Monday, December 7, 2015

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ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY (FFO)
Summer Undergraduate Research Fellowship (SURF) Program

<u>EXECUTIVE SUMMARY</u>

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

- **Funding Opportunity Title:** Summer Undergraduate Research Fellowship (SURF) Program:

  o SURF operating on the Boulder, Colorado campus (SURF Boulder) and the Gaithersburg, Maryland campus (SURF Gaithersburg)

- **Announcement Type:** Initial

- **Funding Opportunity Number:** 2016-NIST-SURF-01

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

- **Dates: SURF Boulder and SURF Gaithersburg receive and process applications separately**. Electronic applications for both campuses must be received by NIST no later than 11:59 p.m. **Eastern Time,** Friday, February 12, 2016. Paper applications will not be accepted. Applications received after the deadline will not be reviewed or considered. **Applicants should be aware, and factor in their application submission planning, that the Grants.gov system will be closed for routine maintenance from 12:01 Eastern Time, Saturday, December 19, 2015 until Monday, December 21, 2015 at 6:00 a.m. Eastern Time, and also from 12:01 Eastern Time, Saturday, January 16, 2016 until Monday, January 19, 2016 at 6:00 a.m. Eastern Time, and that applications cannot be submitted during those time spans.** NIST considers the date and time stamped on the notice generated by www.grants.gov as the official time the application is received. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2016.

  The SURF Program is anticipated to run from:
  o Monday, May 16, 2016 through Friday, July 29, 2016 for SURF Boulder; and
  o Monday, May 23, 2016 through Friday, August 5, 2016 for SURF Gaithersburg.

  Adjustments may be made to accommodate specific academic schedules for colleges or universities operating on quarter systems. For instance, SURF Boulder

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offers a limited number of 11-week programs beginning after the regular start date. SURF Gaithersburg offers a limited number of 9-week programs with the schedule shifted to begin after the regular start, i.e., Monday, June 6, 2016 to Friday, August 5, 2016.

When developing your submission timeline, please keep in mind that (1) applicants are required to have current registrations in both the System for Award Management (SAM.gov) and in Grants.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.) may take between three and five business days or as long as more than two weeks; and (3) 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. **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. Applicants applying to both SURF Boulder and SURF Gaithersburg must submit a separate application for each site (*see* Section IV. in the Full Announcement Text of this FFO).

- **Funding Opportunity Description:** NIST is soliciting applications from eligible colleges and universities in the U.S. and its territories, nominating undergraduate students to participate in the Summer Undergraduate Research Fellowship (SURF) Program. The SURF Program will provide research opportunities for undergraduate students to work with NIST scientists and engineers, to expose them to cutting-edge research and promote the pursuit of graduate degrees in science and engineering.

- **Anticipated Funding Amounts:** Approximately $1,001,000 for new awards may be available (approximately $182,000 for SURF Boulder and $819,000 for SURF Gaithersburg). NIST anticipates that individual awards to institutions will range from approximately $9,000-$72,000 and will support approximately 110 undergraduate students in total. The total number of awards will depend upon the number of undergraduate students selected per institution to attend SURF Boulder or SURF Gaithersburg.

- **Funding Instrument:** Cooperative Agreement.

- **Who is Eligible:** Colleges and universities (includes 2-year and 4-year institutions) in the U.S. and its territories with degree-granting programs in biology, chemistry, computer science, engineering, materials science, mathematics, nanoscale science, neutron research, and/or physics. Due to the size of SURF Boulder, applicants that apply to SURF Boulder are limited to nominating no more than eight (8) undergraduate students for participation. SURF Gaithersburg does not have an applicant limit at this time. Each undergraduate student nominated to participate in

the SURF Program from the applicant college or university must meet the requirements in Section III.1. of this FFO.

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

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FULL ANNOUNCEMENT TEXT

I. Program Description

The statutory authority for the SURF program is 15 U.S.C. § 278g-1(a).

NIST is one of the nation's premiere research institutions for the physical and engineering sciences and, as the lead Federal agency for technology transfer, it 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 with longer-term research that anticipates future needs. This occurs in few other places and enables the Center for Nanoscale Science and Technology (CNST), Communications Technology Laboratory (CTL), Engineering Laboratory (EL), Information Technology Laboratory (ITL), Material Measurement Laboratory (MML), NIST Center for Neutron Research (NCNR), and Physical Measurement Laboratory (PML), to offer unique research and training opportunities for undergraduates, providing them with a research-rich environment and exposure to state-of-the-art equipment.

The SURF Program provides an opportunity for the NIST laboratories to encourage outstanding undergraduate students to pursue careers in science and engineering. The objective of the SURF Program is to build a mutually beneficial relationship among the student, the academic institution, and NIST. The SURF Program is conducted in English and will provide research opportunities for students to work with NIST scientists and engineers, to expose them to cutting-edge and world-class research, and to promote the pursuit of graduate degrees in science and engineering. It is expected that

the students participating in the SURF Program will have a proficiency in writing and speaking English, the ability to live and work with others, a commitment to honesty, and an interest in learning measurement metrology and using their own innovativeness to develop new science.

SURF students will have the opportunity to work one-on-one with NIST scientists and engineers. In addition, SURF students may have opportunities to voluntarily participate as subjects in minimal-risk NIST research experiments, for example, an evaluation of the quality, whiteness, and color rendering of different correlated color temperatures of solid-state lamps in the NIST Spectrally Tunable Light Facility. It is anticipated that successful SURF students will move from a position of reliance on guidance from their NIST research advisors to one of research independence during the program period. One goal of the SURF Program is to provide opportunities for our nation's next generation of scientists and engineers to engage in scientific research of the highest caliber at NIST, especially in ground-breaking areas of emerging technologies. This carries with it the hope of motivating individuals to pursue Ph.D.s in biology, chemistry, computer science, engineering, materials science, mathematics, nanoscale science, neutron research, and/or physics, and to consider research careers.

The SURF Program Manager will answer questions regarding the application process and encourage the appropriate department chairs, outreach coordinators, and directors of multi-disciplinary academic organizations to advertise the program and solicit their best students (including graduating seniors) who would benefit from off-campus summer research in a first-class scientific environment to participate.

NIST consists of seven laboratories: Center for Nanoscale Science and Technology (CNST), Communications Technology Laboratory (CTL), Engineering (EL), Information Technology (ITL), Material Measurement (MML), Center for Neutron Research (NCNR), Physical Measurement (PML). All seven of the NIST laboratories participate in the SURF program. A description of the seven laboratories and project topic areas are provided in the text to follow. In addition, students are encouraged to visit http://www.nist.gov/laboratories.cfm to learn about the multi-disciplinary nature of each laboratory.

NIST's Center for Nanoscale Science and Technology (CNST) (in Gaithersburg 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. Examples of current research projects include nanomagnetism imaging and dynamics, atomic scale characterization and fabrication, nanoscale measurement and fabrication using laser-controlled atoms, advanced Focused Ion Beam (FIB) development, modeling nanostructures in mesoscopic environments, characterization of nanophotonic devices, transport in

nanoscale devices, scanned force microscopy, diblock copolymers, nanoparticle assembly, metrology for electron-beam lithography, advanced electron-beam resist development, and metrology for directed assembly.

NIST's Communications Technology Laboratory (CTL) (in Boulder and Gaithersburg) 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. In addition, in SURF Gaithersburg, CTL and the Information Technology Laboratory (ITL) (see below) combine the strengths and facilities of two Operating Units to jointly administer their SURF activities.

NIST's Engineering Laboratory (EL) (in Gaithersburg only) anticipates and meets the measurement science and standards needs for technology-intensive manufacturing, construction, and cyber-physical systems. Through its measurement focused research and services, EL supplies critical enabling solutions to U.S. manufacturers, the construction industry, and the broad array of businesses and other organizations that build, own, operate, or maintain the nation's vast physical infrastructure. EL researchers investigate the use of intelligent machines, precision control of machine tools, and information technology for the integration of all elements of a product's life cycle. Much of this applied research is devoted to overcoming barriers to the next technological revolution. EL's research and development leads to standards, test methods and data that are crucial to industry's success in exploiting advanced manufacturing technology. Critical components of manufacturing at any level are measurement and measurement-related standards, not just for products, but increasingly for information about products and processes. Thus, EL programs enhance both physical and information-based measurements and standards. Research projects can be theoretical or experimental, and will range in focus from intelligent machine control to characterizing a manufacturing process to improving product data exchange in manufacturing. EL also provides technical leadership and participates in developing the measurement and standards infrastructure related to materials critical to U.S. industry, academia, government, and the public. 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. Through laboratory-organized consortia and one-on-one collaborations, EL's scientists and engineers work closely with industrial researchers, manufacturers of high-technology products, and the major users of advanced materials.

NIST's Information Technology Laboratory (ITL) (in Boulder and Gaithersburg)

responds to industry and user needs for objective, neutral tests for information technology. These enabling tools help companies produce the next generation of products and services, and help industries and individuals use these complex products and services. ITL works with industry, research and government organizations to develop and demonstrate tests, test methods, reference data, proof of concept implementations and other infrastructural technologies. Program activities include: high performance computing and communication systems; emerging network technologies; access to, exchange, and retrieval of complex information; computational and statistical methods; information security; and testing tools and methods to improve the quality of software. In SURF Gaithersburg, CTL (see above) and ITL combine the strengths and facilities of two Operating Units to jointly administer their SURF activities.

NIST's Material Measurement Laboratory (MML) (in Boulder and Gaithersburg) serves as the national reference laboratory for measurement research, standards, and data in the chemical, biological, and material sciences. MML research supports areas of national importance such as advanced materials (from nanomaterials to structural steels to complex fluids), electronics (from semiconductors to organic electronics), energy (from characterization and performance of fossil and alternative fuels to next-generation renewable sources of energy), the environment (from the measurement of automotive exhaust emissions and other pollutants to assessment of climate change and the health and safety aspects of man-made nanomaterials), food safety and nutrition (from contaminant monitoring to ensuring the accuracy of nutritional labels), health care (from clinical diagnostics to tissue engineering and more efficient manufacturing of biologic drugs), infrastructure (from assessing the country's aging bridges and pipelines to the quality of our drinking water), manufacturing (from lightweight alloys for fuel-efficient automobiles to biomanufacturing and data for chemical manufacturing), and safety, security and forensics (from gunshot and explosive residue detection, to ensuring the performance of body armor materials, to DNA-based human identity testing). MML conducts research in analytical chemistry, biochemical science, ceramics, chemical and biochemical reference data, materials reliability, metallurgy, polymers, surface and microanalysis science, and thermophysical properties of materials. MML offers two programmatic choices: *Chemical/Biochemical Sciences* and *Materials Science.* In addition, in SURF Gaithersburg MML and the NIST Center for Neutron Research (see below) combine the strengths and facilities of two Operating Units to jointly administer their SURF activities within these two programmatic choices.

NIST's Center for Neutron Research (NCNR) (in Gaithersburg 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. Neutrons are particularly well suited to investigate all forms of magnetic materials such as those used in computer memory storage and retrieval. Atomic motion especially that of hydrogen, can be measured and monitored, like that of water during the setting of cement.

Residual stresses such as those inside stamped steel automobile parts can be mapped. Neutron-based research covers a broad spectrum of disciplines, including engineering, biology, materials science, polymers, chemistry, and physics. In SURF Gaithersburg MML (see above) and NCNR combine the strengths and facilities of two Operating Units to jointly administer their SURF activities and offer two programmatic choices: *Chemical/Biochemical Sciences* and *Materials Science*.

NIST's Physical Measurement Laboratory (PML) (in Boulder and Gaithersburg) attends to the long-term needs of many U.S. high-technology industries. NIST's PML conducts basic research in the areas of quantum, electron, optical, atomic, molecular, and radiation physics. To achieve these goals, PML staff develops and utilizes highly specialized equipment, such as polarized electron microscopes, scanning tunneling microscopes, lasers, and x-ray and synchrotron radiation sources. Research projects can be theoretical or experimental and will range in focus from computer modeling of fundamental processes through trapping atoms and choreographing molecular collisions, to standards for radiation therapy. PML also conducts theoretical and experimental research in length, mass, force, vibration, acoustics, and ultrasonics. In addition, NIST's PML strives to be the preeminent source of fundamental and industrial-reference measurement methods and physical standards for electrotechnology. To be a world-class resource for semiconductor measurements, data, models, and standards focused on enhancing U.S. technological competitiveness in the world market, research is conducted in semiconductor materials, processing, devices, and integrated circuits to provide, through both experimental and theoretical work, the necessary basis for understanding measurement-related requirements in semiconductor technology. To provide the world's most technically advanced and fundamentally sound basis for all electrical measurements in the United States, PML's research projects include maintaining and disseminating the national electrical standards, developing the measurement methods and services needed to support electrical materials, components, instruments, and systems used for the generation, transmission, and application of conducted electrical power, and related activities in support of the electronics industry including research on video technology and electronic product data exchange. PML offers two programmatic choices: *Physics* and *Electrical Engineering*.

Periodically, there are opportunities for SURF students to participate in technical special projects (in Gaithersburg) which are not located in the NIST laboratories. For the upcoming summer, NIST is soliciting applications for SURF students in the following special projects: Standards Coordination Office (SCO), Information Services Office (ISO), and Technology Partnerships Office (TPO).

NIST's Standards Coordination Office (SCO) strengthens the U.S. economy and improves the quality of life through its standards and conformity assessment programs. Our staff works closely with U.S. industry, standards developers, other government agencies, and leaders in the global standards community to build a standards infrastructure that supports innovation and creates opportunities for business to thrive. SCO student research projects may encompass participation in standards development and conformity assessment activities that might also include corresponding research

within another NIST laboratory; development of workshops, educational seminars and information services for domestic and international audiences; and economic and social research into standards and conformity assessment-related topics.

NIST's Information Services Office (ISO) provides services to NIST research staff throughout their research and publishing cycles through the activities of three programs: the Research Library, the Digital Services and Publishing Group (DSPG), and the Museum and History Program. DSPG's major activities focus on implementing strategies for increasing the visibility and long term access to NIST research results and providing guidance to NIST researchers on publishing, citation and impact analysis, data visualization, and research data management. Student research projects align with these major activities and may include evaluating and utilizing text mining and data visualization tools to display a variety of NIST data; creating tools to manipulate and transfer metadata; designing and creating templates to facilitate production of technical reports; and implementing tools to report on a variety of web usage data.

NIST's Technology Partnerships Office (TPO) connects the results of NIST's laboratory research to applications in new products and services to grow our nation's economy. TPO has a lead role in supporting the transfer of technology from the lab to the marketplace across 11 federal agencies and over 300 laboratories, in addition to the specific technology transfer role of NIST. TPO works directly with researchers, private businesses, academia, and all levels of government to promote commercialization of research results and public private research partnerships. TPO student research projects focus on the commercialization of technology in a specific technology sector or in functions that accelerate commercialization across multiple agencies. This includes working on events that match partner needs with potential solutions and deliver content in new ways. Opportunities involve research that supports high level policy implementation.

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 collaboration between NIST and the recipient organizations. This includes NIST collaboration with a recipient on the scope of work. Additional forms of substantial involvement that may arise are described in Chapter 5.C of the Department of Commerce Grants and Cooperative Agreements Manual, which is available at http://go.usa.gov/SNJd. Please note the Department of Commerce Grants and Cooperative Agreements Manual is expected to be updated after publication of this funding announcement and before awards are made under this FFO. Refer to Section VII. of this FFO, 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.

2. **Funding Availability**. Funds budgeted for payments to students under this program

are stipends, not salaries. The stipend is an amount that is expected to be provided to the participating student to help defray the cost of living, for the duration of the program, in the Boulder, CO or in the Gaithersburg, MD area.

The tables below summarize the anticipated FY 2016 funding levels for awards under the SURF program, subject to the availability of funds. Program funding will be available to provide for the costs of stipends ($5,500 per student), plus transportation and lodging ($4,000 per student, *see* Section IV.2.a.(2). of this FFO). If a student is unable to participate for the full 11 week period, then the amount of the stipend will be calculated at a rate of $500 per week for that student.

SURF Boulder	Total Program Funding	Anticipated No. of Students
CTL	~$ 20,000	~2
ITL	~$ 10,000	~1
MML	~$ 60,000	~6
PML	~$110,000	~11

SURF Gaithersburg	Total Program Funding	Anticipated No. of Students
CNST	~$ 40,000	~4
EL	~$200,000	~20
ITL/CTL	~$100,000	~10
MML/NCNR-Materials	~$160,000	~16
MML/NCNR-Chemical/Biochemical Sciences	~$150,000	~15
PML-Physics	~$110,100	~11
PML-Electrical Engineering	~$140,000	~14
Special Projects (SCO, ISO, TPO)	~$40,000	~4

The actual number of awards made under this FFO will depend on the proposed budgets and the availability of funding.

NIST anticipates that approximately $1,001,000 for new awards may be available (approximately $182,000 for SURF Boulder and $819,000 for SURF Gaithersburg, *see* tables above). NIST anticipates that individual awards to institutions will range from approximately $9,000-$72,000 and will support approximately 110 undergraduate students in total (*see* tables above). The total number of awards will depend upon the number of undergraduate students selected per institution to attend SURF Boulder or SURF Gaithersburg.

Funding for student transportation and lodging will be included in the awards under

this FFO. To assure that students can successfully participate in SURF, award recipients (i.e., colleges and universities) should disburse funds in a timely manner for student transportation, lodging, and stipends. It is highly recommended that funds for student lodging are disbursed prior to the start of the SURF Program. Furthermore, award recipients are encouraged to begin drawing down student stipends before July 1. This is necessary to enable effective student participation.

SURF Boulder is anticipated to run from Monday, May 16, 2016 through Friday, July 29, 2016; adjustments may be made to accommodate specific academic schedules (e.g., 11-week programs with the schedule shifted to begin after the regular start in order to accommodate colleges or universities operating on quarter systems).

SURF Gaithersburg is anticipated to run from Monday, May 23, 2016 to Friday, August 5, 2016; adjustments may be made to accommodate specific academic schedules (e.g., a limited number of 9-week programs with the schedule shifted to begin after the regular start, i.e., Monday, June 6, 2016 to Friday, August 5, 2016, in order to accommodate colleges or universities operating on quarter systems).

III. Eligibility Information

1. **Eligible Applicants.** The SURF Program is open to colleges and universities in the United States and its territories with degree-granting programs in biology, chemistry, computer science, engineering, materials science, mathematics, nanoscale science, neutron research, and/or physics.

   Each undergraduate student nominated to participate in the SURF Program from the applicant college or university must meet all of the following requirements:

   1) Be a U.S. citizen or permanent U.S. resident.
   2) Commit to eleven (11) full continuous weeks, or nine (9) full continuous weeks for the nine (9) week program, (Monday through Friday) from 8:30 a.m. to 5 p.m., during the summer of 2016, to participate in the SURF Program. Students are expected to participate in SURF Boulder and SURF Gaithersburg through the last day of the program July 29, 2016 and August 5, 2016 respectively.
   3) Be a currently registered undergraduate at the applicant university or college in the U.S. or its territories with a scientific major at the time of application. Graduating seniors may apply for the program but must be a registered undergraduate at the time of application.
   4) Is considering pursuing a graduate degree (M.S. or Ph.D.). Students with biology, chemistry, computer science, engineering, materials science, mathematics, nanoscale science, neutron research and/or physics majors are always encouraged to apply. There may also be research opportunities for students with other majors. Refer to the evaluation criteria and selection factors for additional recommendations.

It is recommended that students have a G.P.A. of 3.0 or better, out of a possible 4.0.

Applicants are encouraged, but are not required, to nominate eligible underrepresented minority undergraduate students.

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

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

SURF Boulder and SURF Gaithersburg receive and process applications separately. Applicants applying to both SURF Boulder and SURF Gaithersburg must submit a separate application for each location.

1. **Address to Request Application Package.** The standard application package, consisting of the standard forms, i.e., SF-424, SF-424A, SF-424B, SF-LLL, and the CD-511, is available at www.grants.gov. The **full application package** consists of all of these standard forms plus the applicable Application Checklist and the applicable Student Application Form. Note: **The Application Checklist and the Student Application Form for SURF Boulder and SURF Gaithersburg are the same. The forms can be found at the following websites:**
    a. **SURF Boulder**: the Application Checklist (http://www.nist.gov/surfboulder/upload/2016-SURF-Application-Checklist.pdf and the Student Application Form; http://www.nist.gov/surfboulder/upload/2016-Student-Application-Form-Fillable.pdf);
    b. **SURF Gaithersburg**: the Application Checklist (http://www.nist.gov/surfgaithersburg/upload/SURF-Application-Checklist.pdf) and the Student Applicant Information form (http://www.nist.gov/surfgaithersburg/upload/Student-Application-Form-Fillable.pdf)

The **full application package** may also be requested by contacting the following NIST personnel:

For SURF Boulder and SURF Gaithersburg: Dr. Brandi Toliver, Academic Program Manager, National Institute of Standards and Technology, NIST SURF Program, 100 Bureau Drive, Mail Stop 1090, Gaithersburg, MD 20899-1090; Phone: (301) 975-2371; e-mail: brandi.toliver@nist.gov.

<u>**Please remember that if you are applying to SURF Boulder and SURF Gaithersburg you must complete and submit a separate application for each location.**</u>

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

All applications to the NIST SURF Program are required to be submitted electronically.

SURF Boulder and SURF Gaithersburg receive and process applications separately.

Applicants may submit an application for SURF Boulder, SURF Gaithersburg, or separate applications for both programs. Keep in mind **if you are applying to both SURF Boulder and SURF Gaithersburg, it is necessary to submit TWO SEPARATE APPLICATIONS, one for SURF Boulder and one for SURF Gaithersburg, using the same FFO number and two separate sets of documents. A separate full application package must be submitted for each location**.

For SURF Boulder include in the **full application package** the standard forms listed in Section IV.1 of this FFO, the applicable Application Checklist (http://www.nist.gov/surfboulder/upload/2016-SURF-Application-Checklist.pdf) and the applicable Student Application Form (http://www.nist.gov/surfboulder/upload/2016-Student-Application-Form-Fillable.pdf); as listed above in Section IV.1.a. of this FFO).

For SURF Gaithersburg include in the **full application package** the standard forms listed in Section IV.1 of this FFO, the applicable Application Checklist (http://www.nist.gov/surfgaithersburg/upload/SURF-Application-Checklist.pdf) and the applicable Student Applicant Information Form (http://www.nist.gov/surfgaithersburg/upload/Student-Application-Form-Fillable.pdf) as listed above in Section IV.1.b of this FFO).

Electronic applications will be directed to the campus named in **Field 15** of the **SF-424**. (*See* Section IV.2.a.(1). of this FFO.)

a. **Required Forms and Documents**

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

    SF-424, Item 12, must list the FFO number 2016-NIST-SURF-01.

    SF-424, Item 15, must specify either "SURF Boulder" or "SURF Gaithersburg", depending on the location to which the application is directed. Applicants submitting to both locations must submit separate applications, one for each location.

    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 SURF Boulder and SURF Gaithersburg:

(a) The total stipend amount must be calculated as $5,500 X the number of students and entered into **Section B, Budget Categories** on **line h.** under column (1). For students who are not able to participate for the full 11 week period (*see* Section II.2. of this FFO), the amount of the stipend must be calculated at a rate of $500 per week for these students only.

(b) The transportation and lodging allowance must be estimated as $4,000 X the number of students and entered into **Section B, Budget Categories** on **line c**. under column (1). The actual amount of that allowance, which is the maximum amount NIST will provide for these expenses (based on the lodging cost and the distance to be travelled to and from NIST by the accepted nominees), will be transmitted to the applicant shortly after the nominees' acceptances are received by NIST. Note: For purposes of this application, please use the calculation of $4,000 per student when estimating the transportation and lodging costs. If awarded, recipients will request reimbursement for costs related to transportation and lodging in accordance with uniform Federal-wide cost principles at 2 C.F.R. Part 200, Subpart E.

(c) 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.

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

(4) CD-511, Certification Regarding Lobbying

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

(6) Applicant Information. This is a word-processed document written by the applying college or university and must contain the following information:

(a) A description of the institution's education and research programs;
(b) A summary list of the student(s) being nominated; and
(c) A brief narrative about each nominated student.

(7) Student Information. For each student nominated to participate in the SURF Program, the following items must be submitted. A **<u>single file attachment</u>** comprised of these items must be submitted:

(a) Applicable SURF Application Checklists:
  i. SURF Boulder: the Application Checklist is available at: (http://www.nist.gov/surfboulder/upload/2016-SURF-Application-Checklist.pdf;
  ii. SURF Gaithersburg: the Application Checklist is available at:

http://www.nist.gov/surfgaithersburg/upload/SURF-Application-Checklist.pdf.

    (b) Applicable SURF Student Application Form:
- i. SURF Boulder: the Student Application Form is available at: http://www.nist.gov/surfboulder/upload/2016-Student-Application-Form-Fillable.pdf;
- ii. SURF Gaithersburg: the Student Applicant Information Form is available at: http://www.nist.gov/surfgaithersburg/upload/Student-Application-Form-Fillable.pdf.

    (c) Resume;

    (d) Two letters of recommendation;

    (e) Transcripts (unofficial copies acceptable);

    (f) Personal statement of commitment to participate and description of prioritized research interests;

    (g) Verification of U.S. citizenship or permanent legal residence, (e.g., copy of birth certificate, passport, or green card).

The student's name and college/university must appear on all of the documents. **NOTE**: It is recommended that students have a G.P.A. of 3.0 or better, out of a possible 4.0.

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.(7) 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 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.*

Paper application submissions are not being accepted (*see* Section IV.2. of this FFO).

b. Application Format

    (1)   **Application language.** English.

    (2)   **Paper submissions.** Will not be accepted.

    (3)   **E-mail submissions.** Will not be accepted.

(4) Facsimile submissions (fax). Will not be accepted.

(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) Number of paper copies. Paper copies are not permitted. Applications must be submitted electronically via Grants.gov (*see* Section IV.2. of this FFO).

(9) Page layout. Portrait orientation only.

(10) Page numbering. Number pages sequentially.

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

(12) Typed document. All applications, including forms, must be typed, including the student documents which should be typed but may be accepted in handwritten format.

c. **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.

d. **Pre-Applications.** NIST is not accepting pre-applications or white papers under this FFO.

e. **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 FFO, 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**. **SURF Boulder and SURF Gaithersburg receive and process applications separately.** For both SURF Boulder and SURF Gaithersburg, applications must be received by NIST electronically through Grants.gov no later than 11:59 p.m. Eastern Time, Friday, February 12, 2016. 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.

NIST strongly recommends that applicants do not wait until the last minute to submit an application. NIST will not make allowance for any late submissions. The responsibility for ensuring a complete application is received by NIST by the deadline is the sole responsibility of the applicant. To avoid any potential processing backlogs due to last minute Grants.gov registrations, applicants are strongly encouraged to start their Grants.gov registration process at least four (4) weeks prior to the application due date.

When developing your submission timeline, please keep in mind that (1) applicants are required to have current registrations in both the System for Award Management (SAM.gov) and in Grants.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.).) may take between three and five business days or as long as more than two weeks; and (3) 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. 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**. The SURF Program will not authorize funds for indirect costs or fringe benefits. Profit or fee is not an allowable cost.

7. **Other Submission Requirements**

a. **Applications may be submitted electronically only.**

(1) Electronic applications must be submitted via www.grants.gov, under announcement 2016-NIST-SURF-01.

a) Submitters of electronic proposals should carefully follow specific Grants.gov instructions to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating a proposal is received <u>does not provide information about whether attachments have been received</u>. For further information or questions regarding applying electronically for the 2016-NIST-SURF-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 (3) to five (5) business days. If problems are encountered, the registration process can take up to two (2) 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 FFO. 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 the "Grant Applicants" page.

In addition to following the "Steps" and instructions described in the "Applicant Actions" section and its sub-categories, further detailed instructions are described in "Applicant Resources" and all of its subcategories. This appears in the box near the top left of the Grant

Applicants page. Applicants should follow the links associated with each subcategory.

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 on the deadline date.

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

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

V. <u>Application Review Information</u>

1. **Evaluation Criteria**. The evaluation criteria that will be used in evaluating applications and assigned equal weights are as follows:

   a. **Student's Interest in Participating in the Program, Academic Ability, Laboratory Experience, and Advanced Degree Interest**. Evaluation of GPA (grade point average) in relevant courses, career goals, activities, honors and awards, letters of reference, commitment of the student to working in a laboratory environment, and interest in pursuing graduate school.

   b. **Applicant's Commitment to Program Goals.** Evaluation of the institution's academic department(s) relevant to the discipline(s) of the student(s), as demonstrated by accrediting organizations, course offerings in the relevant departments, enthusiastic support by the academic department, school, or institution, and extensive publications in nanoscale science, engineering, computer science, mathematics, materials science, chemistry, biology, neutron research, and/or physics.

2. **Selection Factors.** The Selecting Official shall select applications for award based

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upon the rank order of the applications (*see* Section V.4.b. of this FFO), and may select an application out of rank based on one or more of the following selection factors:

a. Fit of the undergraduate student's stated interest and commitment to the program priorities of NIST (*see* Section V.3. of this FFO) and objectives of the SURF program as described in Section I. of this FFO (i.e., SURF Boulder or SURF Gaithersburg);

b. Fit of the undergraduate student's interests and abilities to the available NIST research projects and when appropriate, to NIST scientists and engineers in the specified laboratory program;

c. Relevance of the student's course of study to the program objectives of the specified NIST laboratory in which that SURF Program resides as described in Section I., Funding Opportunity Description, of this FFO;

d. Assessment of whether the laboratory experience is a new opportunity for the student which may encourage future postgraduate training; and

e. The availability of Federal funds.

3. **Program Priorities.** All applicable fields of science that promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. More information about those programs can be found at www.nist.gov.

4. **Review and Selection Process**

Proposals, reports, documents and other information related to 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 applicant and undergraduate student eligibility and application completeness and responsiveness to this FFO and the scope of the stated program objectives. Applications determined to be ineligible, incomplete, and/or non-responsive based on this FFO 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 which may easily be rectified or corrected. As SURF Boulder and SURF Gaithersburg are receiving applications separately, in the event a timely and complete application package appears to have been inadvertently submitted to the incorrect campus, NIST will direct the application to the appropriate office for review.

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

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

(1) Applications will be separated into student/applicant packets and directed to the SURF sub-program contact for the Laboratory as designated by the student as his/her first Program choice. For the purposes of the selection process, each student selectable program choice on the Student Applicant Information Cover Sheet (which means each of the sub-programs designated by a subject area) is considered a separate SURF Laboratory sub-program.

(2) Each student/application packet will be reviewed by at least three (3) independent, objective reviewers, which will include written evaluations and scores, based on the evaluation criteria (*see* Section V.1. of this FFO). The independent reviewers will be NIST employees or associates who are knowledgeable in the scientific areas of the program. The scores based on this merit review will be averaged for each student/applicant packet, creating a rank order.

(3) The Selecting Official, the Director of the NIST Communications Technology Laboratory, or their designee, will select funding recipients based upon the rank order of the student /applicant packets and the selection factors (*see* Section V.2. of this FFO).

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

(1) Applications will be separated into student/applicant packets and directed to the SURF sub-program contact for the Laboratory as designated by the student as his/her first Program choice. For the purposes of the selection process, each student selectable program choice on the Student Applicant Information Cover Sheet (which means each of the sub-programs designated by a subject area) is considered a separate SURF Laboratory sub-program.

(2) The review and selection process occurs in three (3) rounds as follows:

(a) First round: Three (3) reviewers in each SURF Laboratory sub-program will conduct independent, objective reviews of each student/applicant packet, which will include scores and comments, based on the evaluation criteria (*see* Section V.1. of this FFO). The independent reviewers will be

NIST employees who are knowledgeable in the scientific areas of the program. Based on the average of the reviewers' scores, a separate rank order of the student/applicant packets will be prepared within each SURF Laboratory sub-program and provided to the Selecting Official for further consideration.

The Selecting Official, who is the coordinator for each SURF Laboratory sub-program, will select funding recipients based upon the rank order of the student/applicant packets and may select proposals out of rank order based on the selection factors (*see* Section V.2. of this FFO).

Based on these results, the Selecting Official for each SURF Laboratory sub-program will divide the rank ordered student/applicant packets into three categories: "Priority Funding"; "Fund if Possible"; and "Do Not Fund." Student/applicant packets placed in the Priority Funding category will be selected for funding in that SURF Laboratory sub-program, contingent upon availability of funds. Student/applicant packets placed in the Do Not Fund category will not be considered for funding by any other SURF Laboratory sub-program.

(b) Second round: Student/applicant packets placed in the "Fund if Possible" Category may be considered for funding at a later time by the category-designating SURF program. The "category-designating" program is the SURF Laboratory sub-program Selecting Official who first categorized the student/applicant packet as "Priority Funding," "Fund if Possible," or "Do Not Fund." This is the same SURF Laboratory sub-program that was designated by the student on his/her NIST SURF Program Student Application Information form as his/her first choice. In the interim period these student/applicant packets (along with those for unfunded "Priority Funding" applicants) will be released for consideration for funding by the SURF Laboratory sub-program which was designated by the student on his/her NIST SURF Program Student Application Information form as his/her second choice.

The student's second choice SURF Laboratory sub-program's Selecting Official will take into consideration the comments and scores of the reviewers who conducted the technical reviews for the student's first choice SURF Gaithersburg Program, apply the selection factors (*see* Section V.2. of this FFO) as applied to that second choice SURF Laboratory sub-program, and arrive at a final rank order of the students available for the second round of selections and placements. Any Selecting Official may look at any student application in advance of the second or subsequent round. Any Selecting Official may choose not to participate in the second round if he/she does not see suitable students in the second round appropriate for the available projects within his/her laboratory and/or there are no slots available.

(c) Third round: Student/applicant packets not selected for funding by their first or second choice SURF Laboratory sub-program, and students who did not designate a second choice, will then be considered for selection and placement by all Selecting Officials that still have slots available in a third round, using the same process as the second round. In making selections for the third round, each Selecting Official will take into consideration the comments and scores of the reviewers who conducted the technical reviews for the student's first choice SURF Laboratory sub-program, apply the selection factors (*see* Section V.2. of this FFO) as applied to that presently evaluating SURF Laboratory sub-program, and arrive at a final rank order of the students available for the third round of selections and placements. Any Selecting Official may choose not to participate in the third round if he/she does not see suitable students in the third round appropriate for the available projects within his/her laboratory and/or there are no slots available.

NIST reserves the right to negotiate the budget costs with the applicants that have been selected to receive awards, which 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. Substitutions for students who decline offers will be made from the remaining pool of ranked students consistent with the review and selection process (*see* Section V.4. of this FFO). NIST also reserves the right to reject an application where information is uncovered that raises a reasonable doubt as to the responsibility of the nominated student or applicant. NIST may select some, all, or none of the applications, or part(s) of any particular application. 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 administrative reviews, 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. Upon review of these factors, if appropriate, special conditions that correspond to the degree of risk may be applied to an award.

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.

5. **Anticipated Announcement and Award Dates.** Review, selection, and award processing is expected to be completed in mid-April 2016. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2016.

6. **Additional Information**

a. **Notification to Unsuccessful Applicants.** Unsuccessful applicants will be notified by email.

b. **Retention of Unsuccessful Applications.** An electronic copy of each non-selected application will be retained for three (3) years for record keeping purposes. After three (3) years, it will be destroyed.

VI. <u>**Federal Award Administration Information**</u>

1. **Federal Award Notices.** Successful applicants will receive an award from the NIST Grants Officer. The award cover page, i.e., CD-450, Financial Assistance Award is available at http://go.usa.gov/SNMR. This award cover page may be updated between publication of this funding announcement and issuance of awards in this program. Refer to Section VII. 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.

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 December 26, 2014, accessible at http://go.usa.gov/hKbj, to this award. Refer to Section VII. of this FFO, 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.

c. **Department of Commerce 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 FFO, 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 notice is contingent upon the availability of Fiscal Year 2016 appropriations. NIST issues this notice subject to the appropriations made available under the current continuing resolution funding the Department of Commerce, the Continuing Appropriations Act, 2016, Public Law 114-53 (September 30, 2015). NIST anticipates making awards for the program listed in this notice provided that funding for the program is continued beyond December 11, 2015, the expiration of the current continuing resolution. In no event will NIST or the Department of Commerce be responsible for proposal preparation costs if these programs fail to receive funding or are cancelled because of agency priorities. Publication of this announcement 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 SURF Program Description specifically anticipates that students will collaborate with NIST. Applicants are not required to collaborate 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 December 26, 2014, found at http://go.usa.gov/hKbj. Questions about these requirements may be directed to Chief Counsel for NIST, (301) 975-2803, nistcounsel@nist.gov.

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.

If any inventions made in whole or in part by a NIST employee arise in the course of an award made pursuant to this FFO, the United States government may retain its ownership rights in any such invention. Licensing or other disposition of NIST's rights in such inventions will be determined solely by NIST, and include the possibility of NIST putting the intellectual property into the public domain.

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, 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 activity.

Human Subject: A living individual <u>about</u> 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.** NIST reserves the right to make an independent determination of whether an applicant's activities include research involving human subjects. NIST will conduct an independent administrative review of all applications accepted for funding that include research involving human subjects that were approved by a non-NIST Institutional Review Board (IRB). Research may not start until the NIST Human Subjects Protection Office (HSPO) issues institutional review approval for final action by the NIST Grants Officer. (15 C.F.R. § 27.112 Review by Institution.) If NIST determines that an application includes research activities which involve human subjects, the applicant will be required to provide additional information for review and approval. The documents required for funded proposals are listed in each section below. Most such 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. If an award is issued, no research activities involving human subjects shall be initiated or costs incurred for those activities under the award until the NIST Grants Officer issues written approval. Retroactive approvals are not permitted.

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. **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 will be provided.
      (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.

c. **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 Applications Involving Live Vertebrate Animals. Research Activities Involving Live Vertebrate Animals.** Any application that includes research activities involving live vertebrate animals, that are being cared for, euthanized, or used by participants in the application 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 Non-clinical Laboratory Studies (21 C.F.R. Part 58). In addition, such applications should be in compliance with the *"U.S. Government Principles for Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training."* 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.

The following requirements 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 items from animal material suppliers (*e.g.,* tissue banks), such as 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.

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.

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.*" 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 (*e.g.,* 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.

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 accepts three types of assurances, as may be applicable. NIST may request documentation to confirm an assurance, if adequate confirmation is not available through an assuring organization's website.

   The cognizant Institutional Animal Care and Use Committee (IACUC) where the research activity is located may hold one or more applicable assurance, including:
   - Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) indicated by the OLAW assurance number, *i.e.,* A-1234;
   - USDA Animal Welfare Act certification indicated by the certification number, *i.e.,* 12-R-3456;
   - 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) **Administrative Review.** NIST reserves the right to make an independent determination of whether an applicant's research activities involve live vertebrate animals or custom samples from, or field studies with live vertebrate animals. If NIST determines that 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. 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 subjects shall be initiated or costs incurred for those activities under the award until the NIST Grants Officer issues written approval.

3) **Required documents for 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.***

   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; and

(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. Students participating in the NIST SURF 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 Performance (Technical) Reports and B.02 Financial Reports of the Department of Commerce Financial Assistance Standard Terms and Conditions dated December 26, 2014, http://go.usa.gov/hKbj, apply to awards in this program (*see* Section VI.2.b. of this FFO):

(1) Financial Report. Each award recipient will be required to submit an SF-425, Federal Financial Report within 30 days after the award expiration date to the NIST Grants Officer and Grants Specialist named in the award documents.

(2) Performance (Technical) Report. Each award recipient shall require the undergraduate students accepted into the SURF Program to present an oral report on his/her experiences and accomplishments during the Program. The oral report must be presented prior to the last day of the student's participation in the SURF Program, at a symposium specifically organized for the student presentations, or to the student's mentor in the case of extenuating circumstances preventing the student from attending the symposium.

(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 FFO)

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 FFO, 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	**For SURF Program:** 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 Grants.gov Phone: (800) 518-4726 E-mail: support@grants.gov
Grants Rules and Regulations	Husai Rahman Phone: (301) 975-4355 E-mail: husai.rahman@nist.gov Fax: (301) 975-8884