administrative review of research involving live vertebrate animals.

This clause reflects the existing NIST policy for Research Involving Live Vertebrate Animals. Should the policy be revised prior to award, a clause reflecting the policy current at time of award may be incorporated into the award.

If the policy is revised after award, a clause reflecting the updated policy may be incorporated into the award.

For more information regarding research projects involving live vertebrate animals, contact Linda Beth Schilling, Senior Analyst (e-mail: linda.schilling@nist.gov; phone: 301-975-2887).

i. **Safety.** Safety is a top priority at NIST. Individuals participating in the PREP Program will be expected to be safety-conscious, attend NIST safety training(s), and comply with all NIST safety policies and procedures.

3. **Reporting**

a. **Reporting Requirements.** The following reporting requirements described in Sections A.01, Reporting Requirements, of the Department of Commerce Financial Assistance Standard Terms and Conditions dated March 31, 2017, http://go.usa.gov/xXRxK, apply to awards in this program (*see* Section VI.2.b. of this NOFO):

   (1) Financial Report. Each award recipient will be required to submit an SF-425, Federal Financial Report on a semi-annual basis for the periods ending March 31 and September 30 of each year to the NIST Grants Officer and Grants Specialist named in the award documents. Reports will be due within 30 days after the end of the reporting period to the NIST Grants Officer and Grants Specialist named in the award documents. A final financial report is due within 90 days after the end of the project period.

   (2) Performance (Technical) Report. Each award recipient will be required to submit a technical progress report to the NIST Grants Officer and Federal Program Officer on a semi-annual basis for the periods ending March 31 and September 30 of each year. Technical progress reports shall contain information as prescribed in 2 C.F.R. § 200.328 (http://go.usa.gov/xkVgP) and Department of Commerce Standard Terms and Conditions, Section A.01 (https://go.usa.gov/xXRxK). Reports will be due within 30 days after the end of the reporting period. A final technical report shall be submitted within 90 days after the expiration date of the award, and publication citation information as well as links to publicly available data shall be submitted as soon as they become available. If a recipient's Data Management Plan (DMP) has changed since their last submission of a technical progress report, the recipient must include their revised DMP in the next technical progress report following the revision to the DMP. The revised DMP must include all the requirements described in Section IV.2.a.(9) of this NOFO.

   (3) Patent and Property Reports. From time to time, and in accordance with the Administrative and National Policy Requirements (*see* Section VI.2. of this NOFO) and other terms and conditions governing the award, the recipient may be required to submit property and patent reports.

(4) Recipient Integrity and Performance Matters. In accordance with section 872 of Public Law 110-417 (as amended; see 41 U.S.C. 2313), if the total value of a recipient's currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds $10,000,000 for any period of time during the period of performance of an award made under this NOFO, then the recipient shall be subject to the requirements specified in Appendix XII to 2 C.F.R. Part 200, http://go.usa.gov/cTBwC, for maintaining the currency of information reported to SAM that is made available in FAPIIS about certain civil, criminal, or administrative proceedings involving the recipient.

b. **Audit Requirements.** 2 C.F.R. 200 Subpart F, adopted by the Department of Commerce through 2 C.F.R. § 1327.101 requires any non-Federal entity (i.e., including non-profit institutions of higher education and other non-profit organizations) that expends Federal awards of $750,000 or more in the recipient's fiscal year to conduct a single or program-specific audit in accordance with the requirements set out in the Subpart. Applicants are reminded that NIST, the Department of Commerce Office of Inspector General, or another authorized Federal agency may conduct an audit of an award at any time.

c. **Federal Funding Accountability and Transparency Act of 2006.** In accordance with 2 C.F.R. Part 170, all recipients of a Federal award made on or after October 1, 2010, are required to comply with reporting requirements under the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282). In general, all recipients are responsible for reporting sub-awards of $25,000 or more. In addition, recipients that meet certain criteria are responsible for reporting executive compensation. Applicants must ensure they have the necessary processes and systems in place to comply with the reporting requirements should they receive funding. Also see the *Federal Register* notice published September 14, 2010, at 75 FR 55663 available here http://go.usa.gov/hKnQ.

VII. Federal Awarding Agency Contacts

Questions should be directed to the following contact persons:

Subject Area	Point of Contact
Programmatic and Technical Questions	Dr. Brandi Toliver Phone: (301) 975-2371 E-mail: brandi.toliver@nist.gov
Technical Assistance with Grants.gov Submissions	Christopher Hunton Phone: (301) 975-5718 E-mail: grants@nist.gov

Subject Area	Point of Contact
	Fax: (301) 975-8884

Or

www.Grants.gov
Phone: (800) 518-4726
E-mail: support@grants.gov |
| Grants Rules and Regulations | Scott McNichol
Phone: (303) 497-3444
E-mail: scott.mcnichol@nist.gov |

VIII. Other Information

1. **Personal and Business Information.** The applicant acknowledges and understands that information and data contained in applications for financial assistance, as well as information and data contained in financial, performance and other reports submitted by applicants, may be used by the Department of Commerce in conducting reviews and evaluations of its financial assistance programs. For this purpose, applicant information and data may be accessed, reviewed and evaluated by Department of Commerce employees, other Federal employees, Federal agents and contractors, and/or by non-Federal personnel, all of whom enter into appropriate conflicts of interest and nondisclosure agreements covering the use of such information. As may be provided in the terms and conditions of a specific financial assistance award, applicants are expected to support program reviews and evaluations by submitting required financial and performance information and data in an accurate and timely manner, and by cooperating with Department of Commerce and external program evaluators. In accordance with 2 C.F.R. § 200.303(e), applicants are reminded that they must take reasonable measures to safeguard protected personally identifiable information and other confidential or sensitive personal or business information created or obtained in connection with a Department of Commerce financial assistance award.

In addition, Department of Commerce regulations implementing the Freedom of Information Act (FOIA), 5 U.S.C. Sec. 552, are found at 15 C.F.R. Part 4, Public Information. These regulations set forth rules for the Department regarding making requested materials, information, and records publicly available under the FOIA. Applications submitted in response to this Federal Funding Opportunity may be subject to requests for release under the Act. In the event that an application

contains information or data that the applicant deems to be confidential commercial information that should be exempt from disclosure under FOIA, that information should be identified, bracketed, and marked as Privileged, Confidential, Commercial or Financial Information. In accordance with 15 CFR § 4.9, the Department of Commerce will protect from disclosure confidential business information contained in financial assistance applications and other documentation provided by applicants to the extent permitted by law.