

June 24, 2013

**ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY (FFO)
Engineering Laboratory Cooperative Agreement Program (ELCAP) for Disaster Resilience of
Buildings, Infrastructure, and Communities; Sustainable Construction and Manufacturing; and
Smart Firefighting**

EXECUTIVE SUMMARY

- **Federal Agency Name:** National Institute of Standards and Technology (NIST), United States Department of Commerce (DoC)
- **Funding Opportunity Title:** Engineering Laboratory Cooperative Agreement Program (ELCAP) for Disaster Resilience of Buildings, Infrastructure, and Communities; Sustainable Construction and Manufacturing; and Smart Firefighting
- **Announcement Type:** Initial
- **Funding Opportunity Number:** 2013-NIST-ELCAP-01
- **Catalog of Federal Domestic Assistance (CFDA) Number:** 11.609, Measurement and Engineering Research and Standards
- **Dates:** Electronic applications must be received no later than 11:59 p.m. Eastern Time, Thursday, July 25, 2013. Paper applications must be received by NIST by 5:00 p.m. Eastern Time, Thursday, July 25, 2013. Applications received after the respective deadline will not be reviewed or considered. The earliest anticipated start date for awards under this FFO is expected to be October 1, 2013.
- **Application Submission Address:** See Section IV in the Full Announcement Text of this FFO.
- **Funding Opportunity Description:** NIST is soliciting applications for financial assistance under the following Engineering Laboratory programs:
 - (1) Disaster Resilience of Buildings, Infrastructure, and Communities;
 - (2) Sustainable Construction and Manufacturing; and
 - (3) Smart Firefighting.
- **Funding Availability.** NIST anticipates funding one single-year project for each of the three programs described in Section I. of this FFO for up to approximately \$300,000 each, subject to the availability of funds. Initial funding that may be obligated under this announcement is approximately \$900,000 subject to the availability of funds.
- **Funding Instrument:** Cooperative agreement
- **Who is Eligible:** Institutions of higher education; non-profit organizations; commercial organizations; state, local, and Indian tribal governments; foreign governments; organizations under the jurisdiction of foreign governments; and international organizations. An eligible organization may work individually or include proposed subawards or contracts with others in a project application, effectively forming a team or consortium. In a team or consortium, eligible subawardees are Institutions of higher education; non-profit organizations; commercial organizations; state, local, and Indian tribal governments; foreign governments; organizations under the jurisdiction of foreign governments; and international organizations. Federal agencies may participate in projects but may not receive NIST funding.
- **Cost Sharing Requirements:** This program does not require cost sharing.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

The statutory authority for the Engineering Laboratory Cooperative Agreement Program is 15 U.S.C. § 272(b) and (c), 15 U.S.C. § 278f, 15 U.S.C. § 278n-2, 42 U.S.C. §§ 7701 *et seq.*, 42 U.S.C. §§ 15701 *et seq.*

Program Description: The U. S. Department of Commerce, National Institute of Standards and Technology (NIST) invites applications for projects with substantial NIST participation that will support the following NIST Engineering Laboratory programs:

1. **Disaster Resilience of Buildings, Infrastructure, and Communities.** In July 2011, the National Academies Committee on Increasing National Resilience to Hazards and Disasters¹ noted the need to increase disaster resilience is imperative to our nation, now more than ever. The disaster resilience of our physical infrastructure and communities today is determined largely by our building standards, codes, and practices used when they were built. With a few exceptions, these are oversimplified and inconsistent with respect to risk. Moreover, there is an increasing recognition of the need to move our nation from a reactive response and recovery platform to a proactive one. In order to do so, the identification of hazards that pose the greatest threats is a necessary first step, followed by the development of a mitigation framework.

NIST is seeking applications from eligible applicants to develop, organize, and convene a workshop on disaster resilient buildings, infrastructure, and communities to prevent and/or mitigate disasters resulting from natural and manmade hazards. The recipient will work with NIST to identify and engage key international and domestic thought leaders to lead the workshop, gathering experts from the following disciplines: structures and lifelines engineering, emergency response, codes and standard development, fire science and engineering, economics, government, and academia. The recipient will work with NIST to document the content of the workshop.

Sustainable Construction and Manufacturing. Progress toward greater sustainability in the built environment and the manufacturing sector is a necessary step to better enable resource efficiency for our nation. NIST is seeking applications from eligible applicants to work with NIST to develop, organize, and convene a workshop on sustainability that will promote the adoption and use of sustainable construction and manufacturing and guide NIST in developing a portfolio of programs that are focused on providing the enabling measurement science to key industry stakeholders. The recipient will work with NIST to identify and engage key international and domestic thought leaders to lead the workshop. The recipient will work with NIST to document the content of the workshop.

2. **Smart Firefighting.** Firefighting in the U.S. can be significantly advanced by leveraging the massive quantities of available data (sensor and archival), computer power, communication technologies, and fire dynamics knowledge to enable markedly better situational awareness, predictive models, deployment models, and tactical decision-making on the fireground. The vision for smart firefighting is to create, store, exchange, analyze, and integrate information from a wide range of databases and sensor networks, including fire fighter equipment, fire fighter apparatus, building systems, and community data in a manner that improves fire safety outcomes. Computational tools will be used to analyze that information to make predictions of fire fighter status, fire growth, building performance, occupant evacuation, and fire suppression.

¹ *Disaster Resilience, A National Imperative*; The National Academies, Committee on Increasing National Resilience to Hazards and Disasters, Committee on Science, Engineering, and Public Policy, The National Academies Press, Washington, DC, 2011.

The information and predictions will be presented real-time to fire service personnel in a format that is effective in increasing situational awareness during incidents and provide for increased safety and effectiveness of the fire service. These data will also be used for fire service training, further increasing firefighter safety and effectiveness by improving fire fighter decision making capabilities.

The recipient will work with NIST to develop a comprehensive *Roadmap for Smart Firefighting* that identifies and addresses high-priority measurement science research challenges, technical barriers, and related research and development gaps that hinder widespread application of Smart Firefighting technologies and systems by the U.S. Fire Service. The *Roadmap* should establish the scientific and technical basis for achieving the vision for Smart Fire Fighting in the United States. Applications should identify existing and potential (a) data sources (including sensors, databases, and communications), (b) analytics, (c) communications technologies and protocols, and (d) information needs of various stakeholders for the duration of a fire incident, from pre-planning, the time of fire ignition, dispatch, suppression, through overhaul, origin and cause determination, and after-action reporting. A gap analysis assessing the difference between existing and possible data, models, and information will drive a research and development *Roadmap* for industry and the research community that will enable disruptive innovations in fire safety. The research and development (R&D) needs should be prioritized in order of importance and identified in terms of a timeline (i.e., near term or less than three years, medium term or three to five years, and long term or five to eight years). The *Roadmap* should identify the existing or needed means to achieve technology transfer including specific national and international standards, hardware issues, software tools for use in practice, and comprehensive best practice guides or research reports.

The *Roadmap* should be composed of a series of complementary chapters, forming a comprehensive and seminal document, defining the state-of-the-art and research gaps. Individual topics shall be written by recognized international and domestic thought leaders and technical experts identified by the applicant with concurrence from NIST. Each chapter should be a stand-alone document and should include, at a minimum, the following components: (a) introduction and background information; (b) current-state-of-the-art; (c) potential future states, (d) knowledge gaps; (e) measurement science needs to address the gaps; and, (f) references with full citations. The applicant should consider including the following four main sections and 18 chapters:

1. Background and Vision
 - Overview of the U.S. fire problem
 - Real-time Fireground Analytics: The Situation Awareness problem
 - The fire fighter land mobile radio (LMR) communications problem
 - The interoperability problem
 - Fire fighter decision making
 - A Vision for Smart Firefighting
 - Big Data: volume, variety, velocity, veracity
2. State-of-the art of Technologies and future research needs
 - Equipment
 - Sensors
 - Robotics
 - Mobile, Wireless, real-time communications
 - Databases and Repositories
3. State of the art of Software tools and future research needs
 - Situational awareness tools
 - Fire models
 - Data representation and Integration
 - Data mining/analytics

- 3D simulations and training
4. Where do we go from here?
- Summary of prioritized research including measurement and standard needs, conclusions, and a call to action

For all three programs, wherever possible, the results of the workshops for Disaster Resilience of Buildings, Infrastructure, and Communities and Sustainable Construction and Manufacturing (Sections I.1 and I.2, respectively) and the *Roadmap for Smart Firefighting* (Section I.3) should be published in the open scientific literature in such a way as to be generally available to American Scientific Libraries. The funding instrument for each of these programs is a cooperative agreement, and the NIST Engineering Laboratory will collaborate with the recipients of each program by reviewing the publications prior to release and assisting in dissemination of the publications. See also Department of Commerce Standard Terms and Conditions, Section L.10, Publications, Videos and Acknowledgement of Sponsorship (see Section VI.1. of this FFO)).

Refer to <http://www.nist.gov/EL> for more information about the NIST Engineering Laboratory and the areas of research collaboration available to program participants in these programs.

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 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 the Department of Commerce (DoC) Grants and Cooperative Agreements Manual, which is available at [http://www.osec.doc.gov/oam/grants_management/policy/documents/FINAL%20Master%20DOC%20Grants%20Manual%202013%20\(03.01.13\)_b.pdf](http://www.osec.doc.gov/oam/grants_management/policy/documents/FINAL%20Master%20DOC%20Grants%20Manual%202013%20(03.01.13)_b.pdf).
2. **Funding Availability.** NIST anticipates funding one single-year project for each of the three programs described in Section I. of this FFO for up to approximately \$300,000 each, subject to the availability of funds. Initial funding that may be obligated under this announcement is approximately \$900,000 subject to the availability of funds, .

III. Eligibility Information

1. **Eligible Applicants.** Institutions of higher education; non-profit organizations; commercial organizations; state, local, and Indian tribal governments; foreign governments; organizations under the jurisdiction of foreign governments; and international organizations. An eligible organization may work individually or include proposed subawards or contracts with others in a project application, effectively forming a team or consortium. In a team or consortium, eligible subawardees are Institutions of higher education; non-profit organizations; commercial organizations; state, local, and Indian tribal governments; foreign governments; organizations under the jurisdiction of foreign governments; and international organizations. Federal agencies may participate in projects but may not receive NIST funding.
2. **Cost Sharing or Matching.** Cost sharing or matching is not required under the programs listed in this FFO.

IV. Application/Proposal and Submission Information

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 standard application package may also be requested by contacting the NIST personnel listed below:

Karen Perry, Engineering Laboratory, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8602, Gaithersburg, MD 20899-8602. Phone: (301) 975-5910; email: karen.perry@nist.gov.

2. Content and Format of Application/Proposal Submission

In an effort to route an application to the appropriate program, applicants should reference, on the Technical Proposal cover page, the name of the applicable ELCAP grant program which the application is being submitted to, using the following choices:

- (1) Disaster Resilience of Buildings, Infrastructure, and Communities;
- (2) Sustainable Construction and Manufacturing; or
- (3) Smart Firefighting.

If an applicant seeks to compete for more than one of these programs, a separate application should be submitted for each program. If the same applicant is selected for more than one program, NIST may consider combining the applications into a multi-project award during the budget negotiation process.

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. The FFO number 2013-NIST-ELCAP-01 should be identified in item 12 of the SF-424. The list of certifications and assurances referenced in item 21 of the SF-424 is contained in the SF-424B.
- (2) **SF-424A, Budget Information – Non-Construction Programs.** (The budget should reflect anticipated expenses for the project, considering all potential cost increases, including cost of living adjustments.)
- (3) **SF-424B, Assurances – Non-Construction Programs**
- (4) **CD-511, Certification Regarding Lobbying**
- (5) **SF-LLL, Disclosure of Lobbying Activities** (if applicable)
- (6) **Technical Proposal.** The Technical Proposal is a word-processed document responsive to the applicable program description(s) (see Section I. of this FFO) and the evaluation criteria (see Section V.1. of this FFO). The Technical Proposal should describe in depth the scope of the proposal, its goals, the methods and equipment to be used, its schedule, the personnel working on the project and their qualifications, and the institutional capabilities of the applicant.
- (7) **Budget Narrative.** There is no set format for the Budget Narrative; however, it should provide a detailed breakdown and explanation of each of the object class categories as reflected on the SF-424A. For awards to commercial organizations, audit requirements will be specified in a special award condition. If an applicant has never received Federal funding from any Federal agency, a certification may be required from a CPA to determine whether the applicant has a functioning financial management system that meets the provisions of 15 C.F.R. § 14.21. Any audit and certification costs will be addressed in budget negotiations, if applicable.
- (8) **Indirect Cost Rate Agreement.** If indirect costs are included in the proposed budget, provide a copy of the approved negotiated agreement if this rate was negotiated with a cognizant Federal audit agency. If the rate was not established by a cognizant Federal audit agency, provide a statement to this effect. If the successful applicant includes indirect costs in the budget and has not established an indirect cost rate with a cognizant

Federal audit agency, the applicant will be required to obtain such a rate.

- (9) **Resumes of Key Personnel.** One-page resumes of no more than five key personnel may be included (these do not contribute to the total number of pages).
- (10) **Letters of Commitment,** if applicable (these do not contribute to the total number of pages).
- a) If key personnel are identified by the applicant and are willing to fill vacancies on the applicant's staff, letters of commitment from the identified persons should be included. The letters from such individuals, or groups of individuals, should indicate the relationship of the writer to the applicant and how the writer will help fulfill the efforts described in the Funding Opportunity Description (see Section I of this FFO).
 - b) If the applicant's proposal includes subawards or contracts to already identified third parties, effectively forming a team or consortium, as described in Section III.1, letters of commitment from proposed subawardees and contractors should be included. Each letter should indicate the submitting organization's willingness to participate as a contractor or subawardee and describe what work they will do and the associated cost to the applicant (see Section I of this FFO).
 - c) Letters of commitment should not be letters submitted by non-proposing entities wishing to vouch for the applicant's (or entities associated with the applicant) knowledge, skills, and abilities or entities to conduct the proposed work. These should be in the form of a letter of support (see Section IV.2.a.11 of this FFO).
- (11) **Letters of Support,** if applicable, optional (one recommended but no more than five will be accepted) (these do not contribute to the total number of pages). Letters of support from non-proposing parties are acceptable. Letters of support may be from parties with whom the applicant has worked with in the past in a similar area of work to that described in the Funding Opportunity Description (see Section I of this FFO).

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.(11) 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 indicating an application is received does not provide information about whether attachments have been received.

b. Application Format

- (1) **Cover page.** In an effort to route an application to the appropriate program, applicants should reference, on the Technical Proposal cover page, the name of the applicable ELCAP grant program which the application is being submitted to, using the following choices:
- (a) Disaster Resilience of Buildings, Infrastructure, and Communities;
 - (b) Sustainable Construction and Manufacturing; or
 - (c) Smart Firefighting
- (2) **Double-sided.** For paper submissions, print on both sides of the paper for the original and copies (front to back counts as two (2) pages).
- (3) **E-mail and facsimile (fax) submissions.** Will not be accepted.

- (4) **Number of paper copies.** For paper submissions, one (1) signed stapled original and two (2) stapled copies. If original proposal is in color, the two (2) copies must also be in color. If submitting electronically via Grants.gov, paper copies are not required.
 - (5) **Figures, graphs, images, and pictures.** Should be of a size that is easily readable or viewable and may be landscape orientation.
 - (6) **Font.** Easy to read font (10-point minimum). Smaller type may be used in figures and tables but must be clearly legible.
 - (7) **Line spacing.** Applicants can use single spacing or double spacing.
 - (8) **Margins.** One (1) inch top, bottom, left, and right.
 - (9) **Page layout.** Portrait orientation except for figures, graphs, images, and pictures. Paragraphs are to be clearly separated from each other by double spacing paragraph formatting or equivalent.
 - (10) **Page limit.** Applications are limited to thirty (30) pages.
 - a) **Page limit includes:** Table of contents (if included), Technical Proposal with all required sections, including management information and qualifications, figures, graphs, tables, images, and pictures.
 - b) **Page limit excludes:** SF-424, Application for Federal Assistance; SF-424A, Budget Information – Non-Construction Programs; SF-424B, Assurances – Non-Construction Programs; SF-LLL, Disclosure of Lobbying Activities; CD-511, Certification Regarding Lobbying; Budget Narrative; and Indirect Cost Rate Agreement, Resumes, Letters of Commitment, Letters of Support.
 - (11) **Page numbering.** Number pages sequentially.
 - (12) **Page size.** 21.6 by 27.9 centimeters (8 ½ by 11 inches).
 - (13) **Language.** English.
 - (14) **Staple paper submission.** For paper submissions, staple the original signed proposal and each of the two (2) copies securely with one (1) staple in the upper left-hand corner.
 - (15) **Typed document.** All applications, including forms, must be typed; handwritten applications and forms will not be accepted.
- 3. Submission Dates and Times.** Electronic applications must be received no later than 11:59 p.m. Eastern Time, Thursday, July 25, 2013. Paper applications must be received by NIST by 5:00 p.m. Eastern Time, Thursday, July 25, 2013. Applications received after the respective deadline will not be reviewed or considered. The earliest anticipated start date for awards under this FFO is expected to be October 1, 2013.

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.

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.

4. Funding Restrictions. Profit or fee is not an allowable cost.

5. Other Submission Requirements

a. Applications may be submitted by paper or electronically.

- (1) Paper proposals must be submitted in triplicate (an original and two copies) and submitted to the NIST personnel listed below:

Karen Perry, Engineering Laboratory, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8602, Gaithersburg, MD 20899-8602.

- (2) Electronic applications must be submitted via Grants.gov at www.grants.gov, under announcement 2013-NIST-ELCAP-01.
- a) Applicants 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 an application is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2013-NIST-ELCAP-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 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 Dun and Bradstreet Data Universal Numbering System (DUNS) number (See Section VI.2.b) 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) Information essential to successful application submission on the Grants.gov system is detailed in the For Applicants section found in red on the left side of the www.grants.gov home page, and all potential applicants should pay close attention to the information contained therein. The All About Grants, Applicant FAQs, and Submit Application FAQs sections found under the Applicant Resources option are particularly important.

All applicants, both electronic and paper submitters, should be aware that adequate time must be factored into applicants' schedules for delivery of their proposal. Submitters of electronic proposals are advised that volume on Grants.gov may be extremely heavy on the deadline date, and if Grants.gov is unable to accept proposals electronically in a timely fashion, applicants are encouraged to exercise their option to submit proposals in paper format. Submitters of paper proposals should allow adequate time to

ensure a paper proposal 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 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 Karen Perry by telephone at (301) 975-5910; email: karen.perry@nist.gov.

V. Application/Proposal Review Information

- 1. Evaluation Criteria.** The evaluation criteria that will be used in evaluating applications for each of the three programs described in Section I. of this FFO are as follows:

- (1) **Technical Quality of the Research.** The clarity, rationality, organization, innovation and imagination of the proposal, and the fit to the program. **(0 – 35 points)**
- (2) **Potential Impact of the Results.** The potential impact and the likelihood of the technical application of the results. **(0 – 35 points)**
- (3) **Staff and Institution Capability to Perform the Work.** The quality of the facilities and experience of the staff to assess the likelihood of achieving the objectives of the proposal. **(0 – 15 points)**
- (4) **Match of Budget to Proposed Work.** Assessment of the budget against the proposed work to ascertain the reasonableness of the request. **(0 – 15 points)**

2. Review and Selection Process

- a. Initial Screening of all Program Applications.** All applications received in response to this FFO will be assigned to the appropriate program and reviewed to determine whether they are eligible, complete, and responsive to this FFO and the scope of the stated program objectives and are compatible with the respective Engineering Laboratory Cooperative Agreement Program areas and the relevance to the objectives of the respective Engineering Laboratory Cooperative Agreement Program areas, as described in the Program Description (see Section I of this FFO). Applications determined to be ineligible, incomplete, and/or non-responsive may be eliminated from further review.
- b. Full Review of Eligible, Complete, and Responsive Applications.** Under each program of the Engineering Laboratory Cooperative Agreement Program, applications that are determined to be eligible, complete, and responsive will proceed for full reviews in accordance with following for each of the respective programs. At least three (3) independent, objective individuals knowledgeable about the particular scientific area described in the application will conduct a technical review of each application, based on the evaluation criteria (see Section V.1.a. of this FFO). If non-Federal reviewers are used, the reviewers may discuss the applications with each other, but scores will be determined on an individual basis, not as a consensus. Based on the reviewers' scores, a rank order will be prepared.

For each program of the Engineering Laboratory Cooperative Agreement Program, the Selecting Official, who is the Director of the Engineering Laboratory, or designee, will make the final application selection. The Selecting Official shall select an application for award based upon the rank order of the applications, and may select an application out of rank based on one or more of the following selection factors:

- (1) The results of the reviewers' evaluations.

- (2) The priorities and objectives as set forth in the Funding Opportunity Description (Section I) set forth in this FFO.
- (3) Whether the project duplicates other projects funded or considered for funding by DoC or other federal agencies.
- (4) The availability of funds.

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

3. Anticipated Announcement and Award Dates. Awards may be made in the October 2013 time frame.

4. 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. One (1) copy of each non-selected application will be retained for three (3) years for record keeping purposes and the other two (2) copies will be destroyed. After three (3) years, the remaining copy 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 and the DoC Financial Assistance Standard Terms and Conditions (January 2013) are available at http://www.osec.doc.gov/oam/grants_management/policy/documents/DOC_Standard_Terms_and_Conditions_01_10_2013.pdf.

2. 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 and are available at <https://www.federalregister.gov/articles/2012/12/17/2012-30228/department-of-commerce-pre-award-notification-requirements-for-grants-and-cooperative-agreements>.

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 Automated Standard Application for Payment System (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 application 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 an application 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 an application under consideration by an agency; and
- (3) Provide its DUNS number in each application or application 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 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.** All applications should include a description of any work proposed to be performed by an entity other than the applicant, and the cost of such work should ordinarily be included in the budget.

If an applicant proposes collaboration with NIST, 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.

- d. 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, 15 C.F.R. § 14.36, and in Section B.21 of the DoC Pre-Award Notification Requirements, 77 FR 74,634(December 17, 2012). 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 Projects Involving Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects Including Software Testing.** Any application that includes research involving human subjects, human tissue/cells, data or recordings involving human subjects, including software testing, must meet 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. In addition, any such application that includes research 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 research involves human subjects. If NIST determines that your research project involves human subjects, you 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 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 human subjects research activities. Non-exempt human subjects research activities will be required to have protocols approved by an Institutional Review Board (IRB) currently registered with the Office for Human Research Protections (OHRP) within the DHHS and that will be performed by entities possessing a currently valid Federal-wide Assurance (FWA) on file from OHRP that is appropriately linked to the cognizant IRB for the protocol. Information regarding how to apply for an FWA and register and IRB with OHRP can be found at <http://www.hhs.gov/ohrp/assurances/index.html>. ***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.***

Generally, NIST does not fund research involving human subjects in foreign countries. NIST will consider, however, the use of **preexisting** tissue, cells, or data from a foreign source on a limited basis if all of the following criteria are satisfied:

- (1) the scientific source is considered unique,
- (2) an equivalent source is unavailable within the United States,
- (3) an alternative approach is not scientifically of equivalent merit, and
- (4) the specific use qualifies for an exemption under the Common Rule.

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 project participant believes that the activity/task is not research as defined under the Common Rule, the following may be requested for that activity/task:

Justification, including the rationale for the determination and in some cases additional documentation, to support a determination that the activity/task in the project is not research as defined under the Common Rule. See 15 C.F.R. 27.102. Some cases may result in a NIST determination or an applicant or recipient may choose to provide an IRB approval (if the project participant uses a cognizant IRB).

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 project participant believes that the task/activity is not research as defined under the Common Rule, the following will be required for that activity/task:

Documentation or an IRB approval (if the project participant has a cognizant IRB), including the rationale for the determination, to support a determination that the activity/task in the project is not research as defined under the Common Rule [see 15 C.F.R. 27.102].

If the application appears to include research activities involving human subjects 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 FWAs or IRB registrations are being applied for, that should be clearly stated.

Additional documentation may be requested, as warranted, during review of the application, but 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 applicable to 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 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.

- f. Research Projects Involving Live Vertebrate Animals.** Any application that includes participation in research involving live vertebrate animals, that are being cared for, euthanized, or used by the project participants to accomplish research goals, teaching, or testing, must be in compliance with 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. In addition, such applications 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. These regulations 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 animal materials from commercial processors of animal products or to animal cell lines or tissues from tissue banks. ***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.***

NIST reserves the right to make an independent determination of whether your research involves live vertebrate animals. If NIST determines that your research project involves live vertebrate animals, you 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 under the award until the NIST Grants Officer issues written approval.

If the applicant's application appears to include research activities involving live vertebrate animals the following information may be requested during the application review process:

- (1) The name(s) of the institution(s) where the animal research will be conducted;
- (2) The assurance type and number, as applicable, for the cognizant 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 (if currently approved);
- (4) If the review by the cognizant Institutional Animal Care and Use Committee (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.

Additional documentation will be requested, as warranted, during review of the application, but may include the following for research activities 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 Animal Study Application (ASP);
- (2) Documentation of the IACUC approval indicating the approval and expiration dates of the ASP; and
- (3) If applicable, a nonduplication-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.

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 program 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 these programs fail to receive funding or are 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. Collaborations Making Use of Federal Facilities.** All applications should include a description of any work proposed to be performed using Federal facilities.

If an applicant proposes use of NIST facilities, the statement of work should include a statement of this intention and a description of the facilities. Any use of NIST facilities 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 availability of the facilities and approval of the proposed usage. Any unapproved facility use will be stricken from the application prior to the merit review. Examples of some facilities that may be available for collaborations are listed on the NIST Web site, <http://www.nist.gov/user-facilities.cfm>.

- i. DoC Representation by Corporations Regarding an Unpaid Delinquent Tax Liability or a Felony Conviction Under Any Federal Law.** In accordance with the Federal appropriations law expected to be in effect at the time of project funding, NIST anticipates that the selected applicants will be provided a form and asked to make a representation regarding any unpaid delinquent tax liability or felony conviction under any Federal law.

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 Reports.** Each award applicant will be required to submit an SF-425, Federal Financial Report in triplicate (an original and two (2) copies), on a semi-annual basis for the periods ending March 31 and September 30 of each year. Reports will be due within 30 days after the end of the reporting period. A final financial report is due within 90 days after the end of the project period.
 - (2) **Performance (Technical) Reports.** Each award applicant will be required to submit a progress report in triplicate (an original and two (2) copies), on a semi-annual basis for the periods ending March 31 and September 30 of each year. Reports will be due within 30 days after the end of the reporting period. A final technical progress report shall be submitted within 90 days after the expiration date of the award. Two (2) copies of the technical progress report shall be submitted to the Project Manager and the original report to the NIST Grants Officer. Technical progress reports shall contain information as prescribed in 15 C.F.R. § 14.51.
 - (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 applicant may need to submit property and patent reports.
- b. **OMB Circular A-133 Audit Requirements.** Single or program-specific audits shall be performed in accordance with the requirements 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 applicant'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.
- 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.

VII. Agency Contact(s)

Questions should be directed to the following contact persons:

Subject Area	Point of Contact
Programmatic and technical questions:	Sustainability: Robert Chapman Phone: 301-975-2723 E-mail: robert.chapman@nist.gov Disaster Resilience: Stephen Cauffman Phone: 301-975-6051 E-mail: stephen.cauffman@nist.gov Firefighting: Anthony Hamins Phone: 301-975-6598 E-mail: Anthony.hamins@nist.gov or Administration: Karen Perry Phone: 301-975-5910 E-mail: karen.perry@nist.gov
Electronic submission through Grants.gov	Christopher Hunton Phone: 301-975-5718 Fax: 301-840-5976 E-mail: christopher.hunton@nist.gov or Grants.gov Phone: 800-518-4726 E-mail: support@grants.gov
Grant rules and regulations	Scott McNichol Phone: 301-975-5603 Fax: 301-840-5976 E-mail: scott.mcnichol@nist.gov