

December 11, 2014

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

EXECUTIVE SUMMARY

- **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:** 2015-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 no later than 11:59 p.m. **Eastern Time**, Friday, February 13, 2015. Paper applications must be received by mail (see Section IV.6.a.(1). of this FFO) by:
 - o 5:00 p.m. Mountain Time, Friday, February 13, 2015 for SURF Boulder
 - o 5:00 p.m. Eastern Time, Friday, February 13, 2015 for SURF Gaithersburg

Applications received after the respective deadline will not be reviewed or considered. Review, selection, and award processing is expected to be completed in April 2015. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2015.

The SURF Program is anticipated to run from:

- o Monday, May 18, 2015 through Friday, July 31, 2015 for SURF Boulder; and
- o Tuesday, May 26, 2015 through Friday, August 7, 2015 for SURF Gaithersburg.

Adjustments may be made to accommodate specific academic schedules (to accommodate colleges or universities operating on quarter systems). e.g., a limited number of 11-week programs with the schedule shifted to begin after the regular start for SURF Boulder; or 9-week programs with the schedule shifted to begin after the regular start, i.e., Monday, June 8, 2015 to Friday, August 7, 2015 for SURF

Gaithersburg.

When developing your submission timeline, keep in mind that (1) a free annual registration process in the electronic System for Award Management (SAM) (see Section VI.4.b.) may take between three and five business days or as long as more than two weeks, and (2) applicants using Grants.gov will receive a series of receipts over a period of up to two business days before learning via a validation or rejection whether a Federal agency's electronic system has received its application.

- **Application Submission Address:** See Section IV. in the Full Announcement Text of this FFO. Applicants applying to both SURF Boulder and SURF Gaithersburg must submit a separate application for each site.
- **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 to 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 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; however, at this time, applicants are not limited in the number of students that they may nominate for SURF Gaithersburg. 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. Funding Opportunity 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 a research-rich environment and exposure to state-of-the-art equipment.

The SURF Program provides an opportunity for the NIST laboratories (with partial financial support from the National Science Foundation) 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 is soliciting applications in these areas.

The SURF Program Directors 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's Center for Nanoscale Science and Technology (CNST) (in Gaithersburg only) endeavors to provide science and industry with the necessary measurement methods, standards, and technology to facilitate the development and productive use of nanotechnology from discovery to production. CNST projects are focused on three broad program areas: 1) Measurements for Future Electronics, 2) Measurements for Nanofabrication and Nanomanufacturing, and 3) Measurements for Energy Storage, Conversion, and Transport. Examples of projects currently underway within these program areas are nanomagnetism, atomic scale characterization and fabrication of graphene, 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. Much of this work is done in CNST's state-of-the-art nanofabrication clean room facility. Student research projects will be theoretical or experimental.

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 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. They 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*.

II. 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 with the recipients in the scope of work and working jointly with the undergraduate student(s) in carrying out the scope of work. Additional forms of substantial involvement that may arise are described in Chapter 5.C of the DoC Grants and Cooperative Agreements Manual, which is available at [http://www.osc.doc.gov/oam/grants_management/policy/documents/FINAL%20Master%20DOC%20Grants%20Manual%202013%20\(03.01.13\)_b.pdf](http://www.osc.doc.gov/oam/grants_management/policy/documents/FINAL%20Master%20DOC%20Grants%20Manual%202013%20(03.01.13)_b.pdf).
- 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 2015 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	~\$ 18,200	~2
ITL	~\$ 9,100	~1
MML	~\$ 54,600	~6
PML	~\$100,100	~11

SURF Gaithersburg	Total Program Funding	Anticipated No. of Students
CNST	~\$ 36,400	~4
EL	~\$182,000	~20
ITL/CTL	~\$ 91,000	~10
MML/NCNR-Materials	~\$145,600	~16
MML/NCNR-Chemical/Biochemical Sciences	~\$136,500	~15
PML-Physics	~\$100,100	~11
PML-Electrical Engineering	~\$127,400	~14

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. This is necessary to enable effective student participation.

SURF Boulder is anticipated to run from Monday, May 18, 2015 through Friday, July 31, 2015; 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 Tuesday, May 26, 2015 to Friday, August 7, 2015; 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 8, 2015 to Friday, August 7, 2015, 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 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 2015, to participate in the SURF Program.
- 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) Are 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.

- 3. Other**

Pre-Applications. NIST is not accepting pre-applications or white papers under the SURF Program listed in this FFO.

IV. Application and Submission Information

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 site.

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. **The Application Checklist and the Student Application Form for SURF Boulder are different from those for SURF Gaithersburg, and the forms for each location can be found at the following websites, respectively:**

- a. **SURF Boulder:** the Application Checklist (http://www.nist.gov/surfboulder/upload/appchklist_form-2015.pdf) and the Student Application Form; (http://www.nist.gov/surfboulder/upload/student_application_form-2015.pdf);
- b. **SURF Gaithersburg:** the Application Checklist (<http://www.nist.gov/surfgaithersburg/upload/2015-SURF-Application-Checklist.pdf>) and the Student Applicant Information form (<http://www.nist.gov/surfgaithersburg/upload/2015-SURF-Application-form.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.

Please remember that if you are applying to SURF Boulder and SURF Gaithersburg you must complete and submit a separate application for each.

2. Content and Format of Application Submission

SURF Boulder and SURF Gaithersburg receive and process applications separately.

Whether submitting electronically or by paper, you may submit an application for SURF Boulder or for SURF Gaithersburg or for both programs by submitting an application for each program separately. Keep in mind that while the standard application package (consisting of the standard forms, see Section IV.1 above) are the same for both SURF Boulder and SURF Gaithersburg, the applicable Application Checklist and applicable Student Application Form for SURF Boulder are different than those for SURF Gaithersburg (see Section IV.1.a. and b. above). Also, 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/appchklist_form-2015.pdf) and the applicable Student Application Form (http://www.nist.gov/surfboulder/upload/student_application_form-2015.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/2015-SURF-Application-Checklist.pdf>) and the applicable Student Applicant Information Form (<http://www.nist.gov/surfgaithersburg/upload/2015-SURF-Application-form.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 2015-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.

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 the Department of Commerce is expected to adopt. Refer to 2 C.F.R. § 200.75, Participant Support Costs.

(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 (if submitting an electronic application, for each nominated student **a single file attachment** 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/appchklist_form-2015.pdf;
 - ii. SURF Gaithersburg: the Application Checklist is available at: <http://www.nist.gov/surfgaithersburg/upload/2015-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/student_application_form-2015.pdf;
 - ii. SURF Gaithersburg: the Student Applicant Information Form is available at: <http://www.nist.gov/surfgaithersburg/upload/2015-SURF-Application-form.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.

If submitting the application electronically via Grants.gov, 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 enable attachments to 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. When several students are being nominated for the program, the required attachments for each student should be packaged into a single file per student. e.g., if there are 5 nominated students, there should be 5 student information files. Applicants will receive a series of receipts during a process of up to two business days before the application is either validated as electronically received by the Federal agency system, or rejected by it.

If submitting an application by paper, all of the required application documents should be submitted in the order listed above.

b. Application Format

- (1) Application language.** English.
- (2) Double-sided copy.** For paper submissions, print on both sides of the paper.
- (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.** For paper submissions, one (1) signed original. If submitting electronically via Grants.gov, paper copies are not required.

(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) No stapling of a paper submission. For paper submissions, **DO NOT** staple the original signed application.

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

- 3. Submission Dates and Times. SURF Boulder and SURF Gaithersburg receive and process applications separately.** For both SURF Boulder and SURF Gaithersburg, electronic applications must be received no later than 11:59 p.m. Eastern Time, Friday, February 13, 2015. Paper applications must be received by 5:00 p.m. Mountain Time, Friday, February 13, 2015 for submissions to SURF Boulder and 5:00 p.m. Eastern Time, Friday, February 13, 2015 for submissions for SURF Gaithersburg. Applications received after the respective deadline will not be reviewed or considered.

For electronic applications, NIST will consider the date and time stamped on the validation generated 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. To avoid any potential processing backlogs due to last minute Grants.gov registrations, applicants are highly encouraged to begin their Grants.gov registration process early.

When developing your submission timeline, keep in mind that (1) a free annual registration process in the electronic System for Award Management (SAM) (see Section VI.4.b.) may take between three and five business days or as long as more than two weeks, and (2) applicants using Grants.gov will receive a series of receipts over a period of up to two business days before learning via a validation or rejection whether a Federal agency's electronic system has received its application.

In the event of a natural disaster that interferes with timely application submissions, NIST may issue an amendment to this FFO to change the application due date.

NIST SURF Directors may consider an appeal for an application rejected for untimely submission in the two following situations only: (1) carrier failure to deliver by the submission deadline, when the carrier accepted the package with a guarantee for delivery by the deadline, or (2) significant weather delays or natural disasters. In these cases an applicant must request the waiver and present the compelling circumstances in writing received by the NIST programmatic and

technical questions point of contact as listed in Section VII. by 5:00 pm Eastern Time, Friday, February 20, 2015.

4. **Intergovernmental Review.** Proposals under this Program are not subject to Executive Order 12372.
5. **Funding Restrictions.** The SURF Program will not authorize funds for indirect costs or fringe benefits.

6. Other Submission Requirements

a. Applications may be submitted by paper or electronically.

- (1) Paper applications must be submitted (one (1) signed original) to the NIST personnel listed below:

For SURF Boulder: Ms. Cynthia Kotary, National Institute of Standards and Technology, SURF Boulder Program, 325 Broadway, Mail Stop 104.01, Boulder, CO 80305-3337 (Phone: 303-497-3319).

For SURF Gaithersburg: Dr. Brandi Toliver, National Institute of Standards and Technology, SURF NIST Gaithersburg Program, 100 Bureau Drive, Mail Stop 1090, Gaithersburg, MD 20899-1090 (Phone: 301-975-2371).

- (2) Electronic applications must be submitted via Grants.gov at www.grants.gov, under announcement 2015-NIST-SURF-01.

- a) Submitters of electronic proposals should carefully follow specific Grants.gov instructions in the subcategories to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating a proposal is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2015-NIST-SURF-01 announcement, contact Christopher Hunton by phone at 301-975-5718 or by e-mail at christopher.hunton@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 a proposal 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 Dun and Bradstreet Data Universal Numbering System (DUNS) number (see Section VI.4.b. of this FFO) 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. 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 authorized individual(s) 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 receipts during a process of up to two business days before the application is either validated as electronically received by the Federal agency system, or rejected by it. 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 instructions 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, both electronic and paper submitters, should be aware that adequate time must be factored into applicants’ schedules for delivery of their application. Submitters of electronic applications are advised that volume on Grants.gov may be extremely heavy on the deadline date, and if Grants.gov is unable to accept applications electronically in a timely fashion, applicants are encouraged to exercise their option to submit applications in paper format. Submitters of paper applications should allow adequate time to ensure a paper application will be received on time, taking into account that Federal Government security screening for U.S. Postal

Service mail may delay receipt of mail for up to two (2) weeks and that guaranteed express mailings and/or couriers are not always able to fulfill their guarantees.

Refer to important information in Section IV.3. Submission Dates and Times, to help ensure your proposal 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. Application Review Information

- 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 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 projects and when appropriate, to NIST scientists and engineers in that laboratory program;

- c. Relevance of the student's course of study to the program objectives of the 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

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 cured. 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 only if the application was received by the deadline of the campus to which it should have been submitted.

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 subprograms 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 subprograms 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 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.

- 5. Anticipated Announcement and Award Dates.** Review, selection, and award processing is expected to be completed in April 2015. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2015.

6. Additional Information

- a. 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.
- b. Notification to Unsuccessful Applicants.** Unsuccessful applicants will be notified in writing.
- c. 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. Award Administration Information

- 1. 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://ocio.os.doc.gov/s/groups/public/@doc/@os/@ocio/@oitpp/documents/content/dev01_002513.pdf. This award cover page may be updated between publication of this funding announcement and issuance of awards in this program. Refer to Section VII. 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. OMB Uniform Administrative Requirements, Cost Principles and Audit Requirements.** Please note that on December 26, 2013, OMB published final guidance titled "Uniform Administrative Requirements, Cost Principles, and Audit Requirements" (OMB Uniform Guidance)

(<https://www.federalregister.gov/articles/2013/12/26/2013-30465/uniform-administrative-requirements-cost-principles-and-audit-requirements-for-federal-awards>), which streamlines the language from eight existing OMB circulars, including Cost Principles (OMB Circulars A-21, A-87, A-122) and administrative requirements (OMB Circulars A-102 and A-110), into one consolidated set of guidance applicable to federal assistance awards. Once adopted by the Department of Commerce through the promulgation of updated financial assistance regulations, the OMB Uniform Guidance will supersede DOC's uniform administrative requirements for financial assistance awards, currently set forth in 15 C.F.R. parts 14 and 24.

The DOC expects to adopt the OMB Uniform Guidance by December 26, 2014, meaning that the OMB Uniform Guidance will apply to all new awards and to additional funding to existing awards made after December 26, 2014. In addition, the audit requirements of the OMB Uniform Guidance will apply to audits of non-Federal entities beginning on or after December 26, 2014.

Therefore, applicants should familiarize themselves with the OMB Uniform Guidance. Additional information on the substance of and transition to the OMB Uniform Guidance may be found at <https://cfo.gov/cofar>. When it becomes available, Commerce implementation of the Uniform Guidance is expected to be posted at http://www.osec.doc.gov/oam/grants_management/policy/default.htm. Refer to Section VII. 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.

- 3. Financial Assistance Standard Terms and Conditions.** The DoC will apply Financial Assistance Standard Terms and Conditions to this award. A current version of these terms, from January 2013, is available at http://www.osec.doc.gov/oam/grants_management/policy/documents/DOC_Standard_Terms_and_Conditions_01_10_2013.pdf. These Terms are expected to be updated between publication of this funding announcement and issuance of awards in this program to ensure consistency with DoC implementation of the OMB Uniform Guidance referenced in the previous paragraph, Section VI.2. of this FFO. When they become available, updated terms are expected to be posted at http://www.osec.doc.gov/oam/grants_management/policy/default.htm. Refer to Section VII. 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. To the extent applicable, Federal-wide Research Terms and Conditions at <http://www.nsf.gov/awards/managing/rtc.jsp> and Special Award Conditions necessary to implement the NIST SURF Program will apply to awards in this program.

4. Administrative and National Policy Requirements

- a. DoC Pre-Award Notification Requirements.** The DoC Pre-Award Notification Requirements for Grants and Cooperative Agreements, 77 FR 74634 (December 17,

2012), are applicable to this FFO at the time of publication and are available at <https://www.federalregister.gov/articles/2012/12/17/2012-30228/departments-of-commerce-pre-award-notification-requirements-for-grants-and-cooperative-agreements>. These Requirements may be updated or superseded between publication of this funding announcement and issuance of awards in this program to ensure consistency with DoC implementation of the OMB Uniform Guidance referenced in Section VI.2. of this FFO. Updated information is expected to be posted at http://www.osec.doc.gov/oam/grants_management/policy/default.htm. Refer to Section VII. 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.

- b. Employer/Taxpayer Identification Number (EIN/TIN), Dun and Bradstreet Data Universal Numbering System (DUNS), and System for Award Management (SAM).** All applicants for Federal financial assistance are required to obtain a universal identifier in the form of DUNS number and maintain a current registration in the Federal government's primary registrant database, SAM. On the form SF-424 items 8.b. and 8.c., the applicant's 9-digit EIN/TIN and 9-digit DUNS number must be consistent with the information in SAM (<https://www.sam.gov/>) and if applicable, the U.S. Treasury's Automated Standard Application for Payment System (ASAP), if the applicant has received prior Federal awards and has received award funding through ASAP. For complex organizations with multiple EIN/TIN and DUNS numbers, the EIN/TIN and DUNS numbers MUST be the numbers for the applying organization. Organizations that provide incorrect/inconsistent EIN/TIN and DUNS numbers may experience significant delays in receiving funds if their proposal is selected for funding. Confirm that the EIN/TIN and DUNS number are consistent with the information on the SAM and ASAP.

Per 2 C.F.R. Part 25, each applicant must:

- (1) Be registered in the Central Contractor Registry (CCR) before submitting a proposal noting the CCR now resides in SAM;
- (2) Maintain an active CCR registration, noting the CCR now resides in SAM, with current information at all times during which it has an active Federal award or a proposal under consideration by an agency; and
- (3) Provide its DUNS number in each application or proposal it submits to the agency.

The applicant can obtain a DUNS number from Dun and Bradstreet. A DUNS number can be created within one business day. The CCR or SAM registration process may take five or more business days to complete. If you are currently registered with the CCR, you may not need to make any changes. However, please make certain that the EIN/TIN associated with your DUNS number is correct. Also note that you will need to update your CCR registration annually. This may take three or more business days to complete. Information about SAM is available at SAM.gov. See also 2 C.F.R. Part 25 and the *Federal Register* notice published on September 14, 2010, at 75 FR 55671.

- c. Collaborations with NIST Employees.** The SURF Program Description specifically anticipates that SURF 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.
- d. Use of NIST Intellectual Property.** If the applicant anticipates a student 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, 15 C.F.R. § 14.36, and in Section B.21 of the DoC Pre-Award Notification Requirements, 77 FR 74634 (December 17, 2012). Please note that 15 C.F.R. Parts 14 and 24 and the DoC Pre-Award Notification Requirements are subject to revision prior to issuance of awards in this program, as described in Section VI.2 and Section VI.4.a. of this FFO. Questions about these requirements may be directed to the Chief Counsel for NIST, (301) 975-2803.

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.

- e. 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 involving human subjects, including software testing, must satisfy the requirements of the Common Rule for the Protection of

Human Subjects (“Common Rule”), codified for the Department of Commerce (DoC) at 15 C.F.R. Part 27. Research activities involving human subjects who fall within the classes of subjects found in 45 C.F.R. Part 46, Subparts B, C and D must satisfy the requirements of the applicable subpart. In addition, any such application that includes research activities on these topics must be in compliance with any statutory requirements imposed upon the Department of Health and Human Services (DHHS) and other Federal agencies regarding these topics, all regulatory 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 these topics.

NIST reserves the right to make an independent determination of whether an applicant’s activities include research involving human subjects. NIST policy also requires a NIST administrative review for research involving human subjects approved by a non-NIST Institutional Review Board (IRB). (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. 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.

NIST will accept applications that include exempt and non-exempt research activities involving human subjects. 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, if the application is funded. 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.

The applicant should clearly indicate in the application, by separable task, all research activities believed to be exempt or non-exempt research involving human subjects and the expected institution(s) where the research activities involving human subjects may be conducted, and which institutions are expected to be engaged in the research activities.

If an activity/task involves data obtained through intervention or interaction with living individuals or identifiable private information obtained from or about living individuals but the applicant participant(s) believes that the activity/task is not research as

defined under the Common Rule, the following information may be requested for that activity/task:

- (1) Justification, including the rationale for the determination and in some cases additional documentation, to support a determination that the activity/task in the application is not research as defined in the Common Rule. See 15 C.F.R. § 27.102 Definitions.
- (2) If the applicant participant(s) uses a cognizant IRB that provides a determination that the activity/task is not research, a copy of that determination documentation will be required by NIST. The applicant participant(s) is not required to establish a relationship with a cognizant IRB if they do not have one, but if the applicant participant(s) has a cognizant IRB that requires review of the activity/task, or the applicant participant(s) elects to obtain IRB review, a copy of the IRB approval/determination documentation will be required by NIST.

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

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 To what does this policy apply?).

- (1) The name(s) of the institution(s) where the exempt research will be conducted; and/or from which biological materials or data from human subjects will be provided.
- (2) 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).
- (3) 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.
- (4) Any additional clarifying documentation that NIST may request during the review process in order to make a determination that the activity/task or use of biological materials or data from human subjects is exempt under the Common Rule (see 15 C.F.R. § 27.101 To what does this policy apply?).

If the application appears to NIST to include research activities (exempt or non-exempt) involving human subjects, and the performer of the activity has a cognizant IRB registered with OHRP, 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.

Additional documentation may be requested by NIST for performers with a cognizant IRB during review of the application, and may include the following for research activities involving human subjects that are planned in the first year of the award:

- (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 may be requested;
- (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 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.

- f. Research Applications Involving Live Vertebrate Animals.** Any application that includes research activities involving live vertebrate animals, that will be cared for, euthanized, or used by participants in the research described in the application to accomplish research goals, teaching, or testing, must meet the requirements of the Animal Welfare Act (7 U.S.C. § 2131 et seq.), 9 C.F.R. Parts 1, 2, and 3, and if appropriate, 21 C.F.R. Part 58. In addition, such applications should be in compliance with the National Research Council's "Guide for the Care and Use of Laboratory Animals (8th edition)," (the Guide) which can be obtained from National Academy Press, 500 5th Street, N.W., Department 285, Washington, DC 20055, or online at <http://grants.nih.gov/grants/olaw/Guide-for-the-Care-and-Use-of-Laboratory-Animals.pdf>.

The requirements described above do not apply to proposed research using preexisting images of animals or to research plans that do not include live animals. The requirements 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 sample collection. NIST does require 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.

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.)

The applicant should clearly indicate in the application, by separable task, all research activities believed to include research involving live vertebrate animals, the institution(s) where the research activities involving live vertebrate animals may be conducted, and if any special permits are required.

NIST reserves the right to make an independent determination of whether an applicant's research activities involve live vertebrate animals, 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. 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.

If an application appears to include research activities, field studies or custom sample collections involving live vertebrate animals the following information may be requested from the applicant 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; a 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 must be obtained or IACUCs must be established, those details should be clearly provided for each instance.
- (6) If any special permits are required for field studies, those details should be clearly provided for each instance.

Additional documentation may be requested by NIST during review of the application and may include the following for research activities and/or custom sample collections involving live vertebrate animals that are planned in the first year of the award:

- (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 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 (e.g., documentation of special permits).

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 human subjects or research projects involving live vertebrate animals, contact Linda Beth Schilling, Senior Coordinator and Policy Advisor for Human & Animal Subjects Research at NIST (email: linda.schilling@nist.gov; phone: 301-975-2887).

- g. Funding Availability and Limitation of Liability.** Funding for the programs listed in this FFO is contingent upon the availability of appropriations. In no event will NIST or DoC be responsible for application preparation costs if this program fails to receive funding or is cancelled because of agency priorities. Publication of this FFO does not oblige NIST or DoC to award any specific project or to obligate any available funds.
- h. 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.
- i. Accounting Systems Certification.** If an applicant has never received Federal funding or if an applicant has an audit or other history of financial management issues, a certification may be required from a CPA to provide information about whether the applicant has a functioning financial management system that meets the provisions of 15 C.F.R. § 14.21 or 15 C.F.R. § 24.30 (as applicable). Please note that 15 C.F.R. Parts 14 and 24 are subject to revision prior to issuance of awards in this program, as described in Section VI.2 of this FFO. As part of the proposed project budget, such applicants may wish to include costs for an accounting systems assessment and certification.
- j. Safety.** Safety is a top priority at NIST. Students participating in the NIST SURF Program will be expected to be safety-conscious, to attend NIST safety training, and to comply with all NIST safety policies and procedures.

3. Reporting

- a. **Reporting Requirements.** In lieu of the reporting requirements described in Sections A.01 Financial Reports and B.01 Performance (Technical) Reports of the DoC Financial Assistance Standard Terms and Conditions dated January 2013 (http://www.ossec.doc.gov/oam/grants_management/policy/documents/DOC_Standard_Terms_and_Conditions_01_10_2013.pdf), the following reporting requirements shall apply:

- (1) **Financial Report.** Each award recipient will be required to submit an SF-425, Federal Financial Report, in triplicate (an original and two (2) copies) 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 Uniform Administrative Requirements and other terms and conditions governing the award, the recipient may need to submit property and patent reports.

Please note that the DoC Financial Assistance Standard Terms and Conditions are subject to revision prior to issuance of awards in this program, as described in Section VI.3 of this FFO.

- b. **OMB Circular A-133 Audit Requirements.** Single or program-specific audits shall be performed in accordance with the applicable audit requirements. At the time of publication of this FFO, those requirements are contained in OMB Circular A-133, *"Audits of States, Local Governments, and Non-Profit Organizations,"* and the related *Compliance Supplement*. OMB Circular A-133 requires any non-Federal entity (*i.e.*, including non-profit institutions of higher education and other non-profit organizations) that expends Federal awards of \$500,000 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 Circular. Applicants are reminded that NIST, the DoC Office of Inspector General or another authorized Federal agency may conduct an audit of an award at any time. Additionally, applicants should take note of the new financial assistance audit requirements set forth in the recently published OMB Uniform Administrative Requirements, Cost Principles, and Audit Requirements, which is cited and discussed above in Section VI.2. of this FFO.
- 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 R 55663.

VII. Agency Contacts

Questions should be directed to the following contact persons:

Subject Area	Point of Contact
Programmatic and technical questions	For SURF Boulder: Joseph Magee Phone: (303) 497-3298 Fax: (303) 497-6682 E-mail: joe.magee@nist.gov For SURF Gaithersburg: Brandi Toliver Phone: (301) 975-2371 Fax: (301) 975-3530 E-mail: brandi.toliver@nist.gov
Electronic application submission	Christopher Hunton Phone: (301) 975-5718 Fax: (301) 975-6319 E-mail: christopher.hunton@nist.gov or Grants.gov Phone: (800) 518-4726 E-mail: support@grants.gov
Grants rules and regulations	Scott McNichol Phone: (301) 975-5603 Fax: (301) 975-6319 E-mail: scott.mcnichol@nist.gov