National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
www.nsf.gov

DRAFT COOPERATIVE AGREEMENT (CA) July 31, 2008

AWARD: _____

EFFECTIVE DATE: October 1, 2009

EXPIRATION DATE: September 30, 2014

PROJECTED TOTAL AWARD FUNDING:
(Subject to availability of funds)

$_____

CUMULATIVE AMOUNT:

$_____

SOLICITATION:
NSF 08-574: George E. Brown, Jr. Network for Earthquake Engineering Simulation Operations (NEES Ops) FY 2010-FY 2014

CFDA NUMBER(S):

OTHER AWARDS UNDER THIS PROGRAM:

AWARDEE: **To Be Determined**

PROJECT TITLE: NEES Operations: FY 2010 – FY 2014

Principal Investigator(s) Proposal No.
Institution (s)

Other Key Personnel:

A. Key Personnel. The individuals specified below are considered essential to the work being performed hereunder. Prior written approval of the cognizant NSF Program Officer and the NSF Grants and Agreements Officer is required for any changes in key personnel.

B. Other Proposed Personnel: The cognizant NSF Program Officer shall be notified in advance of any changes to the proposed upper level management structure, overall management structure, equipment site Principal Investigators and Site Operations Managers, and all key personnel.

   Except for the Principal Investigator(s) (PIs) or Co-PIs identified in this award, requests to make any changes to personnel, organizations, and/or partnerships specifically named in the proposal, that have been approved as part of this award, shall be submitted in writing to the cognizant NSF Program Official for approval prior to any changes taking effect. Requests for prior approval of changes to the PI(s) must be submitted through FastLane for review by the cognizant NSF Program Official and approval by an NSF DACS Officer.

NSF Contact Information:

Financial/Administrative questions: e-mail the cognizant NSF Grants and Agreements Officer, Nakita Harris, at nyharris@nsf.gov or call 703-292-2182.

Programmatic questions: e-mail the cognizant NSF Program Officer, Joy Pauschke, at jpauschk@nsf.gov or phone 703-292-7024.

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-

1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Technical/Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Contracting/Agreements Officer or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

This Cooperative Agreement incorporates the following general terms and conditions:

1. Cooperative Agreement Financial & Administrative Terms and Conditions (CAFATC)

   http://www.nsf.gov/publications/pub_summ.jsp?ods_key=cafatc60107

Award-Specific FATC:

1. Cooperative Agreement Supplemental Financial/Administrative Terms and Conditions-Large Facilities:
   http://www.nsf.gov/pubs/policydocs/cafalf607.pdf

2. Order of Precedence

3. Funding and Funding Schedule

   The activities supported under this cooperative agreement will be for a period of 60 months, contingent on the availability of funding for an amount not to exceed $_____.

FY – 2010	$
FY – 2011	$
FY – 2012	$
FY – 2013	$
FY – 2014	$

4. Sub-award Requirements

   A. Except as otherwise provided in this agreement, the term subaward inc ludes contracts, cooperative agreements, and purchase orders issued by the Awardee under this agreement.

B. The Foundation authorizes the Awardee to enter into the proposed contractual arrangements and to fund such arrangements with award funds up to the amount indicated in the Awardee's approved budget. Such contractual arrangements shall contain appropriate provisions consistent with the applicable Cooperative Agreement Financial and Administrative Terms and Conditions (CA FATC) and any special conditions included in this Agreement.

C. The Awardee shall obtain the written approval of the Grants and Agreements Officer prior to placing any new subaward that was not included in the approved budget for all services and equipment exceeding $250,000 in direct costs. The Awardee shall not artificially segregate its procurements to lesser dollar amounts for the purpose of circumventing this requirement.

D. Request for Subaward Approval

1. The Awardee will submit electronically to NSF a request for prior approval at least 30 days in advance of the anticipated start date of the subaward, unless otherwise determined by the cognizant NSF Contracting/Agreements Officer. All requests shall be submitted electronically via the FastLane notifications and request module for review by the Program Officer and the Contracting/Agreements Officer. The documentation shall include the proposed subaward document and a memorandum of negotiation which sets forth the principal elements of the purpose, selection procedures and price negotiation, including items i through iv as appropriate, below:

i. A description of the supplies or services required.
ii. Identification of the type of subaward to be issued.
iii. Identification of the proposed subawardee, an explanation of why and how the proposed subawardee was selected, and the degree of competition obtained.
iv. The proposed subaward price, together with the Awardee's cost or price analysis thereof.

2. The memorandum of negotiation shall be in sufficient detail to reflect the most significant considerations controlling the establishment of initial or revised prices. The memorandum should include the basis of award, and cost or price analysis in accordance with 2 CFR 215.45 (OMB Circular A-110). The memorandum shall include a determination of price reasonableness, whether based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, prices set by law or regulation, and/or some other method. Where the total price negotiated differs significantly from the Awardee's total price objective, the memorandum shall explain this difference.

3. Where the award will be made without competition, the memorandum shall include a detailed justification.

4. Upon satisfactory review, the NSF Grants and Agreements Officer will provide written approval to the Awardee. Approval of the Grants and Agreements Officer shall not be construed to constitute a determination of the allowability of any cost under this agreement, unless such approval specifically provides that it constitutes a determination of the allowability of such cost.

E. Awardee shall make all consultant agreements, subawards, or other commitments in its own name and shall not bind or purport to bind the Government or NSF; agrees to administer/monitor all subawards/subcontracts it enters into and supports with NSF funds in accordance with the applicable federal cost principles and the applicable federal administrative requirements; remains responsible for maintaining the necessary documentation on all subawards and making it available to NSF upon request; and shall include subaward activities in the annual and final progress and final project reports that are submitted to NSF.

F. All contractual arrangements shall contain appropriate provisions consistent with the applicable special conditions included in this agreement.

G. The awardee shall insert a clause in all subawards reserving the right to assign the subaward to a awardee selected by NSF.

H. Awardee shall give the Grants and Agreements Officer immediate notice in writing of any action or suit filed, and prompt notice of any claim made against the Awardee by any subawardee or vendor which in the opinion of the Awardee may result in litigation, related in any way to this agreement, with respect to which the Awardee may be entitled to reimbursement from the Government.

5. Equipment

A. For all equipment exceeding $5,000 to which the government holds title, and in accordance with the requirements of 2 CFR 215, (OMB-Circular A-110) the Awardee must submit annual inventory listings of government owned property to the NSF Property Administrator, Division of Administrative Services (DAS). The listing should include all government-owned equipment purchased under this agreement or acquired by screening excess through the General Services Administration (GSA); include the type of equipment, serial number, acquisition price, acquisition date and condition of the equipment. The inventory listings and audited financial statements should be submitted electronically to fsrpts@nsf.gov and must be received by DAS no later than September 1st each year. If financial statements are not available electronically, please submit a paper copy to: DAS, NSF Property Administration, 4201 Wilson Boulevard, Room 295, Arlington, VA 22230.

B. Reimbursement of indirect costs will be in accordance with the negotiated rate effective for the year in which the costs are incurred.

C. Title to all equipment in excess of $5,000 purchased and/or fabricated with Government funds under this Agreement shall pass directly to the Government from the vendor.

D. The awardee may purchase and charge to this Agreement general purpose equipment budgeted for in the approved Annual Program Plan and Budget as justified to be used exclusively in carrying out the mission of the Agreement.

E. Accountability of all equipment purchased with Government funds under NSF Cooperative Agreement No. 0402490 is hereby transferred to this Agreement. An equipment inventory schedule is to be submitted to the Cognizant NSF Program Official by December 31, annually to be made a part of this Agreement by amendment.

Programmatic Terms and Conditions for Collaborative Research:

General PTC:

N/A

Award Specific PTC:

1. Program Project Description

NEES is a NSF-supported shared resource of experimental facilities and cyberinfrastructure for research and education to advance knowledge discovery and innovation to reduce losses from earthquakes. The NEES experimental infrastructure comprises a network of 15 earthquake engineering equipment sites, located at universities across the United States, available for testing on-site, in the field, or through telepresence. The NEES equipment sites include shake tables, geotechnical centrifuges, a tsunami wave basin, unique large-scale testing laboratories, and mobile and permanently installed field equipment. The NEES cyberinfrastructure connects the equipment sites, via Internet2, and provides data curation and a curated central data repository; telepresence; simulation, computational, data visualization, and collaborative tools; hybrid (coupled computational and physical) simulation and multi-site hybrid simulation capabilities; user support services; middleware; and a cybersecurity framework.

The awardee is expected to meet the highest standards for service and delivery of research infrastructure to the external user community and to demonstrate a proactive, cost-effective, and efficient approach to performance management. The awardee will work with the equipment sites to advance the experimental capabilities of these facilities that can lead to new research frontiers for NEES. NEES cyberinfrastructure has the potential to transform NEES into a global virtual organization for earthquake research and education. The awardee will leverage the NEES infrastructure to

broaden participation in NEES, advance the understanding of earthquake loss reduction by educators and students at all levels and the public, and build strategic national and international partnerships to bring additional capabilities and users to NEES.

2. Awardee Responsibilities for Project Management

The awardee is responsible for network-wide leadership and management of NEES operations. To meet the responsibilities associated with NEES operations outlined below, the awardee will provide an oversight governing body; a management headquarters; subawards and oversight to the NEES equipment sites; cyberinfrastructure operations; and education, outreach, and training activities.

Specifically, the awardee is responsible for providing the following for NEES operations:

a. A Network-wide Governing Body, that (a) provides oversight to the management headquarters on key directions, strategies, priorities, policies, and partnerships; (b) provides annual assessments of the project's progress and plans; (c) ensures that the awardee operates with transparency and accountability to NSF and stakeholders; (d) has membership that avoids conflicts of interest, real or perceived, with the awardee and its partner organizations and consultants supported by the cooperative agreement; and (e) has defined roles, responsibilities, and lines of authority between the management headquarters and the governing body.

b. A Network-wide Headquarters (facility and staff) that provide the day-to-day leadership and management for NEES operations. The headquarters must provide office and meeting space, office equipment, Internet and Internet2 connectivities, and videoconferencing capabilities. Headquarters staff will work collaboratively with the equipment sites and other partners to foster cohesiveness, integration of new ideas, and efficiency of effort, and to prioritize activities and budgets to meet internal user requirements (e.g., cyberinfrastructure needs of the equipment sites) as well as external user requirements (e.g., support for researchers using the equipment sites and telepresence). The specific duties of the headquarters are the following:
   - Provide Qualified Headquarters Staffing: The headquarters must have the capability to administer an award of this scope, complexity, budget, and number of subawards. The headquarters will serve as the U.S. focal point for all NEES activities. The headquarters may be a stand alone non-profit organization or may be led from a unit within the awardee's organization. Regardless of its position within the awardee's organization, the headquarters must have its own organizational structure, with staff roles, responsibilities, lines of authority, and accountability clearly defined, and must be led by the Principal Investigator (PI). The PI must be a full-time employee of the lead organization. The PI is responsible for leading and managing the

- Promote an Active User Base for NEES, through (a) stakeholder participation that recognizes both external (broader earthquake engineering, computer and information science and engineering, and related communities and practitioners) and internal (equipment sites) groups to ensure that NEES resources, services, products, and activities best reflect their evolving needs and priorities; (b) strategic partnerships with other U.S. and international organizations that bring complementary capabilities and users to NEES; and (c) interactions with earthquake hazard reduction programs at the federal, state, and local government levels and national laboratories;
- Provide Network-wide Leadership to develop a vision, mission, goals, and strategic plan for all aspects of NEES operations, informed by stakeholders and updated annually as needed; and
- Provide Network-wide Management to implement the strategic plan, to include:
  - A Work Breakdown Structure (WBS) and Dictionary that define and organize all NEES operations resources, services, products, and activities and are used annually to allocate resources (budget and personnel);
  - Development, Review, and Approval Process for Annual Work Plans and Budgets, for headquarters and all subawards, based on past performance, goals and priorities, WBS, risk management, resource usage, and availability of NSF support;
  - Published Operating Procedures for all aspects of operations;
  - Financial Management and Audit Control, to ensure appropriate support of NEES' mission and goals, including procurement and subaward management;
  - A Network-wide Performance Management System and Performance Metrics, for all aspects of NEES operations, implemented by the awardee, all subawardees, and consultants. The performance management system should include performance metrics and annual performance assessments

for all aspects of NEES operations. This would include, but not be limited to, annual self and external assessments; external user satisfaction surveys; equipment site and cyberinfrastructure performance and usage assessment; assessment of the quality of products and services; education and outreach assessments; budget expenditures tracked against planned budgets; user base and demographics data; and documentation of discoveries, innovations, and publications enabled by the use of NEES;

- Network-wide Equipment Site Operations and Subaward Management, as described in item (3) below;
- Network-wide Cyberinfrastructure Operations, as described in item (4) below;
- Network-wide Education, Outreach and Training, as described in item (5) below;
- National Science Foundation Reporting and Reviews
- Inventory (database) of all infrastructure operated (facilities, software, and databases);
- Formal Document Management System, for document version control for all project documents such as strategic plan, policies and operating procedures, WBS and dictionary, annual work plans, inventories and databases, network-wide maintenance plan, and user manuals;
- Risk Management System, for all aspects of operations; and
- User Services, to assist researchers and educators to discover and use NEES resources during proposal preparation, pre-award review process for project feasibility, post-award access to equipment sites and planning, experimentation, and post-experiment phases, including information on how to start and conduct a project using NEES resources.

c. Network-wide Equipment Site Operations and Subaward Management, to include:

Through subawards, the awardee will provide for research support, maintenance, calibration, management, information technology, training workshops, safety, and educational and outreach activities. The level of shared use at each equipment site may vary annually, based on the level of research supported by NSF and other funding sources to utilize each equipment site in any given year. Therefore, a flexible approach to equipment site operations is needed to provide baseline preventive maintenance, calibration, repair, and replacement or upgrade of minor equipment for each equipment site, while at the same time balancing annual fluctuations in site usage. The awardee is responsible for the following activities:

- Develop Annual Goals, Priorities, Work Plans, and Resource Allocations for network-wide and individual equipment site operations. Work plan development should take a multi-tier approach to accommodate baseline readiness support at each equipment site early in the federal fiscal year (that starts on October 1) and follow-on site support to assist its users after annual NEES research awards have been made by NSF;
- Facilitate Linkages and Cooperation among the individual equipment sites so that they operate as a cohesive national network, collectively advance

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experimental capabilities, take advantage of economies of scale, and avoid duplication;

- Maintain Published Policies and Procedures for equipment site operations and shared facility usage, including a Network-wide Annual Capital Replacement Budget and Policy;
- Implement Network-wide Solutions for maintenance, calibration, repair, software, hybrid simulation, technology replacement and upgrades, and new sensor technologies that lead to efficiencies and cost-effectiveness, including a Network-wide Prioritized Long Range Maintenance Plan, updated annually;
- Track Expenditures by each equipment site, including annualized equipment maintenance and capital replacement budgets;
- Coordinate Scheduling of research and education activities at the equipment sites, including prioritization and rescheduling due to delays or equipment damage;
- Promote a Network-wide Safety Culture;
- Implement a Network-wide Cybersecurity Plan with the equipment sites; and
- Provide Oversight, through headquarter site visit protocols and visits to each equipment site on a regular basis to ensure that equipment sites provide the resources, products, services, activities, and compliance with the items listed in Section II.B, "Description of NEES," in the NEES Ops solicitation, NSF 08-574. As part of these site visits, the awardee will review the physical security policies of the equipment site institution.

d.' Network-wide Cyberinfrastructure Operations, to include:

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' The NEES cyberinfrastructure must support documented user requirements, be of production quality software and documentation, reflect best practices, maximize the use of commercial off the shelf (COTS) and open source software, leverage investments made by NSF and others in campus and/or national computing resources and cyberinfrastructure tools, and utilize the current NEES cyberinfrastructure where feasible. Cyberinfrastructure partners may include academic institutions; non-profit, non-academic organizations; and for profit organizations. For cyberinfrastructure operations, the awardee must provide the following:

- A Baseline Definition of NEES Cyberinfrastructure, updated annually;
- A System Architecture that is cost-effective, efficient, reflects best practices, integrates NEES into an efficient and cohesive system for end users, and provides end-to-end workflow solutions;
- Documented User Requirements, Process for Prioritizing User Requirements, and a Requirements Traceability Matrix, including a plan to engage the equipment sites, user community, and other stakeholders to ensure that the cyberinfrastructure addresses user needs and requirements on an ongoing basis;
- Policies and Procedures for software development, deployment, testing, operations, maintenance, quality assurance, usability, and use;

- Production Quality Cyberinfrastructure, i.e., resources, products, tools, services, software, and documentation that are responsive to user requirements, to include, but not limited to: (1) a state of the art, publicly accessible, searchable, and secured curated repository for research data, as well as metadata, data archiving and sharing policies, data curation, and protocols for accessing, searching, and retrieving data from the repository and assistance to researchers in using the repository; (2) telepresence; (3) data visualization tools; (4) tools for hybrid and multi-site hybrid simulation; (5) simulation and computational tools appropriate for earthquake engineering research and education; (6) web-based collaborative tools for all stages of implementing a project using NEES; (7) facilitated access to and use of campus and/or national computing resources, where appropriate; (8) user support services; (9) software and documentation version control; (10) policies and procedures for cyberinfrastructure operations; and (11) middleware;
- Network-wide Cybersecurity Plan and Implementation; and
- Qualified Cyberinfrastructure Partners, with demonstrated expertise to develop, deploy and operate cyberinfrastructure, to include use of equipment site personnel to contribute to the development of network-wide cyberinfrastructure.

e. Network-wide Education, Outreach, and Training, to include:

- Providing Core Activities that leverage the NEES equipment sites and cyberinfrastructure, and other NSF-supported and earthquake-related activities;
- Qualified Education and Outreach Partners, with expertise and national accomplishments in formal (K-12, college, and university) and informal science and engineering education;
- Developing a Broadly Inclusive Science and Engineering Workforce in all project staffing and activities;
- Partnering with non-traditional institutions and non-profit organizations, such as Historically Black Colleges and Universities, Hispanic-Serving Institutions, Indian Tribally Controlled Colleges and Universities, Alaska Native-Serving Institutions, Native-Hawaiian Serving Institutions, and museums;
- Coordinating and Publicizing Equipment Site and Cyberinfrastructure Training Workshops;
- Organizing and Conducting the Annual National NEES Meeting, which brings together NEES operations personnel, users, potential users, and other stakeholders; and
- Maintaining an Informational and Dissemination Infrastructure, to include:
- Publications about significant discoveries, innovations, and technologies that have been enabled by research utilizing NEES resources, both in printed and web-based formats;
- Informational Publications about NEES operations, both in printed and web-based formats; and

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- Interactive Web Site for operations that serves as the definitive source of dissemination of information for all activities, is frequently updated, provides a community calendar, and is linked to the individual equipment site web sites.

f. Equipment site subawardee requirements, to include:

Equipment site operations are supported through subawards to the universities as part of the NSF cooperative agreement with the incumbent awardee. As part of NEES operations, each university hosting an equipment site has the following responsibilities for equipment site operations:

- Develop a productive working partnership with the NEES operations awardee and its partner organizations for all aspects of operations;
- Operate as a shared-use facility, available for experimentation on-site or in the field and through telepresence, for researchers from other organizations. This includes providing equipment, instrumentation, and sensors; data acquisition; local data storage; technician support; information technology; space for specimen construction and demolition; and office space for visiting faculty and students;
- Maintain a functioning high performance Internet2 connection;
- Work with the NEES operations awardee to develop annual equipment site goals, work plan, priorities, and budget, in accordance with a work breakdown structure (WBS) and dictionary;
- Hire and supervise the university's equipment site personnel. Staffing at each equipment site typically includes a site Principal Investigator, a full-time site operations manager, a full-time information technology administrator, technician(s), and other technical staff;
- Assign appropriate proportion of the costs for preventive maintenance; calibration; repairs; and equipment, instrumentation, and sensor replacement and upgrades to the NSF-supported NEES operations award and to the university;
- Maintain all equipment, instrumentation, sensors, software, data acquisition, computers, and documentation developed or acquired during the MREFC phase or under the current NEES operations cooperative agreement, including routine calibrations;
- Ensure the physical security of all equipment hardware;
- Maintain an annualized equipment maintenance budget for upgrade or replacement of minor equipment, instrumentation, computers, and sensors;
- Maintain a local web site that has current information for users;
- Maintain an inventory of equipment, instrumentation, sensors, personnel, documentation, contact information, and other information for users in a network-wide equipment site database;
- Participate in education and outreach activities coordinated by the NEES operations awardee;

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- Coordinate the scheduling of shared-use research and education projects with the NEES operations awardee;
- Provide periodic equipment site training workshops;
- Support users during all phases of experimentation, which may including planning, instrumentation set-up, testing protocols, testing, local data archiving, and centrally archiving experimental data (users are responsible for curation and permanent data archival in the NEES data repository);
- Assign appropriate user fee structures for academic, industry, government, international, and other researchers for costs not covered by the subaward;
- Comply with all university, government, and/or awardee required environmental, safety, and health standards, regulations, and monitoring requirements, including maintaining safety equipment and web-posted safety plans that equipment site staff and users must follow. Users of the NEES mobile field equipment are responsible for obtaining permits required by the field site and for ensuring that their project complies with all environmental regulations at that test location;
- Comply with all university and NEES operations awardee cybersecurity requirements; and
- Provide individual equipment site information and/or participation needed for the NEES operations awardee to meet the NSF reporting and review requirements of this cooperative agreement.

3. Awardee Reporting Requirements

The Awardee will provide ad hoc and regular reports as designated by the NSF cognizant Program Official with content, format, and submission time line established by the NSF cognizant Program Official. The Awardee will submit all required reports via FastLane using the appropriate reporting category; for any type of report not specifically mentioned in FastLane, the Awardee will use the "Interim Reporting" function to submit reports.

The Awardee will submit annual Government Performance and Results Act (GPRA) facilities reports.

As an NSF-supported large facility, the awardee is responsible for complying with the terms and conditions of the cooperative agreement, which include providing reports to NSF on time, and participating in NSF-organized merit reviews. The following reporting and review requirements will be the responsibility of the awardee:

- Annual Work Plans, for all aspects of NEES operations (headquarters, each equipment site, cyberinfrastructure, education, outreach, and training) that, with the Annual Report and annual budget formulation, serve as the request to NSF for continued annual support;
- Annual and Quarterly Reporting. Annual reports must be submitted to NSF at least six weeks before the annual site visit review but no later than July 1 of each year). Quarterly reports must be submitted to NSF within one month after the end

of the quarter. Annual and Quarterly Reports must be submitted using the NSF FastLane project reporting system. The awardee will work with NSF and its partner organizations to streamline the reporting process. Quarterly reports must include the following information: key activities and workshops during the past quarter and planned for the next quarter; changes in key personnel or their level of effort across the project; equipment site usage during the past quarter and planned for next quarter; list of active research projects at each equipment site and the status of each project (e.g., planning phase, specimen construction, testing, etc.); number of days that each equipment site was used for research projects, maintenance and calibration, workshops, and education and outreach activities; cyberinfrastructure usage; minutes from governance and advisory committee meetings; and budget expenditures for the past quarter and cumulative against the planned budget for the reporting year. The annual report shall be submitted in lieu of a fourth quarter report and will be a comprehensive summary of the information provided in the quarterly reports. The annual report must also include implementation of the awardee's Performance Management System and Performance Metrics and include an assessment of performance against previous year goals stated in the annual work plans and performance metrics; major accomplishments in advancing earthquake loss reduction, new experimental techniques and cyberinfrastructure; summary of budget expenditures for the past year and anticipated unobligated funds at the end of the reporting year; summary of the results of internal and external evaluations and corrective actions; and goals, priorities, and budget for the upcoming year;

- Facilities Reporting, providing estimates and actual information about user units data in FastLane in accordance with the NSF Facilities Reporting under the Government Performance and Results Act (GPRA);
- Notifications to NSF, as they occur, of environmental, safety, health, equipment damage/failure, and cybersecurity incidents;
- Participation in Annual Operations Merit Review Site Visits, organized by NSF, with external reviewers, to assess fulfillment of annual goals; performance; staffing; upcoming annual and longer term maintenance and operating plans; and compliance with university, government, and/or awardee environmental, health, safety, and cybersecurity requirements;
- Participation in Merit Review Site Visits of Equipment Site Operations, organized by NSF, with external reviewers, at individual equipment site universities, approximately three annually, to assess fulfillment of annual goals; performance; staffing; annual and longer term maintenance and operating plans; and compliance with university, government, and/or awardee environmental, health, safety, and cybersecurity requirements; and
- Participation in Business Systems Review, conducted by NSF staff, typically once during a five-year award period, with the review to be conducted within the first two years of the award date.

Start-up and Transition Plan Requirements

The following activities must be completed by the awardee by the deadlines below:

- By November 1, 2009, the year one operating budget proposed to NSF, including budgets for the equipment site subawards and all other subawards;
- By December 1, 2009, network-wide policies for cybersecurity and safety submitted to NSF;
- By January 1, 2010, list of all equipment site personnel submitted to NSF;
- By March 1, 2010, submission to NSF of (a) documented user requirements and requirements traceability matrix and (b) Performance Management System and Performance Metrics for the entire project for review and approval by NSF and implementation by the awardee by April 1, 2010; and
- By March 31, 2010, submission to NSF of the Risk Management System for the entire project for review and approval by NSF and implementation by the awardee by May 1, 2010.
- By March 31, 2010, documentation provided to NSF reporting the exit from start-up to full staffing and full operations, including the completion of transfer of inventory, current and previous annual work plans, data repository, software, web site content, all subaward contracts, maintenance agreements, and other documents from the incumbent awardee.

Network-wide Performance Management System and Performance Metrics

The network-wide performance management system and metrics must be implemented by the awardee, all subawardees, and consultant and include an annual assessment for all aspects of NEES operations. Performance metrics developed and implemented by the awardee must incorporate, but not be limited to, the following:

- Assessment of all aspects of NEES operations (headquarters, equipment sites, cyberinfrastructure, and education, outreach and training activities) in meeting the goals stated in the annual work plans;
- Annual usage of each equipment site's major equipment for externally funded projects;
- At least 90% of the equipment sites collectively are fully operational annually;
- Number of and demographic statistics for users of the NEES equipment sites and cyberinfrastructure;
- Number and demographics statistics of participants in awardee-sponsored education, outreach and training activities, including NEES equipment site training workshops; and
- Number of journal publications published annually describing research outcomes enabled by the use of NEES equipment sites and cyberinfrastructure

4. Awardee Support of Ongoing Management and Oversight

The Awardee will ensure full commitment to and cooperation with the NEES components, and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key institutional partners during any desk or on-site review as well as timely access to all project documentation.

The following measures will be used by NSF in providing oversight for this cooperative agreement:

- Review and approval of initial staffing of all key management personnel, including the Principal Investigator, Deputy and/or Associate Director(s), Directors(s) of Equipment Site Operations, Director(s) of Cyberinfrastructure/Information Technology Operations, Director(s) of Education, Outreach, and Training, Equipment Site Principal Investigators, and Equipment Site Operations Managers.
- Review and approval of Annual Work Plans and NSF-required Reports described in Section II.C, "Awardee Responsibilities - Core Expectations" under item (6) "National Science Foundation Reporting and Reviews."
- Review and approval of the Performance Management System and Performance Metrics, and Risk Management System.
- Review and, if required, approval of notifications to NSF about incidents related to environmental, health, and safety requirements; equipment damage/failure; and cybersecurity.
- Annual Operations Merit Review Site Visits, organized by NSF, with external reviewers, to assess fulfillment of annual goals; performance; staffing; upcoming annual and longer term maintenance and operating plans; and compliance with university, government, and/or awardee environmental, health, safety, and cybersecurity requirements.
- Merit Review Site Visits of Equipment Site Operations, organized by NSF, with external reviewers, at individual equipment site universities, approximately three annually, to assess fulfillment of annual goals; performance; staffing; upcoming annual and longer term maintenance and operating plans; and compliance with university, government, and/or awardee environmental, health, safety, and cybersecurity requirements.
- Business Systems Review, typically scheduled once during the five-year award period, with the review to be conducted within the first two years of the award date.

In addition, NSF will review and, if necessary, approve the following:

- Awardee-proposed national and international partnerships that require awardee signature on a Memorandum of Understanding or similar documents; and

- NSF approval for changes in key management positions and equipment site Principal Investigators, rebudgeting of $100,000 or greater by the awardee or a subaward, and use of unobligated carryover not intended to be applied to the next year's annual operating budget.

5. Change-over and Phase-Out

a. The Awardee recognizes that this Agreement may be terminated or that it may be replaced by a successor awardee in the performance of the kind and type of work described herein. The Awardee agrees to use its best efforts to effect an orderly and efficient transition from the Awardee to any successor awardee.
b. NSF will notify the Awardee in writing of any intent to terminate this Agreement six months in advance of the required date of termination unless a period of less than six months is specifically mandated by actions of the U.S. Congress, in which case NSF will give the Awardee as much notice as possible.
c. Further, in the event that the Awardee is replaced by a successor awardee or in the event that there is no follow-on agreement initiated by the Foundation that provides for substantially the work the Awardee is presently performing, the non-renewal shall be treated as Termination for the Convenience of the Government for purposes of reimbursing the Awardee for its costs for accrued employee benefits plus all costs otherwise allowable as of the date of expiration. However, the Foundation shall not be obligated to reimburse the Awardee for the severance pay due its employees who are given offers of substantially similar employment by a successor awardee, if such offers are made prior to the expiration of this agreement, except for the amount of such payments that would equal the salary of the employee involved during any gap in his/her employment and other accrued benefits of the employee not assumed by the successor awardee. Nor shall the Foundation be obligated to reimburse the Awardee for the severance pay due employees who remain employed by the Awardee if such employment exceeds one year after the date of expiration.

6. Awardee Responsibilities for Data

Rights in Data Necessary for the Operation and Management of NEES:

1. Not withstanding CA-FATC Clause 18 *Copyrightable Material,* or any other clause of this agreement, the awardee grants to the **Error! Reference source not found.** in perpetuity the right to use and reproduce data first produced under this award without charge or additional expense (except for whatever reasonable costs are incurred by the awardee to reproduce the data) as necessary for the operation and management of NEES. This includes the right

to make such data available to any party interested in competing for any subsequent award to operate and manage NEES, and any awardees the **Error! Reference source not found.** selects as a result of these competitions.

2. The types and kinds of data deemed necessary for the operation and management of NEES includes, but is not limited to:
    a. Preventative maintenance guides, histories and agreements
    b. Operating manuals and similar plans
    c. Annual work plans
    d. Schedules
    e. Data repository, and all supporting documentation
    f. Software and manuals
    g. Inventories
    h. Document indexes
    i. Subawards, subcontracts and vendor agreements
    j. Operations reports
    k. Work Breakdown Structure and Dictionary
    l. Memoranda with third parties
3. Rights acquired by the **Error! Reference source not found.** under this clause do not include rights in any data first produced solely for scientific research purposes.
4. Licenses to use data not first produced under this award shall provide for assignment by the awardee to any successor awardee operating and managing the NEES research infrastructure.
5. The awardee shall ensure that the requirements of this clause flow down to all subawardees, subcontractors, and vendors at all tiers.

7. NSF Responsibilities: NEES Operations beyond September 30, 2014

During 2011, NSF intends to support an independent assessment of (1) the accomplishments of NEES operations and NEES research to advance earthquake loss reduction, experimental techniques, and cyberinfrastructure; (2) the viability of NEES equipment sites (on a site by site basis) and cyberinfrastructure to continue to provide state of the art infrastructure beyond September 30, 2014; (3) needed equipment and cyberinfrastructure upgrades; environmental, safety, health, and cybersecurity issues that need to be addressed; and their associated costs to maintain NEES as a state of the art infrastructure beyond September 30, 2014; and (4) earthquake engineering experimental capabilities worldwide. Upon completion of that assessment and based on the awardee's performance, NSF will make a decision whether to upgrade NEES (equipment sites and cyberinfrastructure), renew the cooperative agreement award made under this solicitation for an additional award period, recompete NEES operations, or terminate NEES operations.

The Awardee will ensure full commitment to and cooperation with the NEES components, and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key institutional

partners during any desk or on-site review as well as timely access to all project documentation.

8. Awardee Milestones

July 2010: Annual review
July 2011: Annual review
July 2012: Annual review
July 2013: Annual review

9. Awardee Deliverables

November 1, 2009: Year one operating budget, including budgets for the equipment site subawards and all other subawards

December 1, 2009: Network-wide policies for cybersecurity and safety submitted

January 1, 2010: List of all equipment site personnel submitted to NSF;

February 1, 2010 Quarterly interim progress report due

March 1, 2010: (a) documented user requirements and requirements traceability matrix and (b) Performance Management System and Performance Metrics for the entire project for review and approval by NSF and implementation by the awardee by April 1, 2010

March 31, 2010: Risk Management System for the entire project for review and approval by NSF and implementation by the awardee by May 1, 2010.

March 31, 2010: Documentation provided to NSF reporting the exit from start-up to full staffing and full operations, including the completion of transfer of inventory, current and previous annual work plans, data repository, software, web site content, all subaward contracts and maintenance agreements

February 1, 2010: Quarterly interim progress report due

May 15, 2010: Annual report and annual work plans due for year two

August 1, 2010: Quarterly interim progress report due

October 10, 2010 (approximate date): NSF GPRA Facilities Reporting due (actuals)

November 1, 2010: Quarterly interim progress report due

February 1, 2011: Quarterly interim progress report due

May 15, 2011: Annual report and annual work plans due for year three

August 1, 2011: Quarterly interim progress report due

October 10, 2011 (approximate date): NSF GPRA Facilities Reporting due (actuals)

November 1, 2011: Quarterly interim progress report due

February 1, 2012: Quarterly interim progress report due

May 15, 2012: Annual report and annual work plans due for year four

August 1, 2012: Quarterly interim progress report due

October 10, 2012 (approximate date): NSF GPRA Facilities Reporting due (actuals)

November 1, 2012: Quarterly interim progress report due

February 1, 2013: Quarterly interim progress report due

May 15, 2013: Annual report and annual work plans due for year five

August 1, 2013: Quarterly interim progress report due

October 10, 2013 (approximate date): NSF GPRA Facilities Reporting due (actuals)

November 1, 2013: Quarterly interim progress report due

February 1, 2014: Quarterly interim progress report due

April 1, 2014: Quarterly interim progress report due

August 1, 2014: Quarterly interim progress report due

September 30, 2014 (approximate date): NSF GPRA Facilities Reporting due (actuals)

December 31, 2014: Final Project Report Due