George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES)
FY 2000-FY 2004: Major Research Equipment and Facilities Construction (MREFC)

Update: George E. Brown, Jr.
Network for Earthquake Engineering Simulation

Presented at
Quake Summit 2010 - NEES & PEER Annual Meeting
San Francisco, CA
October 8-9, 2010

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Thank you to NEES and PEER for organizing this joint meeting!
NEES: Snapshot of Successes to Date

• Experimental facilities
  – Well-managed since 2004
  – FY 2010 upgrades

• Your Posters and Presentations at this Meeting!

Significant science and engineering research being conducted not possible prior to NEES enabled by NEES experimental capabilities and strong user support from facility staff

• Leader internationally as consortium model for earthquake engineering experimentation

• Cyberinfrastructure: telepresence, data visualization and analysis tools, hybrid simulation

• REU Site Program

Photos from NEESR PIs and NEES and NSF web sites
NEES: Challenges

“Culture change for conduct of research”

• Scheduling experiments at NEES facilities
  – Completing ESUFs and SUAs
  – Planning to meet testing schedule
  – Understanding the impacts of delays

• Curating and archiving data
  – Quality: Timely and complete
  – NSF Final Project Report approval depends on this!

• Highlighting accomplishments – critical for the field!
  – Publications listed in FastLane
  – Sharing media coverage/recognition with NSF and NEEScomm
Fall 2010 – Spring 2012: Two studies underway
- National Academy of Sciences, CMMI-1047519 (Fall 2010 or Jan 2011 Workshop)
  - Grand Challenges in basic earthquake engineering research that require a network of earthquake engineering experimental facilities and cyberinfrastructure
  - Networked experimental and cyber infrastructure needed to address the Grand Challenges
  - Focus is on requirements, rather than reference to existing or anticipated specific facilities
  - Workshop report completed early 2011
- Science and Technology Policy Institute, AST-1045173
  - Priorities and scenarios for integrated experimental and cyber facilities needed to address the Grand Challenges in basic earthquake engineering research
  - Community input https://collab.ida.org/eeforum
  - Study to be completed by spring 2012

Fall 2012: NSF informs the earthquake engineering community of its plans beyond 2014 for multi-user earthquake engineering research infrastructure
A revised version of the NSF Proposal & Award Policies & Procedures Guide (PAPPG), NSF 11-1, was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011.

**Data Management Plan:** The PAPPG contains a clarification of NSF's long standing data policy.

- All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan.
- The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate.
- Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp.
Beginning in January 2011 (actual implementation date to be announced), a Data Management Plan (DMP) will be required for all new NSF proposals. FastLane will be updated to enable its upload as a separate Supplementary Document. Proposals that do not include the requisite DMP will be stopped from submission. Specific guidance will be included in an upcoming revision to the NSF Proposal & Award Policies & Procedures Guide. Please note, the Engineering Directorate (ENG) will have additional guidance for proposals submitted to ENG programs, http://nsf.gov/eng/general/ENG_DMP_Policy.pdf. Detailed instructions, including responses to Frequently Asked Questions will be provided at the time of implementation. In the meantime, questions and/or suggestions about this new requirement may be addressed to Dr. Maria K. Burka at mburka@nsf.gov.
Data Management Plan (NSF 11-1) May Include:

1. the types of **data**, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;

2. the **standards to be used for data and metadata format and content** (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);

3. **policies for access and sharing** including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;

4. **policies** and provisions for re-use, re-distribution, and the production of derivatives; and

5. plans for **archiving data**, samples, and other research products, and for preservation of access to them.

NEES Data Sharing and Archive Policies and Guidelines
http://nees.org/site/oldnees/filedir_2/DSAPG-V1_041510.pdf
NEESR Program Solicitation
(under revision for FY 2011 – anticipated changes)

• Simplify/reduce requirements
• Significant use of
  – One or more of the 14 NEES facilities and/or
  – Data archived in the NEES Project Warehouse (data repository)
• Budgets match scope, timeline, and use of NEES resources
• Per NSF 11-1, Data Management Plan in Supplementary Docs
• Schedule to complete experimentation by Sept 30, 2014
• Opportunity to partner with NEEScomm for EOT
• International collaboration (e.g., Japan’s E-Defense, China)
NEES Research Directions (1 of 2)

- **NEHRP Workshops - Research Needs Reports**
  http://www.nehrp.gov/library/researchneeds.htm

- **Vision 2020: An Open Space Technology Workshop on the Future of Earthquake Engineering, St. Louis, Missouri, January 2010**
  http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0957648

- **US-Japan Workshop on Future Directions for Earthquake Engineering Research, Japan, March 2010**
  http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0961320

- **Workshop on NEES/China Collaboration for Earthquake Engineering, Purdue University, August 23-24, 2010**

- **Coordinating Workshops for the NEES/E-Defense Collaborative Research Program in Earthquake Engineering (Phase 2)**
  http://peer.berkeley.edu/publications/peer_reports/reports_2010/web_10_109NEES_Edefense.pdf
NEES Research Directions (2 of 2)

- **Research Needs Emerging from the 2010 Haiti and Chile Earthquakes**
  - Chile Earthquake Workshop, August 19, 2010, at NSF
  - Haiti Earthquake Workshop, September 30-October 1, 2010, at NSF
  - Workshop results to be posted at [http://www.eeri.org](http://www.eeri.org)

- **Tsunami Research Colloquium, Chapel Hill, NC, sponsored by DHS S&T, October 19-20, 2009**
  [http://hazardscenter.unc.edu/diem/News_Events.php](http://hazardscenter.unc.edu/diem/News_Events.php)

- **Geotechnical Earthquake Engineering Research Colloquium, RPI, Sponsored by DHS S&T, Proceedings of the Geotechnical Earthquake Engineering Workshop, Rensselaer Polytechnic Institute, July 29, 2009**
NEESR Proposals involving Field Work (See NSF Grant Proposal Guide)

- **Field Work (NEPA)**
  National Environmental Policy Act of 1969 (NEPA) (42 USC §4332). NEPA requires Federal agencies consider the environmental impacts of major Federal actions significantly affecting the quality of the human environment. If a proposed project might have an environmental impact, the proposal should furnish sufficient information to assist Foundation officials in assessing the environmental consequences of supporting the project. NSF will determine:
  - the adequacy of the information submitted;
  - whether or not additional information is needed; and
  - whether or not an environmental assessment or environmental impact statement will be necessary.

- **Research in Historic Places (National Historical Preservation Act)**
Opportunities for Ongoing NEESR Awards

- Coordinate with NEES Ops/NEEScomm REU program
  - Research Experiences for Undergraduates Supplements
- Research Experiences for Teachers Supplements
- NEES/China Collaboration Research Supplements
  - Outcome of August 23-24, 2010 Workshop at Purdue University
  - Must use NEES facility(ies)
- Publicizing accomplishments/significant event – coordinate with
  - NSF Engineering Directorate Media Contact
  - Joshua Chamot (jchamot@nsf.gov)
- Project Outcomes report at research.gov (new NSF requirement)
- CMMI Grantees Meeting January 4-7, 2011, Atlanta, GA
Additional NSF Funding Opportunities (1)

- Early career faculty
  - NSF 10-609: Broadening Participation Research Initiation Grants in Engineering (BRIGE)
  - Faculty Early Career Development (CAREER)

- Major Research Instrumentation (MRI)
- Cyber-enabled Discovery and Innovation (CDI)
- Cyber-Physical Systems (CPS)
- Integrative Graduate Education and Research Training (IGERT)
- Interdisciplinary Research (IDR) (NSF ENG) – in revision
Additional NSF Funding Opportunities (2)

- NSF International Opportunities (planning, workshops, students, etc.)
  - Developing Global Scientists and Engineers
    - International Research Experiences for Students
    - Doctoral Dissertation Enhancement Projects
  - International Research Fellowship Program
  - Pan-American Advanced Studies (PASI) Program
  - East Asia and Pacific Summer Institutes (EAPSI)
  - Partnerships for International Research and Education (PIRE)
  - International Planning Visits and Workshops
    - International Planning Visits
    - International Workshops
- NSF and USAID (in development – approx Jan 2011)
  - Partners in Science for Development (supplements?)
Further Information

National Science Foundation
http://www.nsf.gov

CMMI Grantees Conference
January 4-7, 2011
Atlanta, GA
http://www.cmmigranteeconference.org/

NEES Research Program

NEES Operations (FY 2010-FY 2014)
http://www.nees.org