

5. INFRASTRUCTURE

5.1 Institutional Configuration

PEER is instituted as a consortium of *Core Institutions* and *Education Affiliates*. The *Lead Institution* is the University of California, Berkeley, where the Center Director and core administration are located. The *Core Institutions* are those universities that initiated founding of the center, collaborated to achieve the matching funds, and are the primary locations for PEER activities. The *Education Affiliates* are those universities who participate primarily in PEER education programs. In accordance with NSF designations, PEER also informally defines *Outreach Institutions* to include (a) institutions that receive funds from PEER to conduct very focused work with or for the center, (b) organizations whose PIs work primarily at their own institutions in partnership with PEER staff but receive no funds from PEER, and (c) organizations directly involved with PEER educational or outreach activities, including the Education Affiliates.

The Education Affiliates designation is new to PEER this year. Previously, PEER formally included nine *Affiliated Institutions*, which were so designated at the formation of PEER, and which were eligible to participate in PEER research and education programs. That designation was eliminated in January 2004 and the designated universities were released from their involvement with PEER. Simultaneously, PEER initiated the Education Affiliates designation.

Table 6 (see end of this chapter) lists the Institutions executing PEER's research, technology transfer, and education programs. The growing number of institutions involved with PEER is a major change from the original PEER structure, and reflects the growing funding base and influence of PEER.

5.2 Leadership Team, Faculty, and Student Team and Diversity

Table 7 (see end of this chapter) provides a count of those members of the PEER team during the Reporting Year that are considered to be PEER Personnel by virtue of managing, leading, and carrying out PEER's research, education, technology transfer, and outreach activities. The vast majority of them carry out the center's mission through involvement in projects that contribute directly to the center by fulfilling its strategic plan. Included in this count are all people who worked on a paid or unpaid basis on center research, technology transfer, and education activities funded by all sources.

5.2.1 The Leadership Team

Professor **Jack Moehle** (UC Berkeley) is the *Center Director* and chief executive officer of the center. He is responsible for administering the center in accordance with the requirements of NSF. He also is responsible for creating an atmosphere of intellectual creativity that stimulates innovation and promotes team coordination. He is responsible for staffing, fiscal, and resource management. The Center Director recommends to the Institutional Board the appointment of key individuals. The Center Director reports to the Vice-Chancellor for Research at UC Berkeley.

Professor **Greg Deierlein** (Stanford University) is *Deputy Director for Research*. He manages the research program and is responsible to the Center Director for all research activities. The Deputy Director recommends organization of the research program into thrust areas, and recommends Thrust Area Leaders, who are appointed by the Center Director subject to approval

of the Institutional Board. The thrust area leaders along with the Deputy Director compose the **Research Committee**, which organizes details of the research program. They are responsible for developing strategic plans, convening coordination meetings, monitoring progress, and preparing written summaries of work in the research program. For membership, see Table 5.1.

Professor **Scott Ashford** (UC San Diego) is *Assistant Director for Education*. He organizes and conducts the Education Program through the **Education Committee**, and is responsible to the Center Director for all education activities. Membership on the Education Committee is determined by the Assistant Director for Education, and includes representatives from each Core Institution and from affiliated institutions. Table 5.2 lists current members. The Assistant Director for Education also is responsible for oversight of the Student Leadership Council (described later).

Ms. **Darlene Wright** (UC Berkeley) is the *Administrative Director*, responsible for assisting the Director in PEER management; acting as guardian of rules, regulations, and policies; serving as information gatekeeper and resource for center members; and providing financial and personnel management.

Dr. **Yousef Bozorgnia** (UC Berkeley) is *Associate Director for Sponsored Projects and Technology Transfer*. He leads efforts to develop and manage externally funded projects, develop the Business and Industry Partner Program, develop technology transfer mechanisms, and interact with the Implementation Advisory Board. Together with the Director he represents PEER on the Joint Management Committee (Table 5.3), which manages the Lifelines Program along with the industry partners. Dr. Bozorgnia joined PEER in this position in March 2004.

Table 5.1 – Research Committee

| Member |
|--------------------------------|
| Greg Deierlein, <i>Chair</i> |
| Ross Boulanger |
| Mary Comerio |
| Ahmed Elgamal |
| Gregory Fenves |
| Helmut Krawinkler |
| Stephen Mahin |
| Peter May |
| Jack Moehle, <i>ex-officio</i> |

Table 5.2 – Education Committee

| Member | Affiliation |
|--------------------------------|------------------|
| Scott Ashford, <i>Chair</i> | UC San Diego |
| Pedro Arduino | U Washington |
| James Beck | CalTech |
| Tara Hutchinson | UC Irvine |
| Amit Kanvinde | UC Davis |
| Erik Johnson | USC |
| Abraham Lynn | Cal Poly State U |
| David McLean | Wash. State U |
| Kurt McMullin | San Jose State U |
| Charles Menun | Stanford |
| Jack Moehle, <i>Ex Officio</i> | UC Berkeley |
| Ian Robertson | U Hawaii |
| Jonathan Stewart | UC Los Angeles |
| Bozidar Stojadinovic | UC Berkeley |
| Solomon Yim | Oregon State U |

Table 5.3 – Joint Management Committee for the Lifelines Program

| PEER | California Energy Commission |
|---------------------|------------------------------|
| Jack Moehle (Chair) | David Chambers |
| Yousef Bozorgnia | Laurie ten Hope |
| Caltrans | Pacific Gas & Electric, Co. |
| Abbas Abghari | Norman Abrahamson |
| Brian Chiou | Lloyd Cluff |
| Cliff Roblee | Kent Ferre |
| Tom Shantz | Eric Fujisaki |
| | Stuart Nishenko |

Mr. **Parshaw Vaziri** (UC Berkeley), is *Director of Public Relations and Outreach*, and is responsible for maintaining and developing public relations materials and providing broad visibility for the center and its activities. This position has primary responsibility for events management and regular communications within the center among all participants and sponsors.

5.2.2 Faculty and Student Team

PEER faculty members are spread broadly among the nine Core Institutions plus additional Outreach Institutions where needed expertise exists. PEER endeavors to involve a faculty team that is diverse in gender, ethnicity, and academic age. PEER students working on research projects are selected by faculty researchers to work on individual projects; PEER provides programs and sets requirements to involve the students in multi-disciplinary and multi-institutional research environment. See Table 7.

5.2.3 Diversity

PEER initiated a strategic plan to increase diversity beginning Year 2. The Graduates Fellowship program, introduced in Year 2, targeted Hispanic, African American and Native American students, providing up to three years funding to participate in PEER programs. PEER funded students under this program before it had to be discontinued because of state law prohibiting use of ethnicity or race as a criterion. PEER also advertised its intern programs in schools that serve traditionally underrepresented groups, and collaborated with the UC Berkeley SUPERB program. Despite these efforts, the numbers of minority students participating in PEER programs did not grow substantially.

Starting in late 2003, PEER began a new effort to increase diversity, including the following:

- The Affiliated Universities have been discontinued, and the new Education Affiliates designation was initiated to provide improved access for students from underrepresented groups.
- PEER has made contact with two California sites of NSF's Louis Stokes Alliance for Minority Participation. PEER staffed a table at the Louis Stokes California Alliance for Minority Participation annual undergraduate research symposium in February 2004. We will continue to advertise our intern programs through these organizations.
- PEER is working with George Johnson, Associate Dean for Special Programs, College of Engineering, Berkeley, to identify the appropriate means of establishing a partnership among the affiliated Deans of Engineering, other Deans, and the chairs of departments of the affiliated EERC faculty to increase diversity.
- PEER has modified its undergraduate research programs to encourage applications by students from underrepresented groups and to base selection diversity considerations. Revised materials can be found at <http://peer.ucsd.edu/internshipmenu.htm>.
- PEER's RET program is by collaborating with CHUM at UCSD to find teachers, with emphasis on seeking teachers from low-performing schools. We are also building relationships with Lapwai High School in Idaho, on the Lapwai Tribe reservation. One of their teachers participated in the RET last summer, and will be joining us in Japan this summer.

- PEER has successfully reached K-12 students from underrepresented groups through its earthquake simulation competitions using LEGO building blocks (UC Irvine) and Popsicle sticks (UC San Diego) (see <http://www.ucsd.tv/library-test.asp?showid=8216> starting at 14:40). Starting in Year 7, UC Berkeley is initiating a related program for northern California students, with primary milestones being an initial limited offering in April 2004 and a full competition to commemorate the centennial of the 1906 San Francisco earthquake in April 2006.

PEER's new diversity strategy is newly in place, so its effectiveness cannot be well gauged at this time. Table 5.4 summarizes diversity indices for PEER at the time of this writing.

Table 5.4 – Center Diversity, by Institution

| | UCB | | Caltech | | Stanford | | UCD | | UCI | | UCLA | |
|--|-----|-------|---------|-------|----------|-------|-----|-------|-----|-------|------|-------|
| | # | % | # | % | # | % | # | % | # | % | # | % |
| Females | 17 | 30.4% | 1 | 16.7% | 1 | 4.2% | 6 | 30.0% | 4 | 36.4% | 3 | 25.0% |
| Underrepresented Races | 1 | 2.7% | 0 | 0.0% | 1 | 6.7% | 0 | 0.0% | 0 | 0.0% | 1 | 16.7% |
| Hispanics/Latinos | 2 | 3.6% | 1 | 16.7% | 4 | 16.7% | 0 | 0.0% | 1 | 9.1% | 1 | 8.3% |
| Total # of responses for calculating % of Females & Hispanics* | 56 | | 6 | | 24 | | 20 | | 11 | | 12 | |
| Total # of responses for calculating % of Under-Rep Races** | 37 | | 5 | | 15 | | 13 | | 8 | | 6 | |

| | UCSD | | USC | | UW | | Outreach Orgs | | TOTAL | |
|---|------|-------|-----|-------|----|-------|---------------|-------|-------|-------|
| | # | % | # | % | # | % | # | % | # | % |
| Females | 8 | 27.6% | 5 | 62.5% | 6 | 46.2% | 10 | 11.9% | 61 | 23.2% |
| Underrepresented Races | 1 | 5.0% | 1 | 16.7% | 0 | 0.0% | 4 | 5.6% | 9 | 4.6% |
| Hispanics/Latinos | 4 | 13.8% | 0 | 0.0% | 0 | 0.0% | 5 | 6.0% | 18 | 6.8% |
| Total # of resp. for calculating % of Females & Hispanics* | 29 | | 8 | | 13 | | 84 | | 263 | |
| Total # of responses for calculating % of Underrep. Races** | 20 | | 6 | | 13 | | 71 | | 194 | |

* = Total number of participants minus those who did not provide gender or ethnicity information
 ** = Total number of US Citizens/Permanent Residents with race reported

Underrepresented Races = the total of US citizens and permanent residents who are: African Americans, Native Americans/American Indians, Hawaiian and Pacific Islanders, or any combination of races that includes at least one of these races. (These combinations may include Caucasian or Asian races as well).

5.3 Equipment and Space

The PEER headquarters is at the Richmond Field Station of the University of California, Berkeley. All activities are centrally administered at this location. One administrative support office at UC San Diego assists in the day-to-day administration and management of the education activities of the center. Satellite office space on the UC Berkeley campus has been set aside during Year 6; however, that space is not currently available as a result of programmed seismic rehabilitation work.

The PEER headquarters is responsible for overall administration of the center program. NSF and primary matching funds are held entirely by the PEER headquarters until subcontracts are made to individual principal investigators at PEER institutions. The PEER headquarters also serves as a central clearinghouse for all PEER activities, and publishes research reports, newsletters, and Internet information from the central location.

Overall research coordination and specific responsibility for the core research program funds is the responsibility of the Deputy Director for Research (Gregory Deierlein). Administration of all research activity is through personnel at the PEER headquarters at UC Berkeley.

Education program coordination is carried out partly at the UC San Diego office. This office is responsible to convene the Education Committee and develop an education program, develop program announcements and requests for proposals, and make recommendations for education program funding to the Center Director. This office also is responsible for the day-to-day management of the education program.

The center brings outstanding and unique research facilities together in a single network. Experimental facilities include the largest centrifuge, the largest three-dimensional shaking table, the largest tsunami wave tank, and the largest strong-wall/test floor facilities currently operating in the US. Five NEES equipment sites are at PEER universities. The network of unique facilities, linked by a modern telecommunications system, facilitates multi-institutional coordinated research to be carried out as part of the center.

Each of the participating universities features many state-of-the-art networked computer facilities. In addition, the center has direct access to the NSF-established super computer center at UCSD. The center has established an electronic network including video-conferencing capabilities among the participating institutions to facilitate communications and to extend

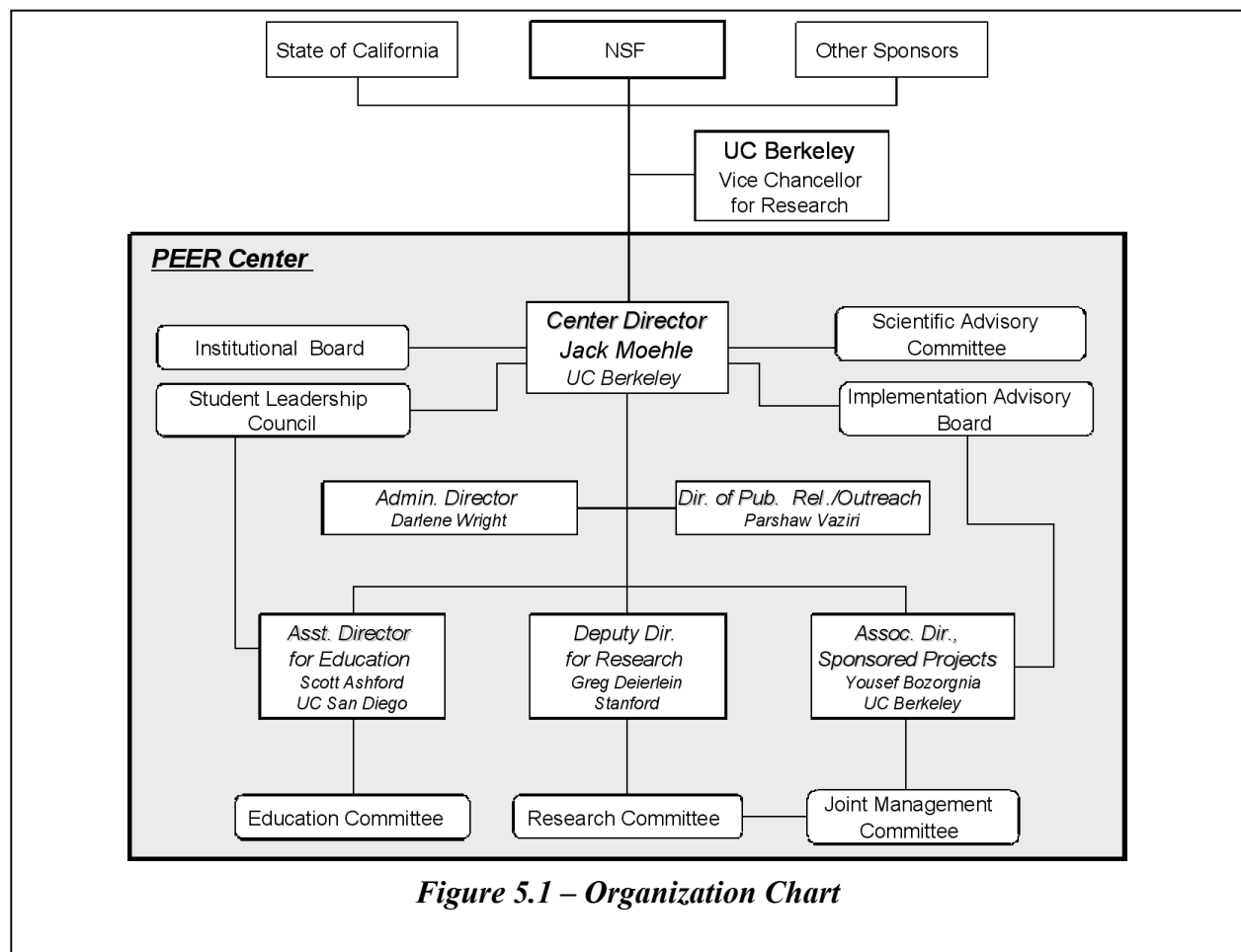


Figure 5.1 – Organization Chart

involvement in all facets of the education and research programs.

Information systems for earthquake engineering are available at UC Berkeley and Caltech through the National Information Service for Earthquake Engineering as well as the CUBE/REDI programs for real-time earthquake information, and at USC as part of the SCEC Outreach Program. The center works with and through these and other established information systems to introduce an enhanced vision of earthquake engineering research dissemination.

5.4 Organization and Management Systems

The PEER programs are organized and managed to ensure strategic planning and program coordination, project and PEER personnel communications, outreach communications, and effective utilization of program resources. The organizational structure is outlined in the following paragraphs.

5.4.1 Organization

Figure 5.1 shows an organization chart for PEER. This chart depicts management, leadership, and oversight relations. Roles of the *Center Director*, *Deputy Director for Research*, *Research Committee*, *Assistant Director for Education*, *Education Committee*, *Administrative Director*, *Associate Director for Sponsored Projects and Technology Transfer*, and *Director of Public Relations and Outreach* are described in Section 5.2.1.

The ***Institutional Board*** (Table 5.5) represents the participating universities, with one appointed member from each of the Core Institutions and one appointed member to represent all Education Affiliates. The Institutional Board establishes policy and reviews and approves financial and administrative activities as well as all appointments of key individuals for the center. The Institutional Board will recommend to NSF and the host institution any changes in the Center Director if this becomes necessary, and will consider adding or removing member institutions. The Center Director and the Deputy Director for Research are ex-officio members of the Board.

Table 5.5 – Institutional Board

| Member | Affiliation |
|-----------------------------|--------------------|
| Paul Jennings, <i>chair</i> | CalTech |
| Thalia Anagnos ¹ | San Jose State U |
| Medhat Haroun | UC Irvine |
| I.M. Idriss | UC Davis |
| Anne Kiremidjian | Stanford |
| Steve Mahin | UC Berkeley |
| Charles Roeder | U Washington |
| Joel Conte | UC San Diego |
| John Wallace | UC Los Angeles |
| L. Carter Wellford | USC |

¹ Education Affiliate Representative

A *Scientific Advisory Committee* provides external review of the PEER programs. It advises on center goals, planning, research thrusts, and products relative to regional and national earthquake risk mitigation needs. The membership includes academic, research organization, and advanced applications industry sectors. Current membership of this committee is identified in Table 5.6.

Table 5.6 – Scientific Advisory Committee

| Member | Affiliation |
|--------------------------------|---------------------------------|
| Ron Hamburger, <i>Chair</i> | Simpson Gumpertz & Heger |
| Don Anderson | CH2M Hill |
| Jacobo Bielak | Carnegie Mellon University |
| Roger Borchardt | US Geological Survey |
| Raymond Burby | U North Carolina at Chapel Hill |
| James Jirsa | University of Texas at Austin |
| Tom Jordan | SCEC |
| Ron Mayes | Simpson Gumpertz & Heger |

The *Implementation Advisory Board* consists of selected members of the Business and Industry Partner Program and other individuals selected by the Director. The IAB reviews PEER’s research programs and products, and recommends ways to improve utilization of results in the private and public sectors. Table 5.7 lists current members.

Table 5.7 – Implementation Advisory Board

| Member | Affiliation |
|-------------------------------|------------------------------------|
| James Malley, <i>Chair</i> | Degenkolb Engineers |
| Fadel Alameddine | California Dept. of Transportation |
| Robert Bachman | Private sector |
| David Chambers | California Energy Commission |
| Lloyd Cluff | Pacific Gas & Electric, Co. |
| John Hooper | Magnusson Klemencic Associates |
| Karl Kirker | Washington Dept. of Transportation |
| Maury Power | Geomatrix Consultants, Inc. |
| Clifford Roblee | California Dept. of Transportation |

The *Student Leadership Council* (Table 5.8) organizes student activities and recommends programs to improve student experiences. The SLC is organized and operates according to bylaws it has established, with general oversight from the Assistant Director for Education. The SLC reports jointly to the Center Director and the Assistant Director for Education.

5.4.2 Management Systems

Strategic research planning in PEER is carried out under the leadership of the Center Director and involves the individuals identified in Figure 5.1. Regular teleconference meetings of an Executive Committee (comprising the Center Director, Administrative Director, Deputy Director for Research, Associate Director of Sponsored Projects, Assistant Director for Education, and Director of Public Relations/Outreach) ensures that all aspects of the center programs are taken into consideration in strategic and event planning. Various tri-center coordinating committees promote coordination among the three EERCs (see Volume III).

In the core research program, the Thrust Area Leaders are charged with developing thrust area strategic plans, which are then discussed, modified, and coordinated by the Research Committee. In the education program, the Assistant Director for Education is charged with developing an

education strategic plan, which is evaluated, modified, and coordinated in discussions within the Executive Committee. Strategic planning is a continual process.

Research project selection is driven by the strategic plan. While primary emphasis is on selecting the most qualified researchers for a task, consideration also is given to building a team of participating faculty and students who are committed to the goals of PEER. PEER also endeavors to fund promising young faculty and faculty from underrepresented groups. Based on the strategic plan, the Deputy Director for Research, with full participation from the Thrust Area Leaders, develops a series of task statements for the next period. If the Research Committee can identify an individual or team specially suited for the task, the task will be directed by mutual agreement to that individual or team. In other cases, a Request for Statements of Interest is distributed and decisions are reached on the basis of responses and negotiations. The Center Director has authority to make final funding decisions.

The Center Director in consultation with the Executive Committee makes strategic and ad-hoc financial decisions. Distribution of funds among programs generally adheres to a strategic allocation plan, which targets percentages of the total budget for specific program areas and attempts to maintain balance in funding among disciplinary areas and among senior and junior faculty. Funding distributions also consider the need to increase participation of individuals from underrepresented groups.

The University of California has an established financial management system that complies with federal, state, and institutional regulations that also govern the PEER Center. Policies and established procedures govern procurement of all goods and services. Knowledge of and adherence to these governmental and institutional regulations is the responsibility of the Administrative Director. Key PEER administrative staff members are aware of cost principles governing expenditures of federal funds (OMB Circular A-21) and procurement procedures prescribed by federal regulations (OMB Circular A-110), and the Cost Accounting Standards. All pre-award activity is channeled through a centralized Sponsored Projects Office, delegated to be the Authorized Institutional Representative for all agreements (grants, contracts, subawards) with the institution. They also make certain that budgets (rates, benefits, overhead and other allowable costs) and terms and agreements are in compliance with institutional as well as governmental regulations. A centralized Extramural Funding Accounting Office is responsible for the university's invoicing of the awarding agency (if applicable). The invoice is usually presented with a financial progress report required by the agency at the time of invoice.

In previous years, data contained in the Annual Report financial tables reported funds that were committed or obligated to specific research or education projects during that current year as being 'spent.' This resulted in a large discrepancy between UC Berkeley's quarterly Financial Cash Transaction Reports (FCTRs) actuals and the resultant balance amount, or residuals.

Table 5.8 – Student Leadership Council

| Member | Affiliation |
|---------------------------------|--------------------|
| Michael Gebman, <i>Chair</i> | UC San Diego |
| Jack Baker | Stanford |
| Casey Bradford | Caltech |
| Barbara Chang | UC Irvine |
| Dongdong Chang | UC Davis |
| Lijuan (Dawn) Cheng | UC San Diego |
| Yoojoong Choi | UC Los Angeles |
| George Gimás | U Washington |
| Emily Guglielmo | UC Berkeley |
| On Lei (Annie) Kwok | UC Los Angeles |
| Leonardo Massone | UC Los Angeles |
| Sarah Paulsen | U Washington |
| Alberto Salamanca | UC Los Angeles |

PEER's Year 6 award was withheld while NSF and UC Berkeley reconciled the apparent differences. Since then, PEER has reorganized its financial reporting structure to meet NSF requirements and begun the enormous task of going back to Year 1 to reconcile all financial activity for each award year through the present. This reconciliation effort is projected to be complete by the end of May 2003.

The multi-institutional nature of PEER requires special efforts to foster communications and collaborations. These communications begin with regular (usually twice monthly) meetings of the Executive Committee, usually through telephonic means. The Director and Deputy Director communicate more frequently by email, telephone, or face-to-face meeting. The researchers are brought together quarterly to discuss research strategic plans, research needs, and research accomplishments, and quarterly reports are required for each project. All project PIs or their research students, or both, are required to attend these meetings. Information on PEER programs is documented on the PEER web site, in the quarterly PEER newsletter, and by regular email communications. Video-conferencing units have been installed at six campuses.