



**George E. Brown, Jr. Network for
Earthquake Engineering Simulation (NEES)**

NEES Consortium, Inc.



NEES FACILITIES USER GUIDE

NEESinc Site Operations Committee (SOC)

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Site Operations Committee



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Preface

The *NEES Facilities User Guide (Guide)* was developed and is maintained as a joint effort of four NEES Consortium, Inc (NEESinc) Standing Committees: the Site Operations Committee (SOC), the Information Technologies Committee (ITC), the Data Sharing and Archiving Committee (DSAC) and the Education, Outreach and Training Committee (EOTC)¹.

The NEES facilities should be understood as a national resource, and the goal of NEESinc is to encourage and facilitate their use. The intent of the *Guide* is to provide NEES users with an overview of the policies and procedures governing the use of the NEES shared-use facilities. The *Guide* serves as a general introduction to the shared use of NEES facilities; while many of its procedures are described as mandatory, it is intended to be a flexible and changeable document. Specific information about the equipment, local shared-use policies, and other constraints at each NEES Equipment Site is available online in the NEES Site Specifications Database and the web pages maintained by each of the NEES Equipment Sites. Links to these sites can be found from the main NEES web page (<http://www.nees.org>).

The *Guide* is presented in six sections as follows:

- Section 1 provides introductory information and the definition of shared use.
- Sections 2 through 4 provide broad guidelines about preparing proposals and planning experiments. Proposers are urged to read these sections carefully and to develop their testing plans in accordance with these guidelines and tips. The high anticipated utilization and demand for these unique facilities will require both a sophisticated scheduling effort and the exercise of flexibility and patience on the part of users. These sections are written as guidelines rather than policies to ensure flexibility in implementation during the early development of the NEESinc.

¹ These Standing Committees have ongoing activities and responsibilities that are anticipated to be essential to the operation of NEESinc on a relatively permanent basis, as distinct from Ad Hoc Committees that can be established by the NEESinc Board of Directors to serve a temporary need or address a narrowly defined topic. The results of the latter may be incorporated into this *Guide* in the future, as the NEES Board of Directors sees fit.

- Section 5 describes the rights and responsibilities of both the users and the sites with respect to site operations, maintenance and information technology issues.
- Section 6 provides guidelines for the assessment of shared use. These guidelines provide sample assessment metrics on how shared use of the facilities will be evaluated and how the results will be utilized.

In addition to this document the SOC and ITC will develop materials that will be customized by the NEES Equipment Sites, including:

- Detailed information about the NEES equipment and software available at each NEES Equipment Site and the corresponding performance characteristics.
- Information about the availability and cost of using ancillary equipment that is available at the university that hosts the NEES Equipment Site.
- Preliminary budget spreadsheets for use by researchers in preparing proposals.
- Site-specific policies related to safety and personnel.
- Contact information and checklists for potential NEES users.

Finally, the DASC² and EOTC³ have developed policies, guidelines and strategic plans to help NEESinc and its users in the coherent and most efficient use to the NEES facilities. These documents can be found at <http://www.nees.org>

² DASC document: “Data Sharing and Archiving Policies and Guidelines”

³ EOTC document: “Education, Outreach and Training Strategic Plan for the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES):

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1. INTRODUCTION

1.1 NEESinc and Standing Committees

The NEES Consortium, Inc. (NEESinc) has been incorporated to operate and maintain a national collaboratory in earthquake engineering simulation for a ten-year operation period (2005-2014). A collaboratory has been defined as “... an organizational entity that spans distance, supports rich and recurring human interaction oriented to a common research area, and provides access to data resources, artifacts and tools required to accomplish key tasks...”⁴

The five key goals of NEESinc are:

- Foster and facilitate the shared use of the NEES facilities.
- Fund the operation and maintenance of the NEES facilities.
- Develop policies for the safe and effective use of the NEES facilities.
- Provide support and access tools to the collaboratory through its information technologies service center.
- Provide a sound business strategy and management for the collaboratory through a centralized staff.

The services provided by NEESinc are illustrated in Figure 1.

As a collaboratory, the success of NEES depends primarily on the active participation of the community. The most direct form of participation is serving as a member of one of the standing committees. The responsibilities, membership, and operating procedures for each of the standing committees can be found at <http://www.nees.org>.

To develop and maintain this *Guide*, the SOC will involve the other standing committees and form subcommittees as needed. The subcommittees dealing with the development of this *Guide* will be composed of both SOC and NEESinc members at large. Formation of such subcommittees will be announced to all NEESinc members through web postings and email, and volunteers will be sought from the membership for all such subcommittees. All the business of both NEESinc committees and subcommittees will be conducted in electronic format⁵ to insure broad access by the entire earthquake engineering research community. Agendas and minutes of all meetings will be posted on the web and emailed to subscribers promptly, and every effort will be made to keep subcommittee and committee deliberations in the public domain⁶.

⁴ For more information on collaboratories, see <http://intel.si.umich.edu/cfdocs/si/research/researchprojects.cfm>

⁵ Video will also be used whenever possible, but video simulcast of the meetings will not be required.

⁶ Exceptions to the “open meeting” approach may be made at the discretion of the chair when she/he deems that confidential issues are being discussed. Minutes need not reflect the details of these discussions or the voting associated with them, but will reflect the final decisions of the committee.

Services Provided by the NEES Consortium

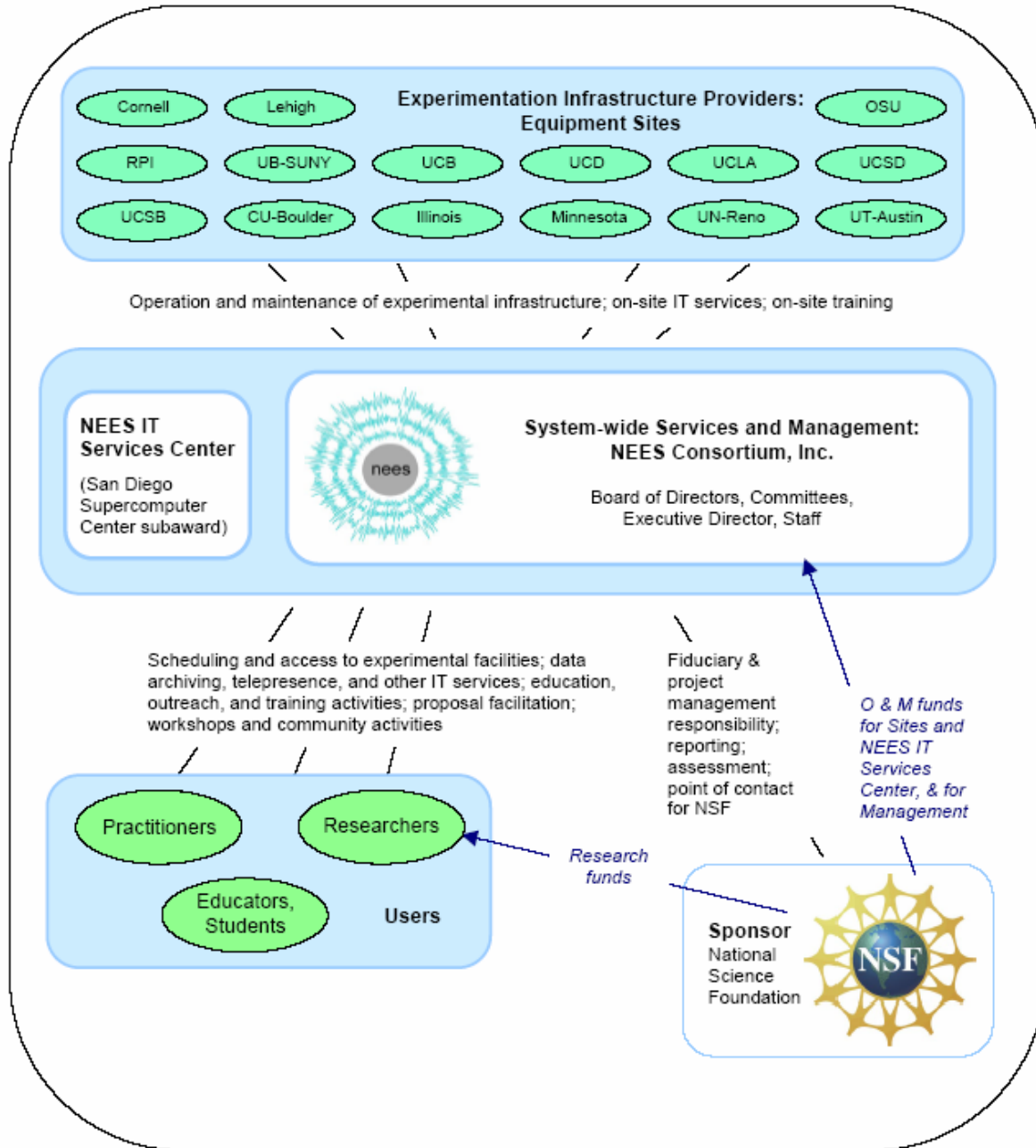


Figure 1. NEESinc Organization and Services (NEESinc Operations: FY 2005 – FY 2014 Proposal)

The primary division of responsibilities among the standing committees is as follows:

Site Operations Committee (SOC): This committee has the primary responsibility of overseeing shared use of the NEES Equipment Sites. Specific tasks include developing the NEES Facilities User Guide, reviewing annual operations and maintenance budgets at the NEES

Equipment Sites, and developing guidelines on how shared use should be defined and implemented for the different NEES Equipment Sites.

Information Technologies Committee (ITC): This committee has the primary responsibility of overseeing information technology activities at the NEES Cyberinfrastructure Center (NEESit), the NEES Equipment Sites (NEESgrid), and at NEESinc headquarters. Specific tasks include developing strategic plans for upgrading the information technology (IT) resources and capabilities, reviewing the annual IT budgets at the NEES Equipment Sites and NEESit, and advising the Board on operation and budgeting of IT services.

Data Sharing and Archiving Committee (DSAC): This committee has the primary responsibility of ensuring that experimental and simulation data generated through NEES research projects are available for use by the earthquake engineering community.

Education, Outreach, and Training Committee (EOTC): This committee oversees all educational, outreach, and training programs within NEESinc.

The committees will work closely with NEESinc staff to monitor site operations. Although at the time of this writing all of the NEESinc staff have not been hired, it is anticipated that NEESinc Experimental Site Operations Department (ESOD) will include an Experimental Site Operations Manager, a Subaward Administrator, a Site Usage Coordinator and a Maintenance and Calibration Specialist. Their primary tasks include:

- Negotiation and management of the 16 subcontracts (15 NEES Equipment Sites plus centralized MTS maintenance agreement).
- Coordination among funded NEES researchers and the NEES Equipment Sites, including scheduling coordination and/or conflict resolution.
- Coordination among potential NEES researchers and the prospective Equipment Sites during the proposal development phase. NEESinc staff will broker information about the Equipment Sites to minimize the workload and to maintain confidentiality of the intellectual content in proposals where so desired by potential investigators.
- Assisting the NEES Equipment Sites in the refinement and enhancement of its safety plan and work to sustain safety awareness into the NEES culture. The NEES Equipment Sites acknowledge sole responsibility for safety at its NEES Equipment Site.
- Tracking of performance metrics for both the NEES Equipment Sites and researchers, to be used in annual reviews of the NEES Equipment Sites and of NEESinc.
- Assisting the NEES Board of Directors and its Committees in the development and formalization of policies and procedures for NEES research (NEESR).
- Assisting the NEES Equipment Sites with routine and remedial maintenance and annual calibrations (including the hiring of consultants or subcontractors).
- Quality assurance of information about equipment, instrumentation, and calibration in the NEES data repository.

1.2 Concept and Definition of Shared Use

The success of the NEES collaboratory will in large part depend on the collegial and productive sharing of NEES Equipment Sites among a wide variety of users. These users may include researchers from a variety of educational institutions, national laboratories, government agencies, the private sector, researchers at a NEES site, and combinations thereof. The utilization of the NEES facilities by such groups in integrated collaborative research projects is defined as “shared use.”

In its broadest sense, the concept of shared use within the NEES collaboratory implies the use of one or several of the NEES facilities by an NSF-funded NEES research project. Projects funded through other mechanisms will be considered as “shared use” if they comply with NEES information technology, data sharing, data archiving, and educational, outreach and training policies. The latter policies will be established and maintained by the ITC, DSAC, and EOTC. Policies and guidelines for assessment of such projects as shared use are given in Section 6. See Table 4 for descriptions and definitions of Activity Types that may qualify as shared-use projects. NSF-funded NEESR research or equivalent shared-use projects (Activity Types I-a or I-c in Table 4) must be formalized by a Research Participation Agreement (RPA) (see Section 3.2 of this *Guide*). Projects approved as Activity Types I-b or IV in Table 4 must be formalized with a Direct Utilization Agreement (DUA) which is a NEESinc approved 2-party MOU coordinated directly between the Equipment Site and the Researcher Institution.

The extent to which a facility is “shared” will vary, with an initial estimate of 50% shared use for most facilities⁷. The percentage of shared use is crucial because NEESinc is committed to funding the operation and maintenance costs at a site at two levels. The first level is 100% funding of the cost of maintaining the operability of the site, which typically includes essential site personnel, information technology infrastructure, and hydraulics and control systems. The second level is funding for other personnel and costs at the shared-used percentage. The intent is to provide NEES users with access to the NEES equipment and basic support personnel at no cost to their research grants. Other common research costs, such as specimen construction, instrumentation, and demolition, and the development of specialized testing software are not covered by NEESinc.

Targets for shared use will be established through a consensus process involving NEESinc, the NEES Equipment Sites, and the National Science Foundation. The targets will be set taking into account the differences between the sites, the levels of available funding, and allocations of past and future operations and maintenance funds. The percentage of shared use will be reviewed and adjusted on an annual basis⁸.

⁷ The UCSB facility, which monitors earthquake activity on a 24/7 basis is allocated 100% shared use.

⁸ See Section 6 of this *Guide* for details of the shared-use assessment process.

2. GUIDELINES FOR PROPOSAL PREPARATION

2.1 Preparation of Proposals

NEES Equipment Sites are available on a competitive basis to qualified researchers from universities, industry, and research institutions through funding from the NSF George E. Brown, Jr. Network for Earthquake Engineering Simulation Research (NEESR) program.⁹ As with all NSF-funded research, funding decisions are based on the technical merit and the broader impacts of the proposed research. For research associated with the NEES Equipment Sites, the capabilities of a specific facility to carry out the proposed research and the availability of the facility will also be considered.

Listed below are some topics which the SOC believes should be included in a proposal to the National Science Foundation. The comments highlight specific issues related to collaborative research projects that take full advantage of the NEES shared-use facilities. Additional information is available in the NEESR Solicitation¹⁰ and the NSF Proposal Guide¹¹.

The following issues should be considered at the early proposal preparation stage:

- The proposal should identify the NEES facilities to be used, the expected level of usage, and justify the advantages of using the NEES facilities over conventional ones in the proposed research.
- The proposal should detail how the research teams will interact through the use of the NEES information technology (NEESit) resources, and how the utilization of those resources will lead to broader impacts by the proposed research. The proposal should include evidence that the specific information technology capabilities required by the proposal are feasible and available at the proposed site(s).
- The proposal should make clear that considerable planning has already taken place with respect to the experimental design. The expected time period(s) for which equipment will be requested should be carefully analyzed and discussed with the appropriate NEES Equipment Site(s). There should be a clear statement about the flexibility of these dates, what are the circumstances that may limit this flexibility significantly, and identify alternatives if they exist. If there are proprietary issues or if there is difficulty experienced in discussions with the NEES Equipment Site, the NEESinc Experimental Site Operations Manager should be contacted.
- The proposal should demonstrate a thorough understanding of the operating procedures at the proposed NEES Equipment Site(s). Those procedures may include additional costs associated with the use of particular subcontractors for specimen construction and demolition, insurance and safety issues, and costs for additional instrumentation and data acquisition that are not part of the original NEES equipment at a site. When preparing the proposals, estimates provided by the NEES Equipment Sites in the NEES Site Specification Database or their web sites can be used unless a unique situation requires contacting individual suppliers for formal quotes. However, the proposer takes the full

⁹ Information on NEESR can be found at (<http://www.eng.nsf.gov/cms/neesprogrampage.htm>).

¹⁰ See (NSF 05-527) at <http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf05527>

¹¹ See <http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg>

responsibility for the accuracy of the estimates and in no way shall hold the sites accountable if the estimate later turns out to be too low.

- The proposal should contain a thoughtful discussion of any specific circumstances which may contribute to equipment loss or damage or that may cause operational difficulty. This discussion should appear in a thorough risk management section. This section should include consideration of possible delays in the testing process.
- The proposal should identify generic types of payload projects. Payload projects are projects that are “piggy-backed” upon the main project by other researchers at minimum cost. Whenever possible, adjunct investigators should be invited and encouraged to participate in existing projects by adding sensors, analyses, and complementary tests to the original research program. However, it should be understood that complementary participation is contingent upon compatibility with the primary research objectives of the project to assure the objectives of the primary research are not compromised.
- The proposal should explicitly recognize that NSF and NEESinc will review and possibly make changes to both the proposed budget and testing schedule after the project is funded.

NEESinc provides a comprehensive, shared infrastructure for performing experiments on earthquake-related phenomena. Investigators bear the responsibility for the success of NEES research projects. In preparing the proposal, the investigator is responsible for:

- Contacting the NEES Equipment Site(s) and using the information in the site database web pages during proposal preparation to conduct a preliminary determination that the site capabilities (including information technology capabilities) meet the needs of the proposed research. Prospective users should avoid contacting sites for information that is publicly available.
- Consulting NEESinc web pages to assess the expected level of utilization of the desired site for the period under consideration.¹²
- Discussing in detail with the Site Operations Manager any proposal that requires temporary modifications of the existing equipment, substantial software development, exceeds 80%¹³ of the published capacity of the equipment, and/or contains unusual demands.
- Establishing a reasonable and well-defined testing program and budget (including specimen preparation, testing and disposal). All the details of the testing are not needed, but some preliminary analyses should be performed to determine the maximum capacities needed (i.e., analyses based on expected material values rather than nominal strengths and assessing all possible failure modes).
- Incorporating any basic safety concerns into a risk mitigation program.

Researchers should be aware that without such preliminary work, it may be necessary to make substantial modifications to the experimental program after the award is made. Proposal preparation is a compromise between time spent in the more creative aspects and the details. These items are highlighted here because more than a cursory effort is required. Due diligence on the part of the investigator needs to be exercised.

¹² See Section 3.3 – Site Scheduling.

¹³ 80% is an estimate; individual NEES Equipment Sites will set their limits and publicize them in their database.

NEES Equipment Sites are responsible for providing the following information to assist researchers during proposal preparation:

- Maintaining up-to-date site specifications and requirements on the site database web page. This should include information about technician rates, machine shop rates, and a list of service providers near the location of the NEES Equipment Site. This information should be maintained current.
- Providing accurate and timely information to potential users during the proposal preparation process.
- Keeping an updated web page with contact information, checklists, and FAQs for potential users.
- Maintaining a list of accommodations for visiting researchers and students that may be involved in long-term research at the NEES Equipment Site.

2.2 Budgeting Guidelines

The proposal budget should include all the usual budgetary categories, but special care should be taken to assess, among others, the following costs:

- Travel of principal investigators (PI) and research associates to visit the NEES Equipment Site(s) to plan and conduct the experiments (see Section 3.1 for a description of the planning meetings).
- Attendance at training sessions needed for the use of equipment.
- Long-term accommodations and living expenses for researchers at remote sites.
- Equipment used by the researchers (laptops, digital camera, special instrumentation, etc.) at the NEES Equipment Site.
- Specimen construction.
- Space needed at the Equipment Site for specimen preparation or disposal
- Shipping of equipment and specimens to and from the NEES Equipment Site.
- Expendable equipment: batteries, hand tools, site construction materials, etc.
- Instrumentation and data acquisition, technicians, and field testing expenses beyond those provided under the Operations and Maintenance Subaward Agreement (OMSA) for the NEES Equipment Site(s) under consideration.

NEES Equipment Sites will provide some guidance to investigators during proposal preparation regarding expected costs for budgetary items that are shared by nearly every NEES project at that particular site. To facilitate this process, the NEES Equipment Sites will maintain a summary of costs for key items on Equipment Site web site including:

- Materials stocked in the laboratory and available for use by researchers
- Technician services
- Fabrication services
- Vehicular services
- Unusual insurance needs
- Training to use laboratory equipment

For research projects that require additional services at the NEES Equipment Site, the researchers must provide specific details. The NEES Equipment Site will evaluate these requests, determine if the services can be provided, and provide an estimate of the costs.

Meaningful communication between the investigators and the NEES Equipment Site is essential in the planning phases of every NEES project and should be documented in the proposal.

3. GUIDELINES FOR FUNDED PROPOSAL

3.1 Equipment Site Policies Compliance Check (ESPCC)

Upon completion of the National Science Foundation (NSF) peer review process and prior to the NSF award being made, proposals recommended for funding will undergo a supplementary review that will be coordinated by NEESinc with each NEES Equipment Site at which experimental work is proposed. This Equipment Site Policies Compliance Check (ESPCC) provides NEESinc and the equipment sites an opportunity to assure policy compliance with respect to the NEES Facilities User Guide, experimental feasibility, safety, budget, schedule, and available data services. A copy of the ESPCC form is available at the NEESinc web site (<http://www.nees.org>).

After NSF notification that the proposal is being recommended for an award, the prospective awardee must submit to NEESinc those sections of the proposal required by NEESinc and the NEES 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. The information provided will be shared with NEESinc and NEES Equipment Site staff. NEESinc will provide the prospective awardee with the outcome of the ESPCC, which the prospective awardee is to 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 and NEESinc and the NEES Equipment Sites will maintain confidentiality of the proposals during the ESPCC process.

3.2 Request for Site Use from NEESinc

Once a project is funded by NSF, the PI for the research project should submit a request to the NEESinc Experimental Site Operations Manager to schedule the experiments. The request should consist of a summary of the proposed experiments and a tentative schedule as outlined in the final research contract. This request should be submitted as soon as possible to ensure that the NEES facilities are scheduled in a fair and efficient manner. This process is formalized in the Research Participation Agreement (RPA) that is part of the OMSA between the individual NEES Equipment Sites and NEESinc. The discussion in this section is intended as a model of how the process can proceed; if any conflicts arise between an RPA and the discussions here, those conflicts shall be resolved based on the stipulations of the RPA.

After ascertaining that the project can be scheduled at the desired site and within the desired time frame, the NEESinc Experimental Site Operations Manager will set up a meeting at the NEES Equipment Site(s) to discuss the logistics of the project. All senior personnel involved in the project should attend this meeting. As discussed in Section 2.2, the proposal budget should explicitly include funds for this trip. Preliminary information may be exchanged between the research team and the NEES Equipment Sites through video teleconferences, but one or more visits to the sites will be needed to develop a detailed testing plan. This process may take

anywhere from a few weeks to months depending on the complexity of the program and the number of sites involved. Once the main portions of this plan have been agreed upon by all parties, a final testing plan should be developed by the research team. Once that document has been filed with the NEESinc Experimental Site Operations Manager, a final project planning meeting will be scheduled. (Note that a minimum of two trips to the NEES Equipment Site are recommended for planning purposes.)

A month before the final planning meeting, the research team must submit to the NEES Equipment Site and the NEESinc Experimental Site Operations Manager a detailed testing plan which includes the following information:

- A copy of the original proposal, along with a description of any significant changes that have been identified during the planning process.
- A list of all equipment that will be used on the project. Note that not all the equipment at the university hosting the NEES Equipment Site is associated with the NEES facility. While this equipment may be available for use by the research team, the associated costs must be included in the budget for the project.
- A summary of the demands placed on the main NEES equipment (such as maximum force and acceleration levels) and the calculations used to determine these demands.
- A description of the testing protocols and expected number of tests.
- A list of services that the research team anticipates will be provided by the NEES Equipment Site and accompanying budget.
- A list of tasks and a description of how each task will be accomplished, including detailed lists of materials, tools, and personnel needed for each task.
- A detailed Gantt chart with the proposed schedule: the tasks on the critical path must be clearly identified.
- Plans for instrumentation of specimens and data acquisition. If the needed instrumentation is not available at the NEES Equipment Site, the research team should describe the plans to acquire the instruments. If the number of data channels needed exceeds the capacity of the available data systems, the research team should describe plans to augment the data acquisition systems.
- Space requirements, including space required for specimen construction. The members of the research team who will be working at the Equipment Site should be identified, and the expected duration of their visits.
- The proposed testing schedule along with alternatives based on both best and worst case scenarios.
- Specimen construction, rigging and demolition plans.
- Requests for any specialty software. If hybrid or multi-site testing is planned, detailed descriptions of the testing protocols are required.
- Requests by the project team for any additional laboratory or information technology personnel.
- A summary of final deliverables identified in the testing plan.

The detailed testing plan will be reviewed by the NEESinc Experimental Site Operations Manager, the PI(s) and Site Operations Manager(s) at the NEES Equipment Site(s), and will become the working plan for the project. Two weeks before the final meeting, the research team will receive a written response to the testing plan that identifies any concerns identified by

NEESinc and/or the NEES Equipment Site(s). Alternatives will be proposed to address these concerns. For complex projects, the time frame suggested above (one month) can be extended by the NEESinc Experimental Site Operations Manager.

The final planning meeting will then be used to resolve outstanding issues and reach an agreement among all parties on how to proceed. Within 30 days after the final planning meeting, the NEESinc Experimental Site Operations Manager will approve the final testing plan. After all parties sign this work plan, this document will become a binding agreement for all parties. Departures from this plan will require consent from the research team, the NEES Equipment Sites, and the NEESinc Experimental Site Operations Manager. If such an agreement between the parties cannot be reached, any of the parties may petition the NEESinc Executive Director for resolution. He will negotiate with all affected parties in good faith to reach a resolution. In the event the NEES Executive Director is unable to negotiate a resolution of the disagreement, any of the parties may petition the NEESinc Board of Directors for resolution. The decision of the NEESinc Board of Directors will be binding to all parties.

3.3 Site Scheduling

Establishing the final testing schedules for each NEESR project and setting priorities among funded research projects is the responsibility of the NEESinc Experimental Site Operations Manager. The NEES Equipment Sites, the research teams, and SOC will provide input as needed.

For each NEES Equipment Site, a tentative schedule will be developed jointly by the site and the NEESinc Experimental Site Operations Manager as part of the process of setting the targets for the next fiscal year.¹⁴ The target shall be consistent with the expected Shared Use at the site (typically 50%). During this process the NEES Equipment Sites should identify any critical external¹⁵ projects that have been planned and cannot be rescheduled. Projects of this type that arise between annual evaluations shall be discussed with the NEESinc Experimental Site Operations Manager as soon as practicable. Equipment Sites cannot accept external projects that will require the use of the NEES equipment for time allocated to NEES projects in the annual plan unless the consent of both the NEESinc staff and the research teams impacted by the change in schedule is obtained. Conversely, NEESinc. will not schedule NEES projects for time allocated for non-NEES projects without the consent of the NEES Equipment Site.

On an informational basis, a longer-term schedule will be maintained in the NEESinc web pages by the NEESinc Experimental Site Operations Manager in order to plan long-term use of the facilities and give proposers an idea of the level of site utilization. This calendar is for planning purposes only, and will be updated periodically. Each site will maintain its own schedule and update it on a bi-monthly basis. The latter will be the official schedule for the site and will be available from the site's web page.

¹⁴ See Assessment of Shared Use section for more details on this process.

¹⁵ External refers to any project using NEES equipment, but not constituting shared use (See Section 1.2 for definition of shared use).

NEESinc reserves the right to adjust the schedules of tests within the time periods allocated to NEES research or assign a research project to an alternate NEES Equipment Site in case of extraordinary circumstances.¹⁶

3.4 Alterations to the Schedule by NEESinc

Time management is a critical component of successful operation of NEESinc. The NEESinc staff will provide guidance to the NEES Equipment Sites on scheduling based on the risks of delays, potential payoffs, and any extraordinary circumstances.

In the case that unavoidable delays are incurred during a given project, alterations may be made to an existing site schedule by the NEESinc staff with the agreement of all parties. This includes the research team and Equipment Site associated with the delayed project and researchers associated with other projects that are impacted by such delays. If such an agreement between the parties cannot be reached, either the research team or the NEES Equipment Site may petition the NEESinc Executive Director for resolution. He will negotiate with all affected parties in good faith to reach a resolution.

Changes in a testing plan schedule will be considered when a petition for change is received by NEESinc from either a NEES Equipment Site or by the research team. The circumstances that may justify a change in schedule include:

- Delays in project funding.
- Emergency maintenance of equipment.
- Optimization of scheduled equipment use at the NEES Equipment Sites.
- Extension of a project that will result in significant advances for the earthquake engineering community.
- Time overrun by a previous project.
- Other circumstances as determined by NEESinc.

In the event the NEESinc Executive Director is unable to negotiate a resolution of the testing plan schedule disagreement with either the research team or the affected NEES Equipment Site(s), and prior to any party commencing any legal action relating to any dispute, the parties shall use the Alternative Dispute Resolution Process as specified in the RPA. The Alternative Dispute Resolution Process includes the NEESinc Dispute Resolution Process that is incorporated to the RPA.

3.5 Monitoring of Project Progress by the SOC

Progress of funded NEES research projects will be monitored by the SOC to ensure efficient use of the NEES Equipment Sites. The main monitoring mechanism will be a quarterly report submitted by the NEESinc staff to the standing committees. This report will be a summary of activities at the NEES Equipment Sites during the previous three months. The NEESinc staff will be in regular contact with the Site Operations Managers at the NEES Equipment Sites and/or

¹⁶ This may be the result of a major earthquake that requires a redirection of the research agenda at the national level (i.e., the SAC Project after the 1994 Northridge Earthquake) or an unexpected equipment failure that leads to a site being inactive for a substantial period of time (i.e., damage to the drive motors in a centrifuge facility).

with the PIs of the NEESR project as necessary to obtain summary descriptions of work completed and the status of all scheduled projects. The NEESinc staff will also contact the PIs of the funded research projects that are active at the NEES Equipment Sites.

The quarterly staff report to the standing committees will only contain items deemed important by the staff. The SOC will assume that all work on projects is proceeding on schedule unless noted in these reports. Copies of relevant portions of the quarterly reports will be provided to the impacted sites.

Periodically, the standing committees may ask the NEESinc staff to compile information on a particular aspect of operation at the NEES Equipment Sites, or to poll the NEES Equipment Sites or researchers on a particular issue. The NEES Equipment Sites and research teams are expected to cooperate with these initiatives.

The data collected during a NEES experiment are considered to be shared property for the earthquake engineering community. All data must be archived in the NEES data repository within a period of time to be set by the NEES Board of Directors and the DASC as outlined in that committee's policies¹⁷.

3.6 Mediation and Resolution of Conflicts by NEESinc

NEESinc will provide support and guidance to the NEES Equipment Sites and researchers to facilitate efficient operation of the NEES Equipment Sites. It is believed that open and frequent communication will serve to resolve most problems and that most problems related to research projects should be handled by the parties involved without external intervention. However, in some cases, technical or logistical conflicts may arise that cannot be resolved between the researcher and the NEES Equipment Site. Generally, the NEESinc Site Operation Manager and its Executive Director shall then assist in resolving such conflicts. It is envisioned that most, if not all, conflicts can be resolved at this level. If not, they will be resolved as described in Section 3.4.

¹⁷ See "Data Sharing and Archiving Policies and Guidelines" document at <http://www.nees.org>

4. TIPS FOR PLANNING EXPERIMENTS

4.1 Visiting NEES Equipment Sites

During the pre-proposal phase, the NEES Site Specification Database and web pages developed and maintained by each of the NEES Equipment Sites are useful resources for obtaining information about the capabilities at each of the NEES Equipment Sites and about equipment inventories. Once the researcher has established an interest in a particular NEES Equipment Site, he/she may choose to visit the site or to contact the Site Operations Manager with additional questions. Potential users are encouraged to attend an NEES Equipment Site training workshop to learn additional details that may be useful in writing a NEESR proposal.

During the post-award planning and design stages, a reconnaissance trip to the NEES Equipment Site may be useful. During this trip, researchers will want to:

- View the equipment at the NEES Equipment Site and the host university.
- Understand equipment performance specifications and configurations.
- Discuss project-specific test fixtures such as instrumentation mounts, anchors, etc.
- Inquire about nearby ancillary services such as machine shops, forklifts, overhead cranes, utilities, etc.
- Inquire about site telepresence capabilities and how this equipment could be utilized during the project.
- Discuss safety protocols.
- Discuss scheduling and data archiving (short and long term archiving).
- Discuss research rates for non-baseline levels of service, particularly in the information technology area¹⁸.
- Tour available office space for visiting researchers.
- Inquire about local accommodations.

Note that the planning visit is not a replacement for the final project planning meeting, which is described in Section 3.1. However, researchers who visit the site during the planning stage will be able to develop a more detailed project plan and will have a better idea of the actual project costs. It is also suggested that the researchers interact with the staff at the NEES Equipment Site using the video conferencing and telepresence facilities to identify activities that can be performed efficiently by the researchers at their home institution and those that can only be performed by the researchers at the NEES Equipment Site.

4.2 Selecting Sites

Determining which NEES Equipment Site to use for a particular research project involves considering various factors, because several NEES Equipment Sites have similar capabilities. Researchers will want to consider technical factors such as specific equipment performance (e.g.,

¹⁸ The baseline level of service is assumed to be what individual sites post in their Site Specifications Database. Minimum requirements in the information technology services area are discussed in Section 5.

actuator performance, payload capacity, specimen size, available instrumentation, etc). In addition, researchers may want to consider non-technical factors such as proximity, Equipment Site availability, scheduling and costs for additional levels of service beyond the baseline.

4.3 Staffing

The NEES Site Specification Database and web pages developed and maintained by each of the NEES Equipment Sites provide a list of faculty and staff at each NEES Equipment Site, as well as a point of contact. In general, the Site Operations Manager acts as the liaison between the NEES Equipment Site and researchers.

In general, it is expected that visiting researchers must have a visiting appointment at the university hosting the NEES Equipment Site to engage in any research activity (including library use and email access). Visiting students, staff and faculty should complete safety training prior to performing work, and perform only approved activities. For example, it is unlikely that any of the NEES Equipment Sites would permit visiting researchers to operate a forklift or an overhead crane. Visiting students, staff, and faculty may be required to provide proof of insurance and sign release forms.

4.4 Student Reciprocity

Universities may elect to establish a Memorandum of Understanding (MOU) to have a student exchange or joint degree program. This should be left to the discretion of participating universities.

4.5 Insurance

Each university has established policies related to insurance and safety. Consequently, NEES researchers should learn the insurance and safety guidelines at the NEES Equipment Site, and develop a risk management plan in the early stages of the project. Furthermore, researchers must consider safety and possible property or equipment damage when designing an experiment.

NEESinc is committed to the safety, health and well being of its members. Faculty and staff have the responsibility to promote health and safety in their environments and operations. All members of the NEES community are expected to support this commitment.

4.6 Data Management

All experimental data generated from NEES research must be submitted electronically to the NEES data repository. In addition, all experimental information must be properly characterized with appropriate metadata before being archived in the NEES data repository. Information technology personnel at the NEES Equipment Site will assist the researchers in transferring data into the NEES data repository and will monitor data quality.

5. GUIDELINES ON SITE OPERATIONS AND MAINTENANCE

5.1 Overview

The NEES Equipment Sites provide state-of-the-art experimental facilities and the information technology resources associated with NEES provide the infrastructure for archiving and sharing data. It is envisioned that NEESinc will operate as a collaboratory and provide access to these facilities to earthquake engineering researchers from around the world. However, the earthquake engineering community must embrace the objectives of the NEESR program in order for the collaboratory to succeed. Therefore, each group of users within the community must be aware of their responsibilities to the collaboratory and the rights afforded to them by the collaboratory. These responsibilities and rights are discussed in this section.

5.2 Experimental Services

Responsibilities of NEES Users

- Users should thoroughly review all web-based training materials related to the equipment that will be used during the research project.
- Users should request information about space accommodations, available services, and costs (e.g., machine shop and suppliers) at the NEES Equipment Site in a timely manner.
- Users must work with the NEESinc staff and the NEES Equipment Site(s) to develop a planning document and schedule a final planning meeting before any actual work can begin at the NEES Equipment Site. The final testing plan developed by the researchers, NEES Equipment Site(s) and the NEESinc staff will serve as the binding agreement for all parties.
- Users must present a risk mitigation plan to NEESinc the NEES Equipment Site prior to approval of their final testing plan.
- Users should inform the NEESinc and the NEES Equipment Site of any changes in their schedule as soon as possible.
- Users should inform the NEES Equipment Site of any changes in their specimens as soon as possible.
- Users are expected to utilize the NEES-sponsored electronic collaboration system to enhance collaboration efforts.
- Users are responsible for the design, fabrication, and instrumentation of test specimens, unless other arrangements were documented in the proposal and final testing plan.
- Users are responsible for disposing of specimens and returning all equipment and space to the condition prior to the start of the project.
- Users are to follow to all safety policies and regulations established by the NEES Equipment Sites for use of the equipment and laboratory.
- Users are responsible for repairing or replacing damaged instrumentation and equipment when the damage occurs as a direct result of misuse by the user.
- Users are responsible for the intellectual merit and overall success of the project.
- Users are responsible for the broader impacts of the project, including configuring experiments for both private and public viewing as well as general public viewing and for providing access for payload projects (see also NSF 05-527).

Rights of NEES Users

- Users have the right to discuss the equipment performance specifications and configuration with the NEES Equipment Site during proposal preparation and project planning stages.
- Users have the right to discuss issues related to equipment performance and data with the NEES Equipment Sites after the tests have been completed.
- Users have the right to receive information about cost of support, equipment, and facilities available at the university that hosts the NEES Equipment Site but that are not part of the NEES Equipment Site.

Responsibilities of NEES Equipment Sites

- NEES Equipment Sites are to provide services to assist in the training and use of all equipment and services consistent with the tasks for the staff outlined in the NEESinc Operations and Maintenance cooperative agreement.
- NEES Equipment Sites are to provide web-based training manuals for all major equipment.
- NEES Equipment Sites are to provide data on available instrumentation and equipment.
- NEES Equipment Sites are to provide information on space accommodations, available services and known costs.
- NEES Equipment Sites are to keep all correspondence regarding NEES research proposals confidential.
- NEES Equipment Sites are to assist in the design of connection details between NEES equipment and test specimens. If ancillary equipment (provided by either the research team or the university that hosts the NEES Equipment Site) is used in an experiment, the NEES Equipment Sites are also to assist in integrating that equipment into the test configuration. While not designing the instrumentation configuration, the NEES Equipment Sites shall provide guidance as to whether the intended information can be gathered from the available instruments.
- NEES Equipment Sites are required to provide NEES users with the duration and level of service in accordance with the site's cooperative agreement. Any departure from this will require written NEESinc approval.
- NEES Equipment Sites are required to maintain a safety plan and work to sustain a safety awareness culture. NEES Equipment Sites are required to train all users of the equipment in their safety procedures. The NEES Equipment Site has sole responsibility for safety at its NEES Equipment Site.
- NEES Equipment Sites are responsible for the NEES equipment only. The integration and performance of ancillary equipment supplied by the research team are not the responsibility of the NEES Equipment Sites.
- NEES Equipment Sites are responsible for performing routine quality control/assurance tests. This requirement includes calibrating sensors and performing equipment maintenance in accordance with manufacturer recommendations.

Rights of NEES Equipment Sites

- NEES Equipment Sites reserve the right to “stop work” immediately and submit a petition for action to NEESinc for any project activity that is deemed unsafe by technical staff or management personnel. Project activities related to the nature of the petition shall be halted during this review period with no penalty to the research team if the petition is determined to be unsound. The petition must be filed by the PI of the NEES Equipment Site.
- NEES Equipment Sites are under no obligation to make available facilities, equipment, or support personnel not covered in the site’s OMSA.

5.3 Information Technology Services

5.3.1 Responsibilities of NEES Users

- Users should thoroughly review all web-based training materials related to the information technology systems that will be used during the research project.
- Users should request information about specialized information technology equipment and services needed at the NEES Equipment Site in a timely manner.
- Users must work include an information technology plan as part of the planning document developed with the NEESinc staff and the NEES Equipment Site(s) before work begins at the NEES Equipment Site (see previous subsection on user responsibilities). This must include information on the timing and types of data, video, images, metadata, and documentation to be archived in the NEES repository as a formal record of the project and must conform to the guidelines developed by the DSAC. The final plan will serve as the binding agreement for all parties.
- Users should inform the NEES Equipment Site of any changes in their information technology -related plans or schedule as soon as possible.
- Users are expected to utilize the NEES-sponsored electronic collaboration system to enhance collaboration efforts.
- Once User’s data is archived into the NEES central repository, certain personnel from NEESinc Headquarters, as approved by the Executive Director, will be given “read-only” access to all NEEScentral shared-use project files **for tracking purposes only** unless a compelling justification for denying such access is provided in an approved RPA. NEESinc Headquarters personnel accessing these files will observe strict standards of confidentiality, and access accounts only for the purpose of monitoring progress along the data flow process.
- Users are responsible for intellectual merit and quality of the experimental record archived by NEES – in particular, the quality and completeness of user-supplied metadata and supplementary documentation (such as reports detailing the experimental design and analysis of results).
- Users should inform NEESinc and the NEES Equipment Site of any changes in their IT-related schedule as soon as possible.

5.3.2 *Rights of NEES Users*

- Users have the right to expect useful and usable software tools supporting the following activities: collaboration with remote colleagues and site staff, sharing of documents related to the project, providing metadata, remote access to physical and numerical experiment environments, searching/viewing/downloading of experimental data, data curation and quality control, and data analysis.
- Users have the right to appropriate training on how to safely and effectively use NEESit services.
- Users have the right to determine what information is to be made available to the public during the project period, as long as they adhere to the guidelines established by NEESinc (as established by the DSAC).
- Users have the right to presume their data are secure and backed up by the NEES Equipment Site, subject to the data archive and backup capabilities provided under the site's OMSA, prior to uploading of the data to the NEES data repository. Users with significant storage requirements (e.g., high-resolution images or video data) should negotiate the possibilities for backup and uploading with the NEES Equipment Site during the project planning phase.

5.3.3 *Responsibilities of NEES Equipment Sites*

- NEES Equipment Sites are to maintain and operate the core NEESgrid software in accordance with the policies established by NEESinc.
- NEES Equipment Sites are to provide and maintain offsite backup and storage of all raw data developed at their Site. Raw data must be stored offsite within 24 hours after each shared-use experiment unless otherwise justified in the Data Archiving and Sharing Plan included in an approved RPA. Each Equipment Site shall keep a current plan on file with NEESinc detailing how the Site will achieve the offsite data storage requirement.
- NEES Equipment Sites are to provide all funded research projects with access to the following:
 - Local telephone access.
 - Video- and tele-conferencing services.
 - High-speed network access for computers brought in by the researcher.
 - Streaming telepresence (sensor data and video).
 - Archiving of sensor and camera data and technical metadata in a temporary local data repository.
 - Temporary services for viewing archived data.
 - Other IT services (e.g., access to local computers or specialized equipment; archiving of audio, high-resolution video or still image data) as outlined in the OMSA of individual NEES Equipment Sites.
- NEES Equipment Sites must assist in training related to the local use of information technology facilities, the preparation of metadata, and the curation of experimental data, consistent with the tasks for the staff outlined in the NEESinc Management, Operations, and Maintenance (MOM) cooperative agreement.
- NEES Equipment Sites are to maintain and evolve any special information technology services (mobile networking, specialized software, supplemental data repositories,

supplemental video services, and coupled/hybrid experimentation services) developed as part of their original Major Research equipment & Facilities Construction (MREFC) projects, in accordance with the terms of their cooperative agreements

- Each NEES Equipment Site is to maintain an up-to-date, site-specific website, located at <http://nees.<university-name>.edu>.
- NEES Equipment Sites' policies regarding use of information technology facilities and services during a project must be consistent with policies established by NEESinc. Furthermore, any policies regarding the use and security of site-specific information technology resources and services supported by the NEES Equipment Site's OMSA (i.e., those that go beyond the normal resources available at all NEES Equipment Sites) must be clearly stated on the NEES Equipment Site's webpages.

5.3.4 Rights of NEES Equipment Sites

- NEES Equipment Sites reserve the right to file a petition to NEESinc for any project activity that information technology staff or management personnel deem to be electronically insecure, or that might in some other way jeopardize the long-term archiving of the project record. Project activities related to the nature of the petition shall be halted during this review period with no penalty to the research team if the petition is determined to be unsound. The petition must be filed by the PI of the NEES Equipment Site.
- NEES Equipment Sites are under no obligation to make available information technology services, equipment, or support personnel not covered in the NEES Equipment Site's OMSA.

5.3.5 Responsibilities of Centralized NEES IT Services Group (NEESit)

- NEESit is to provide long term, archival storage of: data, images, metadata, and documentation produced as part of all funded projects (including post-experiment analyses and derived data projects).
- NEESit is to maintain and evolve core NEESgrid software.
- NEESit is to maintain and evolve software tools supporting key user activities needed at all NEES Equipment Sites.
- NEESit is to provide training materials and sessions covering the information technology capabilities developed and maintained centrally.
- NEESit is to support the scheduling and activating of video- and tele-conferences involving more than two locations.
- NEESit is to monitor and support networking services to ensure that telepresence, multi-NEES Equipment Site experiments, and coupled physical/numerical experiments can be conducted successfully.
- NEESit is to maintain the central NEES web services, central maillists and mail services, and the domains nees.org and nees.info.

5.3.6 Rights of NEESit

- NEESit reserves the right to file a petition to NEESinc for any project activity that information technology staff or management personnel deem to be electronically insecure, or that might in some other way jeopardize the sharing of centralized information technology services and facilities. Project (or NEES Equipment Site) activities related to the nature of the petition shall be halted during this review period with no penalty to the research team or NEES Equipment Site if the petition is determined to be unsound. The petition must be filed by the PI of NEESit.
- NEESit is under no obligation to make available information technology services, equipment, or support personnel not covered in the NEESit OMSA.

6. ASSESSMENT OF SHARED USE

Success of the NEES collaboratory will depend on the collegial and productive sharing of facilities at the NEES Equipment Sites among a wide variety of users. To help foster the shared use of the NEES facilities, it is necessary to adopt clear definitions of shared use, targets for the shared-use performance expected for each facility, and guidelines for assessing the extent to which the targets are being met. The adoption of definitions, targets and assessment guidelines will provide the host institutions with fair and quantifiable goals, and help remote users develop reasonable expectations of the extent to which facilities will be shared. This information will also be valuable for allocating maintenance and operations funds where it can be used most efficiently, and to NSF and other agencies in assessing the success of the NEES collaboratory.

6.1 Assessment of Shared Use

The assessment of shared use will be conducted on an annual basis by the SOC with support from the NEESinc staff and other standing committees. The process is intended to primarily assess three main issues:

- Are the OMSA funds and NEES resources being used effectively?
- Are the NEES Equipment Sites in compliance with the various NEESinc requirements, such as data archiving support, IT component functionality, and user support?
- Are the NEES Equipment Sites being effective in making their shared-use resources accessible to the earthquake engineering community?

The assessment will be largely based on the annual Site Evaluation Survey (SES) which will be prepared by the NEESinc staff and include data submitted by the NEES Equipment Sites and users. The SES will be developed by the NEESinc staff to satisfy the annual reporting requirements for all NEESinc standing committees, and thus it will be subject to review and approval by those committees. Examples of specific information from the SES that will be used for the shared-use assessment process will be discussed later in this section.

The assessment of shared use will proceed as follows:

1. The NEESinc staff will compile the results of the SES and prepare a Preliminary Summary Report containing: (i) preliminary recommendations for maintenance and operations funding for all sites for the next year, (ii) preliminary recommendations for areas of improvement on the various assessment criteria, including any recommended targets or goals for the next year and an assessment of whether the prior year's targets or goals were achieved, and (iii) results of user-satisfaction surveys. The NEESinc Executive Director is responsible for the preparation of this report.
2. The portion of the Preliminary Summary Report specific to each NEES Equipment Site will be forwarded to the Site Operations Manager for their review and written response. The NEES Equipment Sites will have two weeks to respond in the form of a Site Response Report. In the Site Response Report, the sites shall provide concise but detailed data and explanations for any issue where there is substantive disagreement with the Preliminary Summary Report.
3. The NEESit staff will revise the Preliminary Summary Report as necessary, respond to the issues raised by the NEES Equipment Sites in their Site Response Reports, and forward their final Summary Report and the Site Response Reports to the SOC.

4. The SOC, in cooperation with other NEESinc standing committees, will review the staff's Summary Report and the Site Response Reports, and then prepare an Assessment of Shared Use Report. The Assessment of Shared Use Report will present: (i) a single recommended MOM budget for the following year and (ii) recommended targets and goals on assessment criteria for each site. Any significant changes in a site's recommended OMSA budget will be accompanied by a detailed explanation. The Chair of the SOC shall be responsible for developing the Assessment of Shared Use Report.
5. The NEESinc Board of Directors and the NEES Equipment Sites will receive a copy of the Assessment of Shared Use Report, the Summary Report, and the Site Response Reports. The NEES Equipment Sites may provide additional written comments to the NEES Board of Directors regarding these materials.
6. The NEESinc Board of Directors then sets the final MOM budgets and associated OMSA recommendations for all NEES Equipment Sites. The Board may request additional information from the SOC, NEES Equipment Sites, other standing committees, or researchers funded to use the NEES facilities, if necessary. The Board will recognize that the success of an Equipment Site's capacity for shared-use service is highly dependent upon stable or gradually-changing year-to-year budgets, and strong consideration will be given toward limiting such budget fluctuations. Furthermore, the Board will recognize that success is also dependent upon the carry-forward of a Site-specific budget item corresponding to unexpended annualized equipment maintenance funds, and will seek to preserve such budgets from one funding period to the next with proper justification as required by the NSF and subject to NSF's Terms and Conditions.
7. The NEESinc staff will communicate the results sanctioned by the NEES Board of Directors to the NEES Equipment Sites, along with the associated recommendations for next year.

The NEESinc staff will continually monitor shared use at the sites, and if the NEES Executive Director deems that compliance is inadequate at a NEES Equipment Site, he/she will forward a request for an Exceptional Review, outside of the usual annual cycle, to the SOC. The same procedure outlined above will be followed during an Exceptional Review, with the exception that review by the SOC (Step 4) may be handled by a small subcommittee of the SOC at the discretion of the SOC Chair. Input from the NEES Equipment Site under consideration will be sought at all stages of the review process.

The effectiveness of NEES Equipment Sites in making their resources accessible to the earthquake engineering community requires objective and subjective assessment measures. The breadth of measures enable an evaluation of questions such as: (1) is the NEES Equipment Site adequately providing information and support to those in the community who want to learn about the facility and prepare proposals to use the facility, (2) is the NEES Equipment Site making an adequate effort to attract users and making their accessibility widely known, and (3) is the NEES Equipment Site being used by researchers outside the host university, and are those researchers satisfied?

Some of the assessment measures require user surveys, which will initially be drafted by the NEESinc staff and then reviewed by both the NEES Equipment Sites and the NEESinc standing committees. These surveys will be modified as experience with their use is gained and based

upon feedback from the users, NEES Equipment Sites, NEESinc staff, SOC, and the NEESinc Board of Directors.

Preliminary assessment criteria to be included in the Site Evaluation Survey are summarized in Tables 1 to 3, organized according to the party responsible for collecting the data (i.e., the NEES Equipment Site or the NEESinc staff), and into general and site-specific criteria. The general category (Table 2) includes those criteria for which data will be collected from all NEES Equipment Sites, whereas the site-specific category (Table 3) is intended to reflect the specific nature of each NEES Equipment Site. Site-specific criteria will be developed and justified by each NEES Equipment Site, and is subject to approval by the SOC. Appeals related to the SOC selection of specific criteria will be handled by the NEESinc Board of Directors.

The assessment process will take into account the influence that the level of OMSA support has on the testing capacity at each NEES Equipment Site, and the possible levels of usage, which might change over time. NEES Equipment Sites are therefore asked to prepare site-specific simple metrics for describing their testing capacity, and may be asked by the SOC (as needed) to describe how that testing capacity would vary with changes in OMSA funding.

Targets or goals for each assessment criteria will be developed for each site during the assessment process. The specified targets and goals serve to clearly identify areas where improved efforts by the NEES Equipment Site are expected and the level of expected improvement. For example, a target might be to improve the NEES Equipment Site's entries in the site specifications database, increase user satisfaction with certain services, or fix some deviation from NEES telepresence capabilities. The ability to meet targets on some criteria, such as numbers of external users, may be beyond a NEES Equipment Site's direct control, but nonetheless the collection of assessment data on such criteria and the setting of desirable targets are still valuable for NEESinc's planning purposes.

6.2 Requests for Shared-Use Status for Research Projects that are not Funded through NEESR

Projects funded through sources other than NSF-NEESR funds may request shared-use status from NEESinc, on a case-by-case basis (see Table 4 for Activity Types). Shared-use status would mean that the project would be treated the same as a NEESR project by the NEES Equipment Sites and the NEESinc staff, and that the project would have to comply with all NEESinc IT, data sharing, data archiving, educational, and reporting policies, as described in this *Guide*. Only projects that take full advantage of the unique capabilities of NEES facilities will be considered for shared-use status. Preliminary inquiries about shared-use status for a particular project should be submitted in writing to the NEESinc Executive Director for consideration.

6.3 Conflict Resolutions

Potential conflicts can be avoided or minimized by detailed planning and open communications by both the NEES Equipment Sites and the outside users. Potential users of the NEES facilities must familiarize themselves with the procedures and operation of the equipment at the NEES Equipment Site they wish to use. Both users and sites should work to establish direct

relationships and lines of communication throughout their interactions. Attention to these and other practices can contribute to a productive utilization of the NEES Equipment Sites and minimize potential conflicts that may arise throughout the duration of a project.

Conflicts among parties that cannot be resolved through the assistance of the NEESinc staff should first be brought to the attention of the NEESinc Executive Director. Either the research team or the NEES Equipment Site may petition the NEESinc Executive Director for resolution. The Executive Director will hold conversations with the conflicting parties in an attempt to resolve the conflict in good faith.

In the event the NEESinc Executive Director is unable to negotiate a resolution of the disagreement, the parties shall use the Alternative Dispute Resolution Process as specified in the RPA. The Alternative Dispute Resolution Process includes the NEESinc Dispute Resolution Process that is incorporated to the RPA.

Table 1: Preliminary list of shared-use assessment measures to be collected by NEESinc Staff

Criterion	Example Measures
Providing information to the community	NEES Site Specifications Database complete _____ NEES Site Specifications Database up-to-date _____ Telepresence operational and in compliance _____
Data archiving	Outside user satisfaction with site support on data archiving tasks: _____ Local users meeting data archiving requirements (No. projects: Yes ___; No ___)
NEES Data repository	No. of times data from the site is accessed from the repository _____
IT components (telepresence, remote collaboration tools, etc).	User satisfaction with telepresence _____, remote collaboration tools _____, etc. No. of teleobservers, remote collaborators, and web site visits per IT statistics. No. of responded surveys ___ and polled persons _____.
Satisfaction of outside proposers (PI's, co-PI's).	Sufficiency of online materials _____; Responsiveness to requests for information _____. No. of responded surveys ___ and polled persons _____.
Satisfaction of outside users (e.g., PI's, students).	Guidance on logistical arrangements ____; Adequacy of allotted space ____; Technical support ____; Instrument calibration ____; etc. No. of responded surveys ___ and polled persons _____.
Perceived satisfaction of the overall community	Sufficiency of online materials for site specifications ____, teleobservation ____, etc.; Responsiveness to requests for information __; Accessibility of site __; etc. No. of responded surveys ___ and polled persons _____.
Submitted proposals for which the site was to be shared	No. of submitted proposals in last NEESR cycle: _____ No. of NEESR proposals funded _____ No. of other funded projects that were approved for "shared-use" status: _____ No. and type of outside institutions involved: _____

Table 2: Preliminary list of general shared-use assessment measures to be submitted by the NEES Equipment Sites

Criterion	Example Measures
NEESR tests performed and scheduled:	No. of scheduled NEESR tests: _____ No. of NEESR tests performed: _____ No. of scheduled NEESR payload tests: _____ No. of NEESR payload tests performed _____
NEESR participation by outside PI's.	No. of tests led by outside PI's: _____ No. of outside researchers involved : _____ (PI: ___; GS: ___; UG ___; Others ___)
Non-NEESR tests performed and scheduled:	No. of scheduled non-NEESR tests: _____ No. of non-NEESR tests performed: _____
Non-NEESR participation by outside PI's.	No. of non-NEESR tests led by outside PI's: _____ No. of outside researchers involved : _____ (PI: ___; GS: ___; UG ___; Others ___)
Level of Shared Use	No. of days of NEESR shared-use testing: _____ No. of days of NEESR shared-use preparation: _____ No. of days of non-NEESR shared-use testing: _____ No. of days of non-NEESR shared-use preparation: _____ No. of maintenance days: _____ (Explain) No. of days out-of-commission: _____ (Explain)
Technical support	List of staff and the percentage of their time supported on MOM funds.
Education, Outreach and Training activities	Number of participants Number of underrepresented participants Goals of activities Evaluation summary of activities

Table 3: Preliminary list of site-specific shared-use assessment measures for the SOC to be submitted by the NEES Equipment Sites

Example Criterion	Example Measures
Testing efforts ^a	Determined by a matrix proposed by individual ES, and designed to reflect factors such as number of sensors, number of controllers, size of the specimen, run locally or by tele-operation, or other aspects that strongly affect the level of resources needed. Example 1: No. of ___ high, ___ moderate, ___ low complexity tests. Example 2: Equivalent cost of tests based on established equivalent recharge rates.
Equipment Travel ^b	No. of trips by the equipment: Average distance travel: _____ mi. Number of days traveling to and from the testing site: _____ days
Space ^b	Space used for specimen preparation at the ES laboratory: _____ sq. ft. Office space used for NEES testing related activities: _____ sq. ft.
Outside researcher support ^b	

^a Equipment Sites will prepare site-specific metrics for describing their testing capacity, the usage of that capacity and how OMSA funding will influence their capacity and service at the site.

^b These example criteria are those that do not apply to all sites. For example, only mobile sites have equipment travel and field sites may not have office space for outside users.

Table 4: TGoSUPP Proposed Activity Types

Activity Type ¹	Description	Data Shared?	MOM-Eligible	ESPCC Required?	ES Contract	PI Contract	Count Toward Site's Required Shared-Use Percentage?	Fixed or Flexible Scope
I-a	NEESR projects, and NEESinc-MOU projects (e.g. with NIED/E-Defense)	Yes	Yes	Yes	OMSA	RPA ³	Yes	Fixed
I-b	NSF-funded NEESR payload projects	Yes	Yes	Yes	OMSA	DUA ⁴	Yes	Fixed
I-c	NEESinc-approved projects meeting SUPP minimum and prioritization criteria.	Yes	Yes	Yes	OMSA	RPA ³	Yes	Fixed
II	<u>Required</u> safety, training, maintenance, calibration, and administration.	Yes	Yes	na	OMSA	na	Yes	Flexible (Required)
III ²	<u>Supplemental</u> EOT, safety, maintenance, calibration, facility/efficiency enhancement, and NEES community support activities.	Yes	Yes	na	OMSA	na	If Below Required %	Flexible (Supplemental)
IV ²	NEESinc-approved 'partnered payload projects' or minor 'collaboration opportunity projects' not subject to national competition.	Yes	Yes	Yes	OMSA	DUA ⁴	If Below Required %	Flexible (Supplemental)
V	Other non-NEES projects – Data Shared	Yes	No	No	na	na	No	Neither
VI	Other non-NEES projects – Proprietary	No	No	No	na	na	No	Neither

- Notes: ¹ Activity types I and II take scheduling precedence over Activity types III and IV. Activity types III and IV are subject to being postponed or canceled by NEESinc if new Activity Type I projects are approved.
- ² Equipment Sites are required to provide NEESinc with a current estimate of time allocated for Activity types III and IV for the subsequent 24-month period. NEESinc will publicly post this time as available to others to use for qualifying shared-use projects.
- ³ RPA denotes a 'Research Participation Agreement' which is a 3-party contract between NEESinc, the Equipment Site, and the Researcher's institution. NEESinc-approved RPA templates for each Equipment Site are incorporated into the OMSA.
- ⁴ DUA denotes a 'Direct Utilization Agreement' which is a NEESinc-approved 2-party MOU coordinated directly between the Equipment Site and the Researcher's institution. The DUA contains standard NEES terms including requirements for data sharing, acknowledgement of NSF/NEES, and limitations of the representation of NEES. The DUA will also require both insurance and risk disclaimers to assure that all risks are assumed exclusively by the Site and Researcher. The DUA will not provide NEESinc confidentiality protection nor provide access to the NEESinc Dispute Resolution Process.