REQUEST FOR APPLICATION (RFA)
NIST Community Resilience Center of Excellence

EXECUTIVE SUMMARY

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

- **Request for Application Title:** Request for Application (RFA) NIST Community Resilience Center of Excellence Renewal

- **Announcement Type:** Initial Announcement

- **Funding Opportunity Number**: 2020-NIST-COMM-RES-COE-01

- **Assistance Listing (CFDA Number):** 11.609, Measurement and Engineering Research and Standards

- **Dates:** Application must be received at grants.gov no later than 11:59 p.m. Eastern Time, November 30, 2019. Application received after this deadline will not be reviewed or considered. Paper applications will not be accepted.

  Applicants should be aware, and factor in their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance at the following times:

From 12:01 A.M. Eastern Time Saturday	To 6:00 A.M. Eastern Time Monday
November 16, 2019	November 18, 2019

  Applications cannot be submitted when Grants.gov is closed.

  NIST expects to complete its review, selection of successful applicants, and award processing by January 2020. NIST expects the earliest start date for awards under this RFA to be January 2020.

- **Application Submission Address:** Application must be submitted using Grants.gov.

- **Funding Opportunity Description:** The NIST is soliciting a renewal application from Colorado State University for the Community Resilience Center of Excellence, in which NIST researchers collaborate with interdisciplinary researchers on development of tools and standardized

methods that will enhance the disaster resilience of communities and their built environment through innovations in measurement science and in new modeling, simulation, data, and informatics tools coupled with field studies.

- **Anticipated Amounts:** NIST anticipates approximately $4,000,000 per year may be made available to award one (1) multi-year award for up to five (5) years. This award will not be eligible for further renewal.

- **Funding Instrument:** Cooperative Agreement.

- **Eligibility:** The only eligible applicant is Colorado State University.

- **Cost Sharing Requirements:** Non-federal cost share is not required.

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FULL ANNOUNCEMENT TEXT

I. Program Description

The statutory authority for the NIST Community Resilience Center of Excellence is 15 U.S.C. § 272(b)(4), (b)(8), (b)(10), (c)(17), and (c)(18).

The NIST is seeking an application from Colorado State University for a renewal award for the Community Resilience Center of Excellence, in which NIST researchers collaborate with interdisciplinary researchers on development of tools and standardized methods that will enhance the disaster resilience of communities and their built environment through innovations in measurement science and in new modeling, simulation, data, and informatics tools coupled with field studies.

Progress towards more resilient communities is hindered by a lack of metrics for community resilience, as well as a paucity of validated, science-based tools to evaluate resilience at the community-scale. Community resilience requires

consideration of several key dimensions. Resilience goals are based on social needs, which provide the foundation for performance requirements for buildings and infrastructure systems, including (but not limited to) employment, schooling, governance, public safety, and medical services delivery. Performance requirements also need to consider the role of the facility or system, such as whether it is critical to life safety or community recovery. Interdependencies and cascading effects of damage to buildings and infrastructure can result in greatly increased recovery times and costs. Achieving resilient performance at a community level takes time and planning, and requires informed decision making that can prioritize effective investments. To improve community resilience, science-based tools are needed to address all these dimensions. In developing tools that address these dimensions, the NIST Community Resilience Center of Excellence focuses on the role that buildings and infrastructure play in community resilience and their impact on social and economic systems. The models developed by the Center are expected to serve communities, professionals, and researchers by advancing community resilience assessment and planning methods.

By combining NIST's expertise and experience in community resilience and disaster and failure studies with the successful implementation of the Community Resilience Center of Excellence, the next level of science-based modeling and desired performance levels can be achieved to enhance community resilience. For the renewal period, the Community Resilience Center of Excellence shall address the following thrust areas:

1. **Computational Modeling Environment for Community Resilience.** Develop an integrated, multi-scale, computational modeling environment to accelerate development of validated systems-level models and to inform the development of standards and tools for enhancing community resilience, particularly for the built environment. The built environment includes, but is not limited to, buildings and other structures, energy systems, transportation systems, communication and information systems, and water and wastewater systems. Specifically, the modeling environment and tools should support evaluation of the potential impact of natural hazard events to buildings and infrastructure systems, the effects of aging infrastructure, and consequential effects on community social systems, response, and recovery, with solution uncertainty characterization. The modeling environment should include (but not necessarily be limited to) simulation and evaluation tools for:

    a. Building and infrastructure interdependencies and cascading effects of failures among infrastructure systems and buildings;
    b. Decision-making for planning, risk mitigation, response, and recovery with specific consideration of corresponding infrastructure system performance; and

c. Metrics that quantify the state and improvement of community resilience with regards to the built environment and societal needs.

To achieve maximum benefit to the community resilience research and practitioner communities, the modeling environment should allow for two types of input options: (1) default values where data is available, and (2) user-defined data; the modeling environment models shall remain the same for both input options. Further, the modeling environment output must include user-friendly graphics and tables for visual representation of results with options for output of solution results.

2. **Data Science and Validation.** Foster the development of data architectures and data management tools to support model development and validation and to enable resilience planning and evaluation for decision-making officials, professionals, and researchers.

    a. The data management tools developed should include a resilience data architecture that will accommodate system-level computational models with data for model input and validation. The resilience data architecture should accommodate data types such as mitigation, performance, and recovery information for communities (economics, employment, codes and standards, etc.) and for buildings and infrastructure systems.

    b. The modeling environment should be validated through the following steps:
    1. Conduct studies to validate resilience data architectures, ontologies, data management tools, and models for a variety of hazard events, such as hurricane, tornado, earthquake, flood (rain-induced, storm surge, tsunami, sea level rise), and effects of aging infrastructure.
        - Validation studies may include hazard event data from various sources, including previous disaster event studies and field studies conducted by the awardee.
        - Because validation studies are an opportunity to exercise the data format and collection methods, the center should develop criteria that can be used to determine when a field study will be preferable for validating the architecture, modeling, and data collection process research.
    2. Compare modeling results to data from past events, including assessment of uncertainty; and
    3. Conduct sensitivity studies that examine the effect of parameters, such as event sequence, interdependencies, time, or cost, on the outcomes and community resilience.

c. It is expected that the Center of Excellence will conduct field studies, possibly in collaboration with NIST, to collect data and evaluate models and tools. These field studies, involving approximately one week of data collection per study, should be used to develop and test new methodologies and instruments to improve field data collection for community resilience.

d. These data science and validation efforts will require multi-disciplinary expertise and collaboration to develop methodologies that support analyses based on hazard scenarios and should address data needs and data transfer between analysis modules. Scalability and resolution requirements should be established for interdisciplinary modeling across disciplines such as engineering; architecture; computer science; informatics; urban planning; social science for disasters; emergency warnings, planning and response; business continuity; governance; and economics.

3. **Decision Support and End-User Engagement**. Develop modeling environment capabilities to support resilience decision-making by communities, with consideration of options for mitigation and recovery.

    a. Develop community engagement plans that support community interactions with Center and NIST researchers and obtain feedback for metrics and decision support needs for the computational modeling environment.
    b. Develop a mechanism, such as user groups, to meaningfully engage individuals that represent communities, professional firms, researchers, and other community resilience stakeholders for testing of interim and final releases of the modeling environment.
    c. Develop manuals and training courses for the modeling environment; test their completeness and usefulness with individuals that represent communities, professional firms, researchers, and other community resilience stakeholders.
    d. Establish a business plan to ensure continuity of the modeling environment's continued availability, development, and use by end-users.

It is expected that the Community Resilience Center of Excellence will accelerate the development of tools and standards that will enhance the resilience of communities and their built environment. The Center should establish opportunities for extended collaborations between NIST, partner institutions, and modelers and scientists by employing mechanisms such as staff exchanges,

jointly advised graduate students, post-doctoral researchers, and senior guest scientists.

It is anticipated that the Center will develop and implement an intellectual property (IP) management plan, consistent with Section C.03., Department of Commerce Financial Assistance Standard Terms and Conditions, "Intellectual Property Rights," and authorities referenced therein, which addresses ownership and licensing of all IP created or acquired under the award and pre-existing IP used under the award by any of the award participants, including subawardees, contractors, and/or other collaborators, who participate in the project. It is expected that the awardee will obtain the concurrence of each award participant to the awardee's IP management plan. Given the objective of providing decision-makers and professionals with methods and tools to support cost-effective infrastructure designs and investments, NIST may require the awardee to transfer to NIST its copyright in a particular work (for example, a data architecture or data management tool) if NIST will undertake the primary dissemination of the work.

II. Federal Award Information

1. **Funding Instrument:** The funding instrument used in this program will be a cooperative agreement. The nature of NIST's "substantial involvement" will generally include collaboration with the recipient in executing the approved scope of work.

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

3. **Funding Availability:** NIST anticipates approximately $4,000,000 per year may be made available to award one (1) multi-year award for up to five (5) years. This award will not be eligible for further renewal**.**

III. Eligibility Information

1. Eligible Applicants. The only eligible applicant is Colorado State University.

2. Cost Sharing or Matching. Matching funds are not required.

IV. Application and Submission Information

1. **Address to Request Application Package:** The application package is available at grants.gov under Funding Opportunity Number 2020-NIST-COMM-RES-COE-01.

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

   a. **Required Forms and Documents.** The Application must contain the following:

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

      For SF-424 (R&R), Items 5, 14, and 19, use the Zip Code + 4 format (##### - ####) when addresses are called for.

      For SF-424 (R&R), Item 17, the list of certifications and assurances is contained in the SF-424B (item (3) below).

      SF-424 (R&R), Item 18. If the SF-LLL, Disclosure of Lobbying Activities form (item (6) below) is applicable, attach it to field 18.

      Instructions for filling in the SF-424 (R&R) can be found in the 2020-NIST-COMM-RES-COE-01 Application Instructions document found on Grants.gov, as well as at Instructions SF-424 (R&R), Application for Federal Assistance.

      (2) Research & Related Budget (Total Fed + Non-Fed). The budget should reflect anticipated expenses for the full term of the project, considering all potential cost increases, including cost of living adjustments.

      The budget should be detailed in these categories:
      A. Senior/Key Person;
      B. Other Personnel;
      C. Equipment Description;
      D. Travel;
      E. Participant/Trainee Support Costs;
      F. Other Direct Costs;
      G. Direct Costs (automatically generated);
      H. Indirect Costs;
      I. Total Direct and Indirect Costs (automatically generated);

J. Fee (not relevant to this competition);
K. Total Costs and Fee (automatically generated);
L. Budget Narrative and Justification document (item (8) below) should be attached to field L.

A separate detailed R&R Budget must be completed for each budget period during the proposed award (e.g., annual basis). To add additional budget periods (e.g., year 2), click "Add Period" embedded at the end of the form. Instructions for completing the Research & Related Budget (Total Fed + Non-Fed) form can be found in the 2020-NIST-COM-RES-COE-01 Application Instructions document on Grants.gov, as well as at Instructions Research & Related Budget (Total Fed + Non-Fed) – Budget.

(3) SF-424B, Assurances – Non-Construction Programs. The SF-424B is required for all applicants that have not updated their System for Award Management (SAM.gov) entity registration since February 2, 2019 to include the Federal financial assistance certifications and representations (certs and reps). If an applicant has updated their SAM.gov entity registration since February 2, 2019 to include the certifications and representations, then the SF-424B is not required.

(4) CD-511, Certification Regarding Lobbying. Enter "2020-NIST-COMM-RES-COE-01" in the Award Number field. Enter the title of the application, or an abbreviation of that title, in the Project Name field.

(5) Research and Related Other Project Information. Answer the questions and use this form to attach the Technical Proposal (item (7) below), the Indirect Cost Rate Agreement (item (10) below), the Data Management Plan (item (12) below), and the Current and Pending Support Form (item 14 below). Instructions for completing the Research and Related Other Project Information can be found at SF-424 R&R Other Project Information Form Instructions. Please note that the Project Summary/Abstract field, which has a place to attach an optional Project Summary/Abstract, is not relevant to this competition.

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

(7) Technical Proposal. The Technical Proposal is a word-processed document of no more than forty (40) pages responsive to the program description (see Section I. of this RFA) and the evaluation criteria (see Section V.1. of this RFA). It should contain the following information:

(a) Executive Summary. An executive summary, describing the Community Resilience Center of Excellence. The executive summary should not exceed one (1) single-sided page.

(b) Statement of Work. A statement of work that discusses the specific tasks proposed to be performed, including a schedule of measurable events and milestones, to achieve the goals outlined in Section I. to serve communities, professionals, and researchers by advancing community resilience assessment and planning methods. This section will be evaluated according to the **Rationality** and **Technical Merit of Contribution** evaluation criteria (see Section V.1.i and V.1.iii of this RFA).

The application should describe how the recipient plans to advance the development of R&D tools and standards that will enhance community resilience through activities that support the thrust areas described in Section I of this RFA, specifically: (1) Computational Modeling Environment for Community Resilience; (2) Data Science and Validation; and (3) Decision Support and End-User Engagement. The application should address how the Center will establish collaborations between NIST, partner institutions and other community resilience stakeholders through mechanisms such as staff exchanges, post-doctoral researchers, and other partnering mechanisms.

In addition to the description of work envisioned in the renewal period included above, the technical proposal should discuss how the proposed research will build on the successes of the first award period.

(c) Experience, Qualifications and Resource Availability. A description of the experience, qualifications and proposed operational or management activities of key personnel, representing relevant engineering and social science equities, who will be assigned to work on the proposed project must be provided, including examples of past experience leading programs similar in nature to those described in this RFA, experience working with state government representatives, industry, academia, independent research organizations, and/or related organizations.

The application should describe how the recipient will manage the funds to support R&D in the area of Community Resilience to achieve the thrusts described in Section I. Specifically, the application should:

- describe the resources committed to the proposal, including the allocation of funds to personnel, equipment, and nature of subawards (if any); and
- describe how the resources will support the applicant's proposed work to meaningfully enhance the resilience of communities and their built environment.

The application should also address:

- How will the research and the management/governance approach be different given lessons learned from the first period?
- What changes, if any, will be made to collaborators and sub-awardees, and why?
- What is the plan for preparing for the end of the award in 5 years? That is, how will the Center ramp down activities and/or become self-sustaining at the end of the award period?

The application should illustrate the technical expertise of the applicant relevant to achieving successful outcomes in the thrust areas identified in Section 1. of this RFA including the application of standards, measurement infrastructure, and computational tools in supporting resilience decision-making by communities.

This section will be evaluated according to the **Experience, Qualifications and Resource Availability** evaluation criteria (see Section V.1.ii. of this RFA).

(d) Success Metrics. Three or more metrics that indicate whether measurable progress is being made towards programmatic objectives that support the three thrust areas (see Section 1 of this RFA) should be described, including meaningful use of research outputs by communities and professionals. Outputs from the Center may be quantified, such as the number and quality of publications; number and types of software and other tools developed; or number and types of data collected, archived, and made publicly available. Impact metric(s) should be proposed that reflect the number and types of communities supported, guidelines developed, or consensus standards submitted.

This section will be evaluated according to the **Success Metrics** evaluation criteria (see Section V.1.iv. of this RFA).

(8) Resume(s). Resumes are required for all key personnel, including the principal investigator/project lead(s). Awardees are advised that any

changes to individuals deemed 'key personnel', including disengagement from the project for more than three months or a 25% reduction of effort, will require prior approval, in writing, by the NIST Grants Officer.

This section will be evaluated in accordance with the **Experience, Qualifications and Resource Availability** evaluation criterion (*see* Section V.1.ii. of this RFA). There are no page limits for resumes. However, any material considered inappropriate for inclusion in a resume (e.g. supplementary text for another section) will be redacted and not provided to the reviewers.

Resumes do not count against the forty (40) page limit of the Technical Proposal.

(9) Budget Narrative and Justification. There is no set format for the Budget Narrative and Justification. The Budget Narrative and Justification must be attached to the Research & Related Budget (Total Fed + Non-Fed). The written justification should include the necessity and the basis for the cost. Proposed funding levels must be consistent with the project scope, and only allowable costs should be included in the budget. Information on cost allowability is available in the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200 (http://go.usa.gov/SBYh), which apply to awards in this program. The Budget Narrative does not count against the forty (40) page limit of the Technical Proposal.

Information needed for each category is as follows:

A. Senior/Key Person – At a minimum, the budget justification should include the following: name, job title, commitment of effort on the proposed project in terms of average number of hours per week or percentage of time, salary rate, total direct charges on the proposed project, description of the role of the individual on the proposed project and the work to be performed.

Fringe benefits should be identified separately from salaries and wages and based on rates determined by organizational policy. The items included in the fringe benefit rate (e.g., health insurance, parking, etc.) should not be charged under another cost category.

B. Other Personnel - Data is requested at the project role level, and not at the individual level for Other Personnel. The budget justification should include the following: job title, commitment of effort on the proposed project in terms of average number of hours

per week or percentage of time, salary rate, total direct charges on the proposed project, description of the role of the position on the proposed project and the work to be performed.

Fringe benefits should be identified separately from salaries and wages and based on rates determined by organizational policy. The items included in the fringe benefit rate (e.g., health insurance, parking, etc.) should not be charged under another cost category.

C. **Equipment -** Equipment is defined as an item of property that has an acquisition cost of $5,000 or more (unless the organization has established lower levels) and an expected service life of more than one year. The budget justification should list each piece of equipment, the cost, and a description of how it will be used and why it is necessary to the successful completion of the proposed project. Please note that any general use equipment (computers, etc.) charged directly to the award should be allocated to the award according to expected usage on the project. Applicants should provide at least two (2) quotes, if available, for equipment costing $25,000 or more. If two (2) quotes are not available, please provide a statement as to why two (2) quotes are not available. Any items that do not meet the threshold for equipment can be included under the Materials and Supplies line item in Section F, Other Direct Costs. For equipment purchases yet to be determined provide best estimates based on prior experience.

D. **Travel -** For travel costs required by the recipient to complete the project, including attendance at any relevant conferences, the budget justification for known travel should include the following: destination; names and number of people traveling; dates and/or duration; mode of transportation, lodging and subsistence rates; and description of how the travel is directly related to the proposed project. For travel that is yet to be determined, please provide best estimates based on prior experience. If a destination is not known, an approximate amount may be used with the assumptions given for the location of the meeting.

E. **Participant/Trainee Support Costs -** Participant support costs are stipends, subsistence allowances, travel, and registration fees paid to or on behalf of participants or trainees, who are not employees of your organization, for conferences or training projects. The budget justification should indicate the names or number of participants or trainees, a description and calculation of costs per person, a

description and date of the event, and a description of why the cost is necessary for the successful completion of the proposed project.

F. Other Direct Costs - For costs that do not easily fit into the other cost categories, please list the cost, and the breakdown of the total costs by quantity or unit of cost. Include the necessity of the cost for the completion of the proposed project. Only allowable costs can be charged to the award. Each subaward or contractual cost or should be treated as a separate item in the Other Direct Costs category. Describe the services to be provided and the necessity of the subaward or contract to the successful performance of the proposed project. Contracts are for obtaining goods and services. Subawardees perform part of the project scope of work. For each subaward, applicants must provide budget detail justifying the cost of the work performed on the project.

H. Indirect Costs - Commonly referred to as Facilities & Administrative Costs, Indirect Costs are defined as costs incurred by the applicant organization that cannot otherwise be directly assigned or attributed to a specific project.

This section will be evaluated in accordance with the **Experience Qualifications and Resource Availability** evaluation criteria (*see* Section V.1.ii of this RFA). It will also be reviewed to determine if all costs are reasonable, allocable, and allowable under 2 C.F.R. Part 200 Subpart E, Cost Principles.

(10) 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.

(11) Letters of Commitment.

(a) **Letters of commitment to participate, as applicable.** If the applicant's proposal identifies third parties including contractors, subawardees, and/or other collaborators who will participate in the proposed project, effectively forming a team or consortium, then a letter from each, currently known participant, describing its participation should be submitted. Each letter should indicate the organization's willingness to participate and what they will be doing

for the project. A letter should be submitted whether or not the organization is receiving Federal funds.

(b) **Letters of Interest, optional.** Letters of interest may be provided from parties who might benefit from the technology or knowledge developed as discussed in the proposed project.

Letters of Commitment will be evaluated in accordance with the **Experience, Qualifications and Resource Availability** evaluation criteria (*see* Section V.1.ii.) of this RFA). Letters of commitment do not count against the forty (40) page limit of the Technical Proposal.

(12) Data Management Plan.

Consistent with NIST Policy 5700.001, *Managing Public Access to Results of Federally Funded Research,* and NIST Order 5701.002, *Managing Public Access to Results of Federally Funded Research*", applicants must include a Data Management Plan (DMP).

The DMP is a supplementary document of not more than two pages that must include, at a minimum, a summary of proposed activities that are expected to generate data, a summary of the types of data expected to be generated by the identified activities, a plan for storage and maintenance of the data expected to be generated by the identified activities, and a plan describing whether and how data generated by the identified activities will be reviewed and made available to the public. As long as the DMP meets these NIST requirements, it may take the form specified by the applicant's institution or some other entity (e.g., the National Science Foundation3 or the National Institutes of Health4).

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

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

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

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

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

(13) Subaward Budget Form.

The Research & Related Subaward Budget Form is required if sub-recipients and contractors are included in the application budget. Instructions for completing subaward budget forms are available by visiting the R&R Family Section of the Grants.gov Forms Repository and scrolling down to the R & R Subaward Budget Attachment(s) Form and selecting "Instructions."

(14) Current and Pending Support Form.

Any application that includes investigators, researchers, and key personnel must identify all sources of current and potential funding, including this proposal. Any current project support (e.g. Federal, state, local, public or private foundations, etc.) must be listed on this form. The proposed project and all other projects or activities requiring a portion of time of the Principal Investigator (PI), co-PI, and key personnel must be included, even if no salary support is received. The total award amount for the entire award period covered, including indirect costs, must be shown as well as the number of person-months per year to be devoted to the project, regardless of the source of support. Similar information must be provided for all proposals already submitted or that are being submitted concurrently to other potential funders.

Applicants must complete the Current and Pending Support Form, using multiple forms as necessary to account for all activity for each individual identified in the PI, co-PI and key personnel roles. A separate form should be used for each identified individual.

Applicants must download the Current and Pending Support Form from the NIST website: https://www.nist.gov/oaam/grants-management-division/current-and-pending-support and reference the guidance provided as it contains information to assist with accurately completing the form.

b. Attachment of Required Documents

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

Item IV.2.a.(6), the SF-LLL, Disclosure of Lobbying Activities form, is an optional application form which is part of the standard application package in Grants.gov. If item IV.2.a.(6), the SF-LLL, Disclosure of Lobbying Activities form is applicable to this proposal, attach it to field 18 of the SF-424 (R&R), Application for Federal Assistance.

Item IV.2.a.(7), the Technical Proposal, should be attached to field 8 (Project Narrative) of the Research and Related Other Project Information form by clicking on "Add Attachment".

Item IV.2.a.(9), the Budget Narrative and Justification, should be attached to field L (Budget Justification) of the Research and Related Budget (Total Fed + Total Non-Fed) form by clicking on "Add Attachment".

Items IV.2.a.(8), Resume(s), IV.2.a.(10), the Indirect Cost Rate Agreement, IV.2.a.(11), Letters of Commitment, IV.2.a.(12), the Data Management Plan, and IV.2.a.(14), the Current and Pending Support Form, must be completed and attached by clicking on "Add Attachments" found in item 12 (Other Attachments) of the Research and Related Other Project Information form.

Item IV.2.a.(13), the Subaward Budget Form(s), if applicable to the submission, should be attached to the Research & Related Subaward Budget (Total Fed + Non-Fed) Attachment(s) Form in the application package.

Following these directions will create zip files which permit transmittal of the documents electronically via Grants.gov.

Applicants should carefully follow specific Grants.gov instructions at www.Grants.gov to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicates only that an application was transferred to a system. It does not provide details concerning whether all attachments (or how many attachments) transferred successfully. Applicants will receive a series of e-mail messages over a period of up to two business days before learning whether a Federal agency's electronic system has received its application. Applicants are strongly advised to use Grants.gov's "Download Submitted Forms and Applications" option to check that their application's required attachments were contained in their submission.

After submitting the application, check the status of your application here: CHECK APPLICATION STATUS. If any, or all, of the required attachments are absent from the submission, follow the attachment directions found above, resubmit the application, and check again for the presence of the

required attachments.

If the directions found at https://www.grants.gov/help/html/help/index.htm#t=GetStarted%2FGetStarted.htm are not effective, please contact the Grants.gov Help Desk immediately. If calling from within the United States or from a U.S. territory, please call 800-518-4726. If calling from a place outside the United States or a U.S. territory, please call 606-545-5035. E-mails should be addressed to support@grants.gov. 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.

Applicants can track their submission in the Grants.gov system by following the procedures at the Grants.gov site (http://go.usa.gov/cjamz). It can take up to two business days for an application to fully move through the Grants.gov system to NIST.

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

c. Application Format

(1) Paper, E-mail and Facsimile (fax) Submissions. Will not be accepted.

(2) Figures, Graphs, Images, and Pictures. Should be of a size that is easily readable or viewable and may be landscape orientation. Any figures, graphs, images, or pictures will count toward the forty (40) page limit for the Technical Proposal.

(3) Font. Easy to read font (12-point minimum). Smaller type may be used in figures and tables but must be clearly legible**.**

(4) Page Limits. The Technical Proposal is a word-processed document of no more than forty (40) pages (single spaced) responsive to the program description (*see* Section I. of this RFA) and the evaluation criteria (*see* Section V.1. of this RFA).

(5) Page Limit Excludes: SF-424 (R&R), Application for Federal Assistance; SF-424B, Assurances – Non-Construction Programs; CD-511, Certification Regarding Lobbying; SF-LLL, Disclosure of Lobbying Activities; Resumes of key personnel; Budget Narrative; Indirect Cost Rate Agreement; Data Management Plan, and Letters of Commitment.

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

(7) Application language. All documents must be in English, including but not limited to the initial application, any additional documents submitted in response to a NIST request, all reports, and any correspondence with NIST.

d. Application Replacement Pages. Applicants may not submit replacement pages and/or missing documents once an application has been submitted. Revisions can only be made by submitting a complete new application that is received by NIST before the submission deadline.

e. Pre-Application. Pre-application will not be accepted under this RFA.

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

3. Unique Entity Identifier and System for Award Management (SAM)

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

4. Submission Dates and Times

Electronic application must be received at grants.gov no later than 11:59 p.m. Eastern Time, November 30, 2019. Application received after this deadline will not be reviewed or considered. Paper applications will not be accepted.

Applicants should be aware, and factor in their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance at the following times:

From 12:01 A.M. Eastern Time Saturday	To 6:00 A.M. Eastern Time Monday
November 16, 2019	November 18, 2019

Applications cannot be submitted when Grants.gov is closed.

NIST expects to complete its review, selection of successful applicants, and award processing by January 2020. NIST expects the earliest start date for awards under this RFA to be January 2020.

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

6. **Funding Restrictions**
   Application for product development and/or commercialization are not considered responsive to this RFA. Profit or fee is not an allowable cost.

7. **Other Submission Requirements**

   a. **Application must be submitted electronically.**

      (1) Application must be submitted via Grants.gov at grants.gov.

         (a) Applicants should carefully follow specific Grants.gov instructions to ensure that all attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating an application is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2020-NIST-COMM-RES-COE-01 announcement, contact Leon Sampson by phone at 301-975-3086 or by e-mail at grants@nist.gov.

   b. **Amendments.** Any amendments to this RFA will be announced through Grants.gov. Applicants may sign up on Grants.gov to receive amendments.

V. Application Review Information

1. Evaluation Criteria

The evaluation criteria that will be used in evaluating application and assigned weights are as follows:

i. **Rationality (0 to 20 points).** The clarity and likelihood of success of the applicant's approach to effectively achieve the goals outlined in Section 1 of this RFA to serve communities, professionals, and researchers by advancing community resilience assessment and planning methods.

ii. **Experience, Qualifications and Resource Availability (0 to 30 points).** The extent to which the applicant has access to the expertise, necessary facilities and resources to achieve the thrusts described in Section I of this RFA. Factors considered as a whole and not given particular weights within the category include: (1) the degree to which resources committed to the proposal (personnel, equipment, and subwards) are appropriate for the project's scope; (2) the experience and qualifications of key personnel and the breadth and depth of the multidisciplinary team; (3) the quality of organizational resources proposed to be used on the project; (4) the rationality and potential effectiveness of any planned subawards and/or contracts; (5) the robustness of plans for how the Center will establish collaborations between NIST, partner institutions, and other community resilience stakeholders; (6) rationality of changes to the center (e.g., management, governance, collaborators) based on the lessons learned in the first five years of the center; (7) reasonableness of the plan for preparing for the end of the award in 5 years; and (8) the rationality and effectiveness of plans to manage intellectual property (IP) generated during the award period (as applicable) and to ensure the community resilience modeling environment's continued availability, development, and use by end-users.

iii. **Technical Merit of Contribution (0 to 40 points).** The technical merit of the proposed work and the likelihood it will advance the development of R&D tools and standards that support the community resilience thrust areas described in Section 1 of this RFA. Factors considered as a whole and not given particular weights within the category include: (1) creativity and originality of the proposed approach; (2) plausibility of the technical approach; (3) scope of work, including the development of a computational

modeling environment, creation of data tools, and number and type of proposed approaches to decision support and end-user engagements supporting community resilience; (4) the magnitude and reach of potential technical outcomes for community resilience; (5) linkage between the technical outcomes and community needs for resilience; and (6) degree of integration with NIST programs (consistent with paragraph VII.2.e of this RFA) and capabilities in the areas of Community Resilience (*see* Section I. of this RFA).

iv. **Success Metrics (0 to 10 points).** The clarity and quality of proposed metrics and mechanisms for evaluating the effectiveness of outputs from the Community Resilience Center of Excellence, including but not limited to the potential for utilization by communities and professionals to enhance community resilience.

2. Selection Factors

The Selection Factors are:

a. Results of the merit reviewers' evaluations.
b. The availability of funding.
c. The extent to which the proposed scope of the research (materials, computational methods, personnel, or equipment) is complementary to the research programs and research goals in these areas at NIST as described at https://www.nist.gov/topics/community-resilience.
d. The relevance to the program as described in Section I. of this RFA.
e. Whether the project duplicates other projects funded by the Department of Commerce or other Federal agencies.
f. The results of any independent, objective evaluations of the Community Resilience Center of Excellence undertaken by NIST.
g. The results of an overall assessment, consistent with the potential long-term nature and purpose of the program, including programmatic, policy, and responsibility assessments, consistent with Department of Commerce and NIST policies and procedures.

3. RFA Review and Selection Process

a. **Initial Administrative Review of the Application.** An initial review of the application will be conducted to determine eligibility, completeness, and responsiveness to this RFA and the scope of the stated program objectives. If the Proposal is determined to be ineligible, incomplete, and/or non- responsive, NIST may terminate review at that point.

b. **Full Review of an Eligible, Complete, and Responsive Application.** If the application is determined to be eligible, complete, and responsive, it will proceed for full reviews in accordance with the review and selection process below:

The application will be reviewed by at least three (3) independent, objective reviewers, knowledgeable in the subject matter of this RFA and its objectives and who are able to conduct a review based on the evaluation criteria (*see* Section V.1. of this RFA). The reviewers may discuss the proposals with each other, but scores will be determined on an individual basis, not as a consensus.
The Selecting Official, the Associate Director for Laboratory Programs, will make the final recommendation to the NIST Grants Office. The Selecting Official will take into consideration the results of the reviewers' evaluations and the Selection Factors in Section V.2 of this RFA.

NIST reserves the right to negotiate the budget costs with the applicant, 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. The final approval of selected application and issuance of awards will be by the NIST Grants Officer. The award decisions of the NIST Grants Officer are final.

4. Additional Information

a. Proposal 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 by the submission deadline via Grants.gov.

b. Anticipated Announcement and Award Date
Review of application, selection of the successful applicant, and award processing is expected to be completed by January 2020. The earliest start date for awards under this RFA is expected to be January 2020.

c. Additional Information

i. **Safety**. Safety is a top priority at NIST. Employees and affiliates of award recipients who conduct project work at NIST will be expected to be safety-conscious, to attend NIST safety training, and to comply with all NIST safety policies and procedures, and with all applicable terms of their guest research agreement.

ii. **Notification if Applicant is Unsuccessful.** If unsuccessful, the applicant will be notified by e-mail and will have the opportunity to receive a debriefing.

iii. **Retention of Unsuccessful Application.** Any unsuccessful application would be retained in accordance with the General Record Schedule 1.2/021.

VI. Federal Award Administration Information

1. Federal Award Notices. If successful, the applicant will receive an award package from the NIST Grants Officer.

2. Administrative and National Policy Requirements

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

b. **Department of Commerce Financial Assistance Standard Terms and Conditions.** The Department of Commerce will apply to each award in this program, the Financial Assistance Standard Terms and Conditions in effect on the date of award. The current version, dated April 30, 2019, is accessible here. Refer to Section VII. of this RFA, Federal Awarding Agency Contacts, Grant Rules and Regulations, if you need more information.

c. **Pre-Award Notification Requirements.** The Department of Commerce will apply the Pre-Award Notification Requirements for Grants and Cooperative Agreements dated December 30, 2014 (79 FR 78390), accessible at http://go.usa.gov/hKkR. Refer to Section VII. of this RFA, Federal Awarding Agency Contacts, Grant Rules and Regulations, for more information.

d. **Funding Availability and Limitation of Liability.** NIST or the Department of Commerce will not be responsible for application preparation costs under any circumstances, including but not limited to if this program fails to receive funding or is cancelled because of agency priorities. Publication of this RFA does not oblige NIST or the Department of Commerce to award any specific project or to obligate any available funds.

e. **Collaborations with NIST Employees.** The statement of work should include a statement of collaboration with NIST, 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.

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

Financial Assistance Terms and Conditions dated April 30, 2019, accessible at: Department of Commerce Standard Terms and Conditions.

Any use of NIST-owned intellectual property by a recipient of an award under this announcement 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 RFA, the United States government may retain its ownership rights in any such invention. Licensing or other disposition of NIST's rights in such inventions will be determined solely by NIST and include the possibility of NIST putting the intellectual property into the public domain.

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

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

Research: A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for

purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities.

Human Subject: A living individual about whom an investigator (whether professional or student) conducting research: (i) Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or (ii) Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens.

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

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

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

(4) *Identifiable biospecimen* includes a biospecimen for which the identity of the subject is or may readily be ascertained by the investigator or associated with the biospecimen.

See 15 C.F.R. § 27.102 (Definitions).

1) Requirement for Federalwide Assurance. If the application is accepted for [or awarded] funding, organizations that have an Institutional Review Board (IRB) are required to follow the procedures of their organization for approval of exempt and non-exempt research activities that involve human subjects. Both domestic and foreign organizations performing exempt research requiring limited IRB review or 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. *See* 15 C.F.R. § 27.103. NIST relies only on OHRP-issued FWAs and IRB Registrations for both domestic and foreign organizations for NIST supported research involving human subjects. NIST will not issue its own FWAs or IRB Registrations for domestic or foreign organizations.

2) **Administrative Review.** The NIST Research Protections Office (RPO) reserves the right to conduct an administrative review[5] of all applications that potentially include research involving human subjects and were approved by an authorized non-NIST institutional entity (an IRB or entity analogous to the NIST RPO) under 15 C.F.R. § 27.112 (Review by Institution). If the NIST RPO determines that an application includes research activities that potentially involve human subjects, the applicant will be required to provide additional information to NIST for review and approval. The documents required for funded proposals are listed in each section below. Most documents will need to be produced during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. Research involving human subjects may not start until the NIST Grants Officer issues an award explicitly authorizing such research. In addition, all amendments, modifications, or changes to approved research and requests for continuing review and closure will be reviewed by the NIST RPO.

3) **Required documents for proposal review. All applications involving human subjects research must clearly indicate, by separable task, all research activities believed to be exempt or**

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

non-exempt research involving human subjects, the expected institution(s) where the research activities involving human subjects may be conducted, and the institution(s) expected to be engaged in the research activities.

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

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

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

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

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

c. Exempt research determination with no IRB. If the application appears to NIST to include exempt research activities that do not meet the criteria for requiring a limited IRB review, and the performer of the activity or the supplier and/or the receiver of the information or biospecimens 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. § 27.104(b) and (d)):

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

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

(1) The name(s) of the institution(s) where the research will be conducted.
(2) The name(s) and institution(s) of the cognizant IRB(s), and the IRB registration number(s).

(3) The FWA number of the applicant linked to the cognizant IRB(s).
(4) The FWAs associated with all organizations engaged in the planned research activity/task, linked to the cognizant IRB.
(5) If the IRB review(s) is pending, the estimated start date for research involving human subjects.
(6) The IRB approval date (if currently approved for exempt or non-exempt research).
(7) If any of the engaged organizations has applied for or will apply for an FWA or IRB registration, those details should be clearly provided for each engaged organization.

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

(1) A 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 which portions of the IRB submitted protocol are specifically included in the application submitted to NIST, if the protocol includes tasks not included in the application, or if the protocol is supported by multiple funding sources. For protocols with multiple funding sources, NIST will not approve the study without a non-duplication-of-funding letter indicating that no other federal funds will be used to support the tasks proposed under the proposed research or ongoing project.
(5) If a new protocol will only be submitted to an IRB if an award from NIST is issued, a draft of the proposed protocol.
(6) Any additional clarifying documentation that NIST may request during the review process to perform the NIST administrative review of research involving human subjects. (*See* 15 C.F.R. § 27.112 (Review by Institution)).

This clause reflects the existing NIST policy and requirements for Research Involving Human Subjects. Should the policy be revised prior to award, a clause reflecting the policy current at time of award may be incorporated into the award.
If the policy is revised after award, a clause reflecting the updated policy may be incorporated into the award.
For more information regarding research projects involving human subjects, contact Anne Andrews, Director, NIST Research Protections Office (e-mail: anne.andrews@nist.gov; phone: (301) 975-5445).

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

1) **Administrative Review.** NIST reserves the right to conduct an administrative review[6] of all applications that potentially include research activities that involve live vertebrate animals, or custom samples from, or field studies with live vertebrate animals. If the application includes research activities, field studies, or custom samples involving live vertebrate animals, the applicant will be required to provide additional information for review and approval.

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

In addition, NIST will verify the applicant's determination(s) of excluded samples from vertebrate animals. The documents required for funded proposals are listed in each section below. Some may be requested for a pre-review during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. If an award is issued, no research activities involving live vertebrate animals shall be initiated or costs incurred for those activities under the award until the NIST Grants Officer issues written approval. In addition, all re-approvals, amendments, modifications, changes, annual reports and closure will be reviewed by NIST.

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

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

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

   b) **Custom Collections Harvested from Live Vertebrate Animals:** NIST requires documentation for obtaining custom

samples from live vertebrate animals from animal material suppliers and other organizations (*i.e.,* universities, companies, and government laboratories, etc.). Custom samples includes samples from animal material suppliers, such as when a catalog item indicates that the researcher is to specify the characteristics of the live vertebrate animal to be used, or how a sample is to be collected from the live vertebrate animal.

c) **Field Studies of Animals:** Some field studies of animals may be exempt under the Animal Welfare Act from full review and approval by an animal care and use committee, as determined by each institution. Field study is defined as "*… a study conducted on free-living wild animals in their natural habitat...".* 9 C.F.R. § 1.1. However, this term excludes any study that involves an invasive procedure or that harms or materially alters the behavior of an animal under study. Field studies, with or without invasive procedures, may also require obtaining appropriate federal or local government permits (marine mammals, endangered species, etc.). If the applicant's institution requires review and approval by an animal care and use committee, NIST will require that documentation to be provided as described below.

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

(1) **Requirement for Assurance.** An applicable assurance for the care and use of the live vertebrate animal(s) to be used in the proposed research is required. NIST may request documentation to confirm an assurance, if adequate confirmation is not available through an assuring organization's website. The cognizant IACUC where the research activity is located may hold one or more assurances applicable to the research activity that are acceptable to NIST. These four assurances are:

i. Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) indicated by the OLAW assurance number, *i.e.,* A-1234;
ii. USDA Animal Welfare Act certification indicated by the certification number, *i.e.,* 12-R-3456;
iii. Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) indicated by

providing the organization name accredited by AAALAC as listed in the AAALAC Directory of Accredited Organizations; and

iv. Letter of Assurance of compliance with the Animal Welfare Act, the U.S. Government Principles, and National Marine Fisheries Service (NFMS) IACUC policy that is valid for five years and provided by a NMFS Regional IACUC for activities with marine mammals or sea turtles (NMFS Policy Directive 04-112).

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

1. The name(s) of the institution(s) where the research involving live vertebrate animals will be conducted and/or custom samples collected.
2. The assurance type and number, as applicable, for the cognizant Institutional Animal Care and Use Committee (IACUC) where the research activity is located. [For example: Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) should be indicated by the OLAW assurance number, i.e. A-1234; an USDA Animal Welfare Act certification should be indicated by the certification number i.e. 12-R-3456; and an Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) should be indicated by AAALAC.]
3. The IACUC approval date for the Animal Study Protocol (ASP) (if currently approved).
4. If the review by the cognizant IACUC is pending, the estimated start date for research involving vertebrate animals.
5. If any assurances or IACUCs need to be obtained or established, that should be clearly stated.
6. If any special permits are required for field studies, those details should be clearly provided for each instance, or indicated as pending.

If the application includes research activities involving vertebrate animals to be performed in the first year of an award, additional

documentation may be requested by NIST during pre-award review for those performers, and may include the following for those research activities, which may also include field studies, custom sample collections involving live vertebrate animals:

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

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

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

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

3. Reporting

a. Reporting Requirements. The following reporting requirements described in Sections A.01, Reporting Requirements, of the Department of Commerce Financial Assistance Standard Terms and Conditions, dated April 30, 2019, apply to awards in this program:

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

(2) Research Performance Progress Report (RPPR). Each award recipient will be required to submit a RPPR to the Federal Program Officer, NIST Grants Officer and Grants Specialist named in the award documents 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. The RPPR shall conform to the requirements in 2 C.F.R. § 200.328 (http://go.usa.gov/xkVgP) and Department of Commerce Financial Assistance Standard Terms and Conditions, Section A.01.

A final RPPR shall be submitted within 90 days after the expiration date of the award, and publication citation information as well as links to publicly available data shall be submitted as soon as they become available.

If a recipient's Data Management Plan (DMP) has changed since their last submission of a technical progress report, the recipient must include their revised DMP in the next technical progress report following the revision to the DMP. The revised DMP must include all the requirements described in Section IV.2.a.(12). of this RFA.

(3) Patent and Property Reports. In accordance with the Uniform Administrative Requirements (*see* Section VII.2. of this RFA) and other terms and conditions governing the award, the recipient may need to submit property and patent reports.

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

b. Audit Requirements. The Department of Commerce Financial Assistance Standard Terms and Conditions, Section D.01.b., and 2 C.F.R. Part 200 Subpart F, adopted by the Department of Commerce through 2 C.F.R. § 1327.101, require any non-Federal entity (i.e., including non-profit institutions of higher education and non-profit organizations) that expends Federal awards of $750,000 or more in the recipient's fiscal year to conduct a single

or program-specific audit in accordance with the requirements set out in the Subpart. Additionally, unless otherwise specified in the terms and conditions of the award, entities that are not subject to Subpart F of 2 C.F.R. Part 200 (e.g., for-profit commercial entities) that expend $750,000 or more in DOC funds during their fiscal year must submit to the Grants Officer either: (i) a financial related audit of each DOC award or subaward in accordance with Generally Accepted Government Auditing Standards; or (ii) a project specific audit for each award or subaward in accordance with the requirements contained in 2 C.F.R. § 200.507. Applicants are reminded that NIST, the Department of Commerce Office of Inspector General, or another authorized Federal agency may conduct an audit of an award at any time

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

VII. Federal Awarding Agency Contacts

Questions should be directed to the following:

Subject Area	Point of Contact
Programmatic and Technical Questions	Therese McAllister Phone: 301-975-6078 E-mail: therese.mcallister@nist.gov
Technical Assistance with Grants.gov Submissions	grants.gov Phone: 800-518-4726 E-mail: support@grants.gov
Grant Rules and Regulations	Dean Iwasaki Phone: 301-975-8449 Fax: 301-975-6368 E-mail: dean.iwasaki@nist.gov

VIII. Other Information

1. Personal and Business Information

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

In addition, Department of Commerce regulations implementing the Freedom of Information Act (FOIA), 5 U.S.C. Sec. 552, are found at 15 C.F.R. Part 4, Public Information. These regulations set forth rules for the Department regarding making requested materials, information, and records publicly available under the FOIA. Application submitted in response to this Federal Funding Opportunity may be subject to requests for release under the Act. If an application contains information or data that the applicant deems to be confidential commercial information that should be exempt from disclosure under FOIA, that information should be identified, bracketed, and marked as Privileged, Confidential, Commercial or Financial Information. In accordance with 15 CFR § 4.9, the Department of Commerce will protect from disclosure confidential business information contained in financial assistance application and other documentation provided by applicants to the extent permitted by law.