

# George E. Brown, Jr. Network for Earthquake Engineering Simulation Research (NEESR)

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## PROGRAM SOLICITATION NSF 09-524

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*REPLACES DOCUMENT(S):*  
NSF 08-519

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**National Science Foundation**

Directorate for Engineering  
Civil, Mechanical and Manufacturing Innovation

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

March 27, 2009

Fourth Friday in March, Annually Thereafter

## REVISION NOTES

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A revised version of the *NSF Proposal & Award Policies & Procedures Guide (PAPPG)*, [NSF 09-1](#), was issued on October 1, 2008 and is effective for proposals submitted on or after January 5, 2009. Please be advised that the guidelines contained in [NSF 09-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 5<sup>th</sup>, 2009, must also follow the guidelines contained in [NSF 09-1](#).

One of the most significant changes to the PAPPG is implementation of the mentoring provisions of the America COMPETES Act. Each proposal that requests funding to support postdoctoral researchers must include, as a separate section within the 15-page project description, a description of the mentoring activities that will be provided for such individuals. Proposals that do not include a separate section on mentoring activities within the Project Description will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II.C.2.d for further information).

Major Revisions

- The Individual Investigator, Small Group, and Grand Challenge proposal categories have been consolidated into one category entitled "Core Research." Core Research proposals are limited to 15-page project descriptions.
- The Eligibility Information, Organization Limit, Required Project Team for Core Research Proposals, includes eligibility criterion for predominantly undergraduate institutions, Historically Black Colleges and Universities, Hispanic-serving institutions, Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions.
- Core Research proposals must include a letter, signed by an Authorized Organizational Representative, certifying that one of the participating institutions meets the eligibility criterion for the "Required Project Team for Core Research Proposals," as one of the following institutions: a predominantly undergraduate institution, Historically Black College or University, Hispanic-serving institution, Tribal College or University, Alaskan Native-serving institution, or Native Hawaiian-serving institution.
- The Eligibility Information, Limit on Number of Proposals per PI, has been revised to limit participation by an individual as a Principal Investigator (PI) or co-Principal Investigator (co-PI) in only one proposal in any annual competition and as other Senior Personnel in only one proposal in any annual competition. An individual who is not included as a PI or co-PI in any proposal submitted to an annual competition may be included as other Senior Personnel in up to two proposals in any annual competition.
- In FY 2010, a new NEES operations awardee will be established as the outcome of the [NSF 08-574](#), "George E. Brown, Jr. Network for Earthquake Engineering Simulation Operations (NEES Ops) FY 2010 - FY 2014," program solicitation competition.
- Awards may support Principal Investigators, co-Principal Investigators, and Senior Personnel each up to a maximum of two months of annual support total on all NSF awards during the award period.
- Proposals intending to investigate both earthquake and fire effects are not supported by this solicitation and will be returned without review.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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**Program Title:**

## Synopsis of Program:

The Division of Civil, Mechanical and Manufacturing Innovation (CMMI) in the Directorate for Engineering (ENG) of the National Science Foundation (NSF) invites proposals for research that uses the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) to advance knowledge discovery and innovation for (1) earthquake and tsunami loss reduction of our nation's civil infrastructure, and (2) new experimental simulation techniques and instrumentation for NEES. NEES comprises a network of earthquake engineering experimental equipment sites available for experimentation on-site or in the field and through telepresence. NEES equipment sites include shake tables, geotechnical centrifuges, a tsunami wave basin, unique large-scale testing laboratory facilities, and mobile and permanently installed field equipment. The NEES networking cyberinfrastructure connects, via Internet2, the equipment sites as well as provides telepresence, a curated central data repository, simulation tools, and collaborative tools for facilitating on-line planning, execution, and post-processing of experiments. Projects proposed and supported under this solicitation must use one or more of the NEES equipment sites listed at <http://www.nees.org> and their related cyberinfrastructure.

## Cognizant Program Officer(s):

- Joy Pauschke, Program Director, George E. Brown, Jr. Network for Earthquake Engineering Simulation, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-7024, fax: (703) 292-9053, email: [jpauschk@nsf.gov](mailto:jpauschk@nsf.gov)

## Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.041 --- Engineering

## Award Information

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**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 8 to 14

This includes a combination of Core Research, Simulation Development, and Payload awards.

**Anticipated Funding Amount:** \$7,000,000 expected annually for new awards, pending availability of funds and quality of proposals.

## Eligibility Information

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### Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

### PI Limit:

None Specified

### Limit on Number of Proposals per Organization:

None Specified

### Limit on Number of Proposals per PI: 1

An individual may be included as a Principal Investigator (PI) or co-Principal (co-PI) in only one proposal in any annual competition and may be included as Senior Personnel in a second proposal in any annual competition. An individual who is not included as a PI or co-PI in any proposal submitted to an annual competition may be included as other Senior Personnel in up to two proposals in any annual competition. An individual, who is not a PI or co-PI in the proposal, whose biographical sketch is provided and/or requests any financial support, will be considered Senior Personnel in the proposal. If an individual appears in more than two proposals submitted to this solicitation in any annual competition, then all proposals in which that individual is participating in that annual competition will be **returned without review**. There is no limit to the number of proposals that an organization may submit in any annual competition.

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and

Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: <http://www.nsf.gov/pubs/policydocs/grantsgovguide607.pdf>)

## B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

## C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

March 27, 2009

Fourth Friday in March, Annually Thereafter

## Proposal Review Information Criteria

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**Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

## Award Administration Information

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**Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.

**Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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## I. INTRODUCTION

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The Division of Civil, Mechanical and Manufacturing Innovation (CMMI) in the Directorate for Engineering (ENG) of the National Science Foundation (NSF) invites proposals for research that uses the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) to advance knowledge discovery and innovation for (1) earthquake and tsunami loss reduction of our nation's civil infrastructure, and (2) new experimental simulation techniques and instrumentation for NEES. NEES comprises a network of earthquake engineering experimental equipment sites, available for experimentation on-site or in the field and through telepresence, linked together through cyberinfrastructure. Projects proposed and supported under this solicitation must use one or more of the NEES equipment sites listed at <http://www.nees.org>. Information about the NEES experimental equipment sites (including detailed specifications about each site's equipment and capabilities as well as contact information), and NEES cyberinfrastructure is available at <http://www.nees.org>. These equipment sites include shake tables, geotechnical centrifuges, a tsunami wave basin, unique large-

scale testing laboratory facilities, and mobile and permanently installed field equipment. The NEES cyberinfrastructure connects, via Internet2, the equipment sites as well as provides telepresence, a curated central data repository, simulation tools, and collaborative tools for facilitating on-line planning, execution, and post-processing of experiments.

This solicitation especially seeks ground-breaking, transformative basic research, requiring the use of NEES equipment sites, which will produce fundamentally new ways of thinking about earthquake loss reduction and experimental simulation, i.e., rethinking the "science" of earthquake engineering from basic concepts of materials and design to complete systems to multi-hazard approaches to sustainable mitigation. It is not expected that all research awarded under this solicitation will directly result in immediate technology transfer or code applications, but rather may provide the basis of fundamental knowledge for future investigations that could eventually transform hazard mitigation or experimental simulation nationally and globally.

NEES is authorized under the National Earthquake Hazards Reduction Program (NEHRP) (<http://www.nehrp.gov>) and awards supported under this program solicitation contribute to NSF's participation in NEHRP. NEHRP maintains a list of research needs identified by workshops, code committees, and other sources on its web site at <http://www.nehrp.gov/library/researchneeds.htm>. This web site is not meant to be an exhaustive list but rather provides a resource for potential research topics during proposal development. In May 2008, the NEHRP Advisory Committee on Earthquake Hazards Reduction (ACEHR) issued a report entitled "Effectiveness of the National Earthquake Hazards Reduction Program." This report recommended that NSF enhance support for "curiosity-driven basic research." Therefore, to encourage a stronger focus on curiosity-driven and potentially transformative basic research for earthquake loss reduction and experimental simulation, this solicitation eliminates the three proposal categories of "Individual Investigator," "Small Group," and "Grand Challenge" found in the previous NSF 08-519 NEES Research (NEESR) solicitation and replaces these three categories with one new proposal category entitled "Core Research," with a range of support designated under Section III, "Award Information." Proposals may be submitted to this solicitation in three categories: Core Research, Simulation Development, and Payload. As a part of their Core Research proposals, proposers may utilize, in conjunction with the NEES experimental facilities, other major facilities, instrumentation, and observatories. For example, proposals also may utilize:

- Earth Science (EarthScope)/Earthquake Engineering (NEES) Research Opportunities: EarthScope is an Earth science program to explore the four-dimensional structure of the North America continent (<http://www.earthscope.org>). The EarthScope Program provides a framework for broad, integrated studies across the earth sciences, including research on fault properties and the earthquake process, strain transfer, magmatic and hydrous fluids in the crust and mantle, plate boundary processes, large-scale continental deformation, continental structure and evolution, and composition and structure of the deep earth. In addition, EarthScope offers a centralized forum for earth science education at all levels and an excellent opportunity to develop cyberinfrastructure to integrate, distribute, and analyze diverse data sets. The EarthScope facility, consisting of the Plate Boundary Observatory, the San Andreas Fault Observatory at Depth, and the USArray, is a multi-purpose array of instruments and observatories that greatly expand the observational capabilities of the earth sciences and permits us to advance our understanding of the structure, evolution, and dynamics of the North America continent. The NEES and EarthScope facilities provide complementary capabilities to extend the continuum and interface of knowledge, innovation, and technology in earth sciences and earthquake engineering. Co-funding opportunities will be considered between the CMMI Division, through this solicitation, and by the NSF Directorate for Geosciences (GEO), Division of Earth Sciences (EAR), for projects that propose research requiring coordinated use of both NEES and EarthScope facilities. Proposals should address both the requirements of this solicitation and program solicitation NSF 06-562, EarthScope (<http://www.nsf.gov/pubs/2006/nsf06562/nsf06562.htm>), or the NSF 06-562 replacement solicitation that will be available, when published, at the NSF Directorate for Geosciences, Earth Sciences Division home page, <http://www.nsf.gov/div/index.jsp?div=EAR>. Proposals will be co-reviewed by ad hoc mail reviews or panels or both formed to review proposals under both solicitations.
- Advanced National Seismic System (ANSS): The ANSS (<http://earthquake.usgs.gov/research/monitoring/anss/>) is maintained and operated by the U. S. Geological Survey. The NEES experimental equipment provides unique capabilities for research on ANSS-instrumented sites and structures.
- NEES/E-Defense Earthquake Engineering Research Collaboration: The 3-D Full-Scale Earthquake Testing Shake Table Facility, known as E-Defense, (<http://www.bosai.go.jp/hyogo/ehyogo/>), built by the Japanese National Research Institute for Earth Science and Disaster Prevention (NIED), opened for research in 2005. The NEES equipment sites and the E-Defense shake table operated by NIED offer complementary earthquake engineering experimental facilities for large and full scale testing. Proposals may be submitted to this solicitation that intend to use both NEES facilities and the E-Defense shake table in the conduct of their research; such proposals are encouraged to include collaborators from Japan. Prior to proposal submission, proposers should contact Professor Masayoshi Nakashima, Director of E-Defense, NIED ([nakashima@archi.kyoto-u.ac.jp](mailto:nakashima@archi.kyoto-u.ac.jp)), for the availability, costs, and other issues associated with the use of this facility.

During FY 2005 - FY 2009 (i.e., October 1, 2004, through September 30, 2009), the operations of NEES infrastructure (equipment sites, cyberinfrastructure, and education, outreach, and training activities) is being coordinated by NEES Consortium, Inc. (NEESinc). During FY 2008 - FY 2009, under a separate program solicitation, NSF 08-574, "George E. Brown, Jr. Network for Earthquake Engineering Simulation Operations (NEES Ops) FY 2010 - FY 2014," NSF is conducting a competition to establish a new awardee for operations of the NEES infrastructure. Awards supported under this program solicitation will be required to comply with the community-established policies and guidelines implemented by the NEES operations awardee supported by NSF (i.e., either by the incumbent (current) NEES operations awardee (NEESinc) or by the NEES operations awardee to be established under NSF 08-574 competition in FY 2010) for access to, scheduling, and announcement of experiments and educational projects at the NEES equipment sites and for documenting, archiving, and sharing of data. Current policies and guidelines for using the NEES equipment sites and data sharing are the *NEES Facilities Users Guide* and the *Data Sharing and Archiving Policies and Guidelines* available at <http://www.nees.org>.

## II. PROGRAM DESCRIPTION

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### General Information Regarding NEES Research (NEESR)

Proposals submitted under this solicitation must incorporate significant use of one or more of the NEES equipment sites listed at <http://www.nees.org> as the primary experimental resource(s). Evidence of significant use of NEES equipment sites(s) as the primary experimental resource(s) must be reflected within the project schedule and the functional budget included as part of the proposal. Proposals that require significant use of other laboratory facilities, in addition to the use of one or more NEES equipment sites, are strongly discouraged unless proposers plan to use one or more NEES equipment sites in conjunction with one of the major facilities listed above in the introduction. Investigators who wish to conduct earthquake engineering research that does not require use of at least one NEES equipment site as the primary experimental resource should submit proposals to one of the other existing programs within the NSF CMMI Division (<http://www.nsf.gov/div/index.jsp?div=CMMI>). Proposals intending to investigate both earthquake and fire effects are not supported by this solicitation and will be **returned without review**.

Proposals may be submitted in three categories: Core Research (CR), Simulation Development (SD), and Payload, as described below.

### **NEESR Core Research (NEESR CR) Proposals**

NEESR CR proposals may include a small, focused research group proposal to a multi-disciplinary, multi-organizational group proposal. The number of participating investigators and organizations should be commensurate with the research and education goals, scope, and activities and utilization of the NEES equipment sites. Proposals may include an External Advisory Board/Group/Committee; however, member names must not be included in the proposal. An External Advisory Board/Group/Committee is defined as a group of individuals whose role in the project is to participate in an advisory capacity at periodic meetings and who may or may not receive financial support to attend these meetings.

*Required Project Team for Core Research Proposals:* Core Research proposals must include financial support for both faculty and students involved in the research activities from a predominantly undergraduate institution, Historically Black College or University, Hispanic-serving institution, Tribal College or University, Alaska Native-serving institution, or Native Hawaiian-serving institution. Eligible "predominantly undergraduate institutions" are U.S. two-year, four-year, masters-level, and small doctoral colleges and universities who (1) grant baccalaureate degrees in NSF-supported fields, or provide programs of instruction for students pursuing such degrees with institutional transfers (e.g., two-year schools); (2) have undergraduate enrollment exceeding graduate enrollment; and (3) award no more than an average of 10 Ph.D. and/or D.Sc. degrees per year in all disciplines that NSF supports, averaged over 2 to 5 years preceding proposal submission to this solicitation. Eligible "Historically Black Colleges and Universities (HBCUs)" must meet the definition located at 20 U.S.C. 1061(2). The Department of Education maintains a list of HBCUs at <http://www.ed.gov/about/inits/list/whhbcu/edlite-list.html>. Eligible "Hispanic-serving institutions" must meet the definition located at 20 U.S.C. 1101a(5). Eligible "Tribal Colleges and Universities" (tribal colleges) are defined by Executive Order 13270 as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), and Dine' College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). A list of Tribal Colleges and Universities is available at <http://www.ed.gov/about/inits/list/whtc/edlite-tcllist.html>. Eligible "Alaska Native-serving institutions" and eligible "Native Hawaiian-serving institutions" must meet the definitions located at 20 U.S.C. 1059d(b)(2) and 20 U.S.C. 1059d(b)(4), respectively.

### **NEESR Simulation Development (NEESR SD) Proposals**

The NEES equipment sites are state-of-the-art experimental facilities for conducting transformative research in earthquake engineering. Supported by innovative cyberinfrastructure tools, each equipment site provides unique opportunities to develop advanced experimental simulation techniques and instrumentation not previously possible. These techniques may require, for example, the development of advanced sensors, measurement devices, control algorithms, or robotic tools. Hybrid testing techniques, in particular, are expected to progress well beyond their current limitations and new applications will be devised that will allow the equipment sites to offer new capabilities not currently feasible. Proposals are especially encouraged that advance capabilities for multi-site hybrid experimentation. Innovative testing techniques that could provide experimental information to develop fundamental constitutive relationships for existing or new materials subjected to dynamic loading conditions are also encouraged. NEESR Simulation Development (SD) proposals must focus on developing and demonstrating the feasibility of advanced experimental simulation techniques or instrumentation for NEES. The research, development, and demonstration in an SD proposal must use a NEES equipment site, but the Principal Investigator need not be affiliated with that particular equipment site or any other NEES equipment site. Proposals that will only reuse experimental data and do not require experimentation at one or more NEES equipment sites will not be supported by this solicitation and will be **returned without review**.

### **NEESR Payload Proposals**

Current NEESR awards offer a unique opportunity for researchers not part of the award team to use the award's test set-up to accommodate a considerably smaller experimental investigation of a payload component, referred to as a "payload project." This payload may be a mechanical, control, sensing, or nonstructural component that may detect or support operation of the overall system, but the payload is not part of the load carrying system. Payload projects also may concern the load carrying system or its components. The NEESR award's test set-up would provide the vehicle for testing the payload component. Researchers should contact the Principal Investigator of the NEESR award that they wish to use for feasibility and accommodation of the payload project. Investigators will not be supported for a payload project to their own NEESR award, i.e., a NEESR award in which they are already receiving financial support.

### **International Collaboration Opportunities**

NSF encourages collaboration with international researchers. Proposals including international collaboration should identify the names and affiliations of the international collaborators, the nature and goals of collaboration activities, and the international synergies and benefits to be gained from the collaboration. NSF policies and procedures regarding participation of international researchers in NSF awards can be obtained from the NSF Office of International Science and Engineering (<http://www.nsf.gov/div/index.jsp?div=OISE>). International collaborators cannot be funded under this solicitation and must provide their own support.

### **NEESR Requirements Regarding Telepresence and Data**

NEES experimental, telepresence, data archival, simulation, and collaborative capabilities have been designed to provide an infrastructure for earthquake engineering research and education partnerships, and to encourage broad participation from different segments of the earthquake engineering community (e.g., researchers, educators, students, practitioners, consultants, government agencies, national laboratories, and international collaborators).

NEES enables broad teleparticipation in experimentation at each NEES equipment site, for both private clients (e.g., remote collaborators involved on the project research team) and public clients (e.g., remote viewers such as K-12 faculty and students, an engineering class, and practicing engineers). The planned test dates of all experiments conducted by awards made under this solicitation must be coordinated with the NEES operations awardee and be announced on the NEES web site (<http://www.nees.org>). The experimental set-up must be configured to enable viewing by both private and public clients to the maximum extent practical. Viewing in this context means the ability to observe not only static web pages, but also includes a range of streaming images, subsets of non-mission critical sensor data, results, and background documentation. All of this should be in a format that is appropriate to the intended educational outreach (public) clients.

At all times, even when a specific test is not being conducted, a public telepresence web site will be kept operational at each NEES equipment site allowing the general public to observe the real-time events occurring in the laboratory facility (e.g., construction, experimentation, disassembly). In addition, NEES equipment sites must provide the ability to browse non-mission critical documentation, representative data, and, if practical, video replays of past experiments. The intent is to expand the community's awareness and understanding of the scientific process by allowing them into the laboratory in a safe manner, yet leaving them the opportunity to explore in a structured environment.

NEES has been designed to share both experimental facilities and the data generated from research that uses these facilities (experimental and analytical data). NSF advocates and encourages open scientific communication. NSF expects significant findings from supported research and educational activities to be promptly submitted for publication with authorship that accurately reflects the contributions of those involved. NSF expects awardees to share with other researchers, at no more than incremental cost and within a reasonable time, the data, samples, physical collections and other supporting materials created or gathered in the course of the work. NSF also encourages grantees to share software and inventions, once appropriate protection for them has been secured, and otherwise act to make the innovations they embody widely useful and usable.

### III. AWARD INFORMATION

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Anticipated support amount: \$7,000,000 expected annually for new awards, pending availability of funds and quality of proposals.

- Payload Awards
  - Up to three.
  - Support up to \$100,000 per award, for up to two years total, pending the availability of funds.
- Simulation Development Awards
  - Up to three.
  - Support up to \$100,000 per year per award, for up to two years total, pending the availability of funds.
- Core Research Awards
  - Up to eight.
  - Support ranging from \$75,000 to \$400,000 per year per award, for up to three years total, pending the availability of funds. Annual requested budgets must be commensurate with the scope of work proposed for each year.

Awardee institutions are expected to manage the award within the support provided by NSF in the original award. NSF does not intend to provide supplemental funds during the award period except for REU and RET supplements in accordance with NSF 07-569 "Research Experiences for Undergraduates (REU)" ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf07569](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07569)) and NSF 07-557 "Research Experiences for Teachers (RET) in Engineering" ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf07557](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07557)), respectively.

### IV. ELIGIBILITY INFORMATION

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#### Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

#### PI Limit:

None Specified

#### Limit on Number of Proposals per Organization:

None Specified

#### Limit on Number of Proposals per PI: 1

An individual may be included as a Principal Investigator (PI) or co-Principal (co-PI) in only one proposal in any annual competition and may be included as Senior Personnel in a second proposal in any annual competition. An individual who is not included as a PI or co-PI in any proposal submitted to an annual competition may be included as other Senior Personnel in up to two proposals in any annual competition. An individual, who is not a PI or co-PI in the proposal, whose biographical sketch is provided and/or requests any financial support, will be considered Senior Personnel in the proposal. If an individual appears in more than two proposals submitted to this solicitation in any annual competition, then all proposals in which that individual is participating in that annual competition will be **returned without review**. There is no limit to the number of proposals that an organization may submit in any annual competition.

#### Additional Eligibility Info:

Proposals involving more than one organization must be submitted as a single administrative package from the lead organization; collaborative proposals with multiple administrative packages will not be accepted.

**Required Project Team for Core Research Proposals:** Core Research proposals must include financial support for both faculty and students involved in the research activities from a predominantly undergraduate institution, Historically Black College or University, Hispanic-serving institution, Tribal College or University, Alaska Native-serving institution, or Native Hawaiian-serving institution. Eligible "predominantly undergraduate institutions" are U.S. two-year, four-year, masters-level, and small doctoral colleges and universities who (1) grant baccalaureate degrees in NSF-supported fields, or provide programs of instruction for students pursuing such degrees with institutional transfers (e.g., two-year schools); (2) have undergraduate enrollment exceeding graduate enrollment; and (3) award no more than an average of 10 Ph.D. and/or D.Sc. degrees per year in all disciplines that NSF supports, averaged over 2 to 5 years preceding proposal submission to this solicitation. Eligible "Historically Black Colleges and Universities (HBCUs)" must meet the definition located at 20 U.S.C. 1061(2). The Department of Education maintains a list of HBCUs at <http://www.ed.gov/about/inits/list/whhbcu/edlite-list.html>. Eligible "Hispanic-serving institutions" must meet the definition located at 20 U.S.C. 1101a(5). Eligible "Tribal Colleges and Universities" (tribal colleges) are defined by Executive Order 13270 as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled

Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), and Dine' College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). A list of Tribal Colleges and Universities is available at <http://www.ed.gov/about/inits/list/whtc/edlite-tclist.html>. Eligible "Alaska Native-serving institutions" and eligible "Native Hawaiian-serving institutions" must meet the definitions located at 20 U.S.C. 1059d(b)(2) and 20 U.S.C. 1059d(b)(4), respectively.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (<http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf>). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

All proposals (Core Research, Simulation Development, and Payload) are limited to the standard 15-page limit for the project description. Proposals must have the entire project description submitted in a single file upload. The project scope, budget, and schedule should incorporate all activities required to conduct the entire project. During proposal preparation, proposers should consult personnel at the NEES equipment site(s) intended to be used for information about shared use protocols, experimental planning, scheduling, budget, and user fees.

Proposals that include software development must include preliminary user requirements, a brief summary of the software development process, the plan for maintenance beyond the NSF award period, the process for how users will access the software beyond the award period, and the expected annual user base. All software developed by awards made under this solicitation must be open source.

Proposals must include the items listed below, as well as those specified in the GPG. Proposals missing one or more of these items will be **returned without review**.

- **Proposal titles must begin** with one of the following phrases: Core Research proposal titles must begin with the phrase "NEESR-CR," Simulation Development proposal titles must begin with the phrase "NEESR-SD," and Payload proposal titles must begin with the phrase "NEESR Payload."
- Proposals must include the following items in the project description, in the order shown below, starting with page one. **Use the headings shown in bold-face type below:**
  - **Project Team Table.** Provide a table listing information about each project team member in the project description, i.e., **every individual** participating in the conduct of the proposal named within any of the 15 pages in the project description must be included in this table, regardless of the role in the project and whether or not that role is financially supported. Include for each project team member the following: name, title, affiliation, expertise, and a brief description of team member's role and full-time equivalent effort during each year of the project. This table will also be used by NSF to check for conflicts of interest in assembling the reviewer community. Note: Proposals must not include the names of external advisory board/group/committee members. Proposals that include the names of external advisory board/group/committee members will be **returned without review**.
  - **Experimental Facilities Table.** Provide a table listing the NEES equipment site(s) and any other experimental facilities to be used in the project, including the planned schedule and duration of use of each NEES equipment site and any other experimental facilities.
  - **Functional Budget Table.** Provide a table that itemizes the requested annual and cumulative budgets for each participating organization into the following categories:
    - Research activities budget.
      - Experimental activities budget. Provide a separate breakdown for each NEES equipment site and any other experimental facility used (e.g., Japanese E-Defense facility or other academic experimental facility). Include costs such as user fees; specimen materials, construction, and instrumentation; laboratory technician time charged to the project; and project team member salary, student support, housing and per diem costs, and travel support during the testing period at the facility.
      - Total budget for specimen removal or disposal.
      - Non-experimental activities budget.
    - Education and outreach activities budget.
    - Data archiving and sharing budget.
    - Management budget (optional, as applicable).
  - **Summary of Proposal Preparation Discussions with NEES Equipment Site Personnel.**
  - **Vision.** A vision for new knowledge or innovation in earthquake hazard mitigation or experimental simulation. If applicable, explain the potentially transformative aspects of the proposed research.

- o **Literature Review.**
- o **Research Program Justification, Plan, and Expected Outcomes.**
- o **Education, Outreach, and Technology Transfer Activities.** Proposers are strongly encouraged to focus on only one or two major activities stemming from the proposed research and to identify learning outcomes for the participants intended to be impacted, if applicable.
- o **Data Archiving and Sharing Plan.** For dissemination and transfer of findings to the earthquake engineering community, include a data archiving and sharing plan to use the NEES central data repository operated by the NEES operations awardee.
- o **Payload Opportunities** (for Core Research and Simulation Development Proposals only, applicable only if the test specimen(s) may accommodate a payload).
- o **Project Implementation Plan**, to include the following:
  - Project schedule (alternatively, the project schedule may be included in the Special Information and Supplementary Documentation section);
  - Organizational chart, if there are four or more individuals funded on the project; and
  - Project web site that provides information about the project for other interested researchers and the general public.
- o **Project Risk Mitigation Plan**, not to exceed five pages, which addresses the following items, as applicable for the NEES equipment to be used (alternatively, the Project Risk Mitigation Plan may be included in the Special Information and Supplementary Documentation section):
  - Protection of NEES equipment during test structure construction.
  - Stability of test structure construction during erection.
  - Safety of NEES equipment and personnel during test structure erection.
  - Protection of NEES equipment and adjacent structures during testing.
  - Safety during removal of test structure from NEES equipment.
  - Protection of mobile NEES equipment during transport to and from experimental field site.
  - Acquisition of required permissions and permits for use of mobile NEES equipment at experimental field site.
  - Additional considerations not addressed above, as applicable.
- o **Results from Prior NSF Support**, if applicable. In addition to describing the results from prior NSF support as part of the 15-page project description, for all project personnel who have been funded through awards made under prior NSF NEES research program solicitations (i.e., NSF 03-589, NSF 05-527, NSF 06-504, NSF 07-506, and NSF 08-519), also include in the Special Information and Supplementary Documentation section a table showing the status of experimental data produced, curated, archived, and publicly available in the NEES central data repository for these awards.
- o **Additional Topics Pertinent to the Proposal**, as applicable.

### Special Information and Supplementary Documentation

Proposals may include in the Special Information and Supplementary Documentation section only the information listed below. Proposals that include letters of support, endorsement, or participation from individuals or organizations not listed in the Project Team Table in the project description will be **returned without review**.

- Project Schedule.
- Project Risk Mitigation Plan.
- For all project personnel who have been funded through awards made under prior NSF NEES research program solicitations (i.e., [NSF 03-589](#), [NSF 05-527](#), [NSF 06-504](#), [NSF 07-506](#), and [NSF 08-519](#)), a table showing the status of experimental data produced, curated, archived, and publicly available in the NEES central data repository for these awards.
- For NEES/E-Defense collaborations: (1) One letter of endorsement from the counterpart Japanese collaborator verifying interest in collaboration and proposed or funded sources of research support, and (2) one letter of support from the Director of E-Defense verifying the availability, costs, and accommodation of that facility for coordinated research.
- A letter from the participating academic institution, which may be the lead or partner institution, signed by an Authorized Organizational Representative, certifying that the institution meets the eligibility criterion for the "Required Core Research Project Team," as one of the following institutions: a predominantly undergraduate institution, Historically Black College or University, Hispanic-serving institution, Tribal College or University, Alaskan Native-serving institution, or Native Hawaiian-serving institution.
- For Payload proposals, a letter from the PI of the NEESR award whose experimental test set-up will be used, acknowledging feasibility and accommodation of the payload project. The letter should include the NSF award number of the NEESR project that will be used.
- Formal vendor quote(s), if needed, for specific equipment, specimen, or services beyond those available at the equipment sites. Note: A formal vendor quote states a specific price for equipment or specimen to be provided or for services to be rendered.
- Letters of commitment documenting collaborative arrangements of significance to the proposal from individuals or organizations who are explicitly listed in the Project Team Table in the project description.

## B. Budgetary Information

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**Cost Sharing:** Cost sharing is not required under this solicitation.

**Budget Preparation Instructions:** Proposals must include a budget for the Principal Investigator to attend an annual NEES research and education awardees meeting and the CMMI Division's grantees meeting held approximately every 18 months.

## C. Due Dates

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- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

March 27, 2009

Fourth Friday in March, Annually Thereafter

## D. FastLane/Grants.gov Requirements

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- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](mailto:fastlane@nsf.gov). The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

**Submission of Electronically Signed Cover Sheets.** The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: <http://www.grants.gov/CustomerSupport>. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

### A. NSF Merit Review Criteria

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All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

**What is the intellectual merit of the proposed activity?**

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

**What are the broader impacts of the proposed activity?**

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broadierimpacts.pdf>.

NSF staff also will give careful consideration to the following in making funding decisions:

**Integration of Research and Education**

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

**Integrating Diversity into NSF Programs, Projects, and Activities**

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

#### **Additional Review Criteria:**

#### **Additional NSF Review Process for Earth Science (EarthScope)/Earthquake Engineering (NEES) Research Proposals**

Proposals focusing on Earth Science (EarthScope)/Earthquake Engineering (NEES) research will be co-reviewed by ad hoc mail reviews or panels or both formed to review proposals under NSF NEESR and EarthScope solicitations.

#### **Equipment Site Policies Compliance Check (ESPCC)**

Upon completion of the NSF merit review process and prior to the NSF award being made, proposals recommended for funding must undergo supplementary review that will be coordinated by the NEES operations awardee with each NEES equipment site at which experimental work is proposed. This Equipment Site Policies Compliance Check (ESPCC) provides the NEES operations awardee and the NEES equipment sites an opportunity to assure policy compliance with respect to experimental feasibility, safety, budget, schedule, and available data services. A copy of the ESPCC form is available at <http://www.nees.org>. After NSF notification that the proposal is being recommended for an award, the prospective awardee must submit to the NEES operations awardee those sections of the proposal required by the NEES operations awardee and the equipment sites to evaluate policy compliance. The required information will include experimental plans (e.g., proposed schedule, specimen preparation details, equipment loads and sequence, instrumentation and data acquisition needs) and the experimental portion of the budget. To satisfy the ESPCC requirement, the NEES operations awardee and the NEES equipment sites may require more detailed information than provided in the proposal. The information provided will be shared with the NEES operations awardee and NEES equipment site staff. The NEES equipment sites may work directly with the prospective awardee in the process of completing the ESPCC. The NEES operations awardee will provide the prospective awardee with the outcome of the ESPCC, which the prospective awardee must in turn share with NSF prior to award recommendation. Using the ESPCC outcomes, NSF will work with the prospective awardee to determine an effective start date for the award that may be later than the start date originally proposed and may require revised budgets. NSF expects the NEES operations awardee and the NEES equipment sites to maintain confidentiality of the proposals during the ESPCC process.

## **B. Review and Selection Process**

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Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

## **VII. AWARD ADMINISTRATION INFORMATION**

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### **A. Notification of the Award**

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Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

### **B. Award Conditions**

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An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); \* or Research Terms and Conditions \* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF

Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

\*These documents may be accessed electronically on NSF's Website at [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide (AAG)* Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

#### **Special Award Conditions:**

#### **Principal Investigator, co-Principal Investigator(s), and Other Senior Personnel Support**

Awards made under this solicitation may support Principal Investigators, co-Principal Investigator(s), and other Senior Personnel each up to a maximum of two months of annual support total on all NSF awards during the award period.

#### **Project Data**

All experimental data generated by a NEESR award must be submitted electronically to the NEES central data repository in accordance with the data archiving and sharing policies and guidelines established by the NEES operations awardee with the user community available at <http://www.nees.org>. Data in this context refers to all measurements, calibrations, observations, analyses, images, commentary, reports, logs, notes, and electronic notebook entries that relate directly to the proposed experiments. Any data (as described above), which are recorded in hardcopy of any form, must be transcribed or converted, without loss of information, into an appropriate searchable format onto electronic media. In addition, this information must be properly characterized with appropriate metadata descriptors and then subsequently stored into one of the NEES accepted digital formats to facilitate archiving.

#### **Principal Investigator Meetings**

Principal Investigators are required to attend an annual NEES research and education awardees meeting; this meeting will be open to the public, and to participate in the CMMI Division's awardees meeting held approximately every 18 months.

#### **Research Participation Agreement (RPA) to Access NEES Equipment Sites**

Awardees will be required to enter into a Research Participation Agreement (RPA) with the NEES operations awardee and each of the NEES equipment site(s) to be used in their project. The RPA provides the contractual basis for awardees to access the NEES equipment sites and contains the terms and conditions for their use. RPA templates for each NEES equipment site are provided at <http://www.nees.org>. Researchers will not be allowed access to the experimental tools at NEES equipment sites until an executed RPA is on file with the NEES operations awardee. Questions regarding RPAs should be directed to the NEES operations awardee.

## **C. Reporting Requirements**

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For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete.

#### **Final Project Report**

The final project report must include documentation that all project data appropriate for archiving has been fully documented, curated, and publicly published in the NEES data repository.

## **VIII. AGENCY CONTACTS**

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General inquiries regarding this program should be made to:

- Joy Pauschke, Program Director, George E. Brown, Jr. Network for Earthquake Engineering Simulation, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-7024, fax: (703) 292-9053, email: [jpauschk@nsf.gov](mailto:jpauschk@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

#### **Cognizant Program Officer(s):**

Richard J. Fragaszy, Program Director, Geotechnical Engineering Program, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-7011, fax: (703) 292-9053, email: [rfragasz@nsf.gov](mailto:rfragasz@nsf.gov)

Joy M. Pauschke, Program Director, George E. Brown, Jr. Network for Earthquake Engineering Simulation, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-7024, fax: (703) 292-9053, email: [jpauschk@nsf.gov](mailto:jpauschk@nsf.gov)

M. P. Singh, Program Director, Hazard Mitigation and Structural Systems Program, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-8071, fax: (703) 292-9053, email: [mpsingh@nsf.gov](mailto:mpsingh@nsf.gov)

Dennis Wenger, Program Director, Infrastructure Management and Extreme Events Program, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation, 545 S, telephone: (703) 292-8606, fax (703) 292-9053, email: [dwenger@nsf.gov](mailto:dwenger@nsf.gov)

## IX. OTHER INFORMATION

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The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, MyNSF (formerly the Custom News Service) is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at <http://www.nsf.gov/mynsf/>.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

*Facilitation Awards for Scientists and Engineers with Disabilities* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
  - Send an e-mail to: [pubs@nsf.gov](mailto:pubs@nsf.gov)
  - or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records, " 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton  
Reports Clearance Officer  
Division of Administrative Services  
National Science Foundation  
Arlington, VA 22230

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