

**EARTHQUAKE HAZARDS REDUCTION ACT
REAUTHORIZATION: HEARING BEFORE THE
SUBCOMMITTEE ON SCIENCE, TECHNOLOGY
AND SPACE OF THE COMMITTEE ON
COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE 98TH CONGR. 1ST
SESSION, MARCH 3, 1983. SERIAL NO. 98-6**

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EARTHQUAKE HAZARDS REDUCTION ACT REAUTHORIZATION

THURSDAY, MARCH 3, 1983

U.S. SENATE,
SUBCOMMITTEE ON SCIENCE, TECHNOLOGY, AND SPACE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9 a.m. in room SR-253, Russell Senate Office Building, Hon. Slade Gorton (chairman of the subcommittee) presiding.

Staff member assigned to this hearing: Louis Blair, professional staff member; and Edward Smick, minority professional staff member.

OPENING STATEMENT BY SENATOR GORTON

Senator GORTON. This is an authorization hearing pursuant to the National Earthquake Hazards Reduction Act.

I note before I give my opening statement that Mr. McLoughlin is already at the table. I think I will ask all four of the Federal agency witnesses to come up here at the same time. We will hear the statement of each of you and then ask questions of all of you. So if Dr. Peck, Dr. Sanderson, and Mr. Kammer will also come forward. When Mr. Kammer comes in, we will get him to join you.

Each year more than 1,000 earthquakes are detected in the United States. Although most are quite small and cause little or no damage, the potential exists for catastrophic effects.

According to estimates from the U.S. Geological Survey, a large earthquake in the Puget Sound area, for example, an area which has experienced several severe earthquakes in the past, could cause property damage of up to \$200 million to \$300 million, inflict as many as 10,000 casualties and leave 20,000 people homeless.

A severe earthquake in the Los Angeles area, on the other hand, could cause property losses of up to \$50 billion and perhaps inflict 20,000 casualties.

In 1977, the Congress passed the Earthquake Hazards Reduction Act, developed largely by this committee, to establish a coordinated Federal program for research, prediction, mitigation efforts to minimize losses, and assistance to States and local governments for earthquake response planning activities.

In today's authorization hearing we will receive testimony from the four Federal agencies currently conducting work under the Earthquake Hazards Reduction Act. These agencies are: the Federal Emergency Management Agency [FEMA], which is the lead

agency for planning and coordinating Federal earthquake mitigation efforts; the U.S. Geological Survey; the National Science Foundation; and the National Bureau of Standards.

In recent years the subcommittee has been concerned about the loose coordination of Federal efforts to meet all the requirements of the act, the degree of commitment of FEMA to the leadership role, and the absence of long-range program plans.

In 1980, Congress directed FEMA to submit by September 30, 1981 a 5-year plan for the earthquake program. We still have not received that plan. However, one of today's witnesses is chairman of an advisory body helping FEMA to prepare the plan. I hope that he and FEMA will speak on the progress in developing it.

In 1982, this subcommittee requested that the General Accounting Office assess the adequacy of the current organization of Federal earthquake activities, and especially the extent to which FEMA is carrying out its lead role. A representative of GAO will testify today as to that assessment.

I will place in the record an opening statement by Senator Hollings.

[The statement follows:]

OPENING STATEMENT BY SENATOR HOLLINGS

Mr. Chairman, during the 95th Congress I had a major role as Chairman of the Subcommittee on Oceans and Atmosphere in the enactment of Public Law 95-124, the Earthquake Hazards Reduction Act. My interest in and concern for public safety has not lessened. Indeed, the more the recently completed National Hazard Maps disclose the pervasiveness of the earthquake hazard throughout our nation, including my home state, the more important this program becomes.

While I do not want to pre-judge the thrust of the testimony we will hear today I do want to express concern over some elements of the program and express the hope that today's witnesses can alleviate that concern. One thing we can all agree on. No act of Congress will ever prevent an earthquake. But this Act can mitigate the human and economic consequences of earthquakes. It will do so if, and only if, its provisions and programs are carried out in a timely and competent manner. We must determine whether that is being done.

Is FEMA providing the management coordination necessary for effectiveness in a multi-agency program? Will the proposed termination of the National Bureau of Standards program in building research be offset by its reestablishment elsewhere, or has the Administration concluded that safety in and after an earthquake is unrelated to the integrity of stairs, ceilings, post-earthquake fire fighting capabilities, etc. which the NBS program seeks to integrate under earthquake engineering?

Mr. Chairman, it is my hope that Committee Members will look carefully into matters such as these during this hearing and reflect their findings in forthcoming authorizing legislation for the National Earthquake Hazards Reduction Act.

Senator GORTON. We will begin with a panel of four representatives of the Federal agencies conducting activities under the Earthquake Hazards Reduction Act. In order of presentation they are Mr. David McLoughlin, Deputy Associate Director for State and Local Programs and Support, Federal Emergency Management Agency; Dr. Dallas Peck, Director, U.S. Geological Survey; Dr. Jack Sanderson, Assistant Director for Engineering, National Science Foundation; and Mr. Raymond Kammer, Deputy Director, National Bureau of Standards, Department of Commerce.

Gentlemen, we welcome you to this hearing and look forward to your testimony, and we will start with you, Mr. McLoughlin.

STATEMENTS OF DAVID McLOUGHLIN, DEPUTY ASSOCIATE DIRECTOR FOR STATE AND LOCAL PROGRAMS AND SUPPORT, FEDERAL EMERGENCY MANAGEMENT AGENCY; DALLAS PECK, DIRECTOR, U.S. GEOLOGICAL SURVEY; JACK SANDERSON, ASSISTANT DIRECTOR FOR ENGINEERING, NATIONAL SCIENCE FOUNDATION; AND RAYMOND KAMMER, DEPUTY DIRECTOR, NATIONAL BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE

Mr. McLOUGHLIN. Good morning, Mr. Chairman.

Senator GORTON. Please proceed. We have the written statements of each of you which will be included in the record in full. If you will summarize those statements in 5 or 6 minutes, we can go on to questions.

Mr. McLOUGHLIN. It is a pleasure to appear before you, Mr. Chairman on behalf of Louis O. Giuffrida, the Director of the Federal Emergency Management Agency, to present FEMA's comments on the national earthquake hazard reduction program in connection with the reauthorization of the Earthquake Hazards Reduction Act of 1977.

I am presenting, as you have requested, only the highlights of my statement which has been made part of the record.

FEMA has assumed an active leadership role in the earthquake program. An earthquake policy group consisting of the senior officials charged with administering the respective agencies' earthquake programs has been formed to direct the overall activities of the Interagency Coordinating Committee.

The review of the 5-year program plan, responsibilities for developing the Federal response plan for a catastrophic earthquake and the activities of the Interagency Committee for Seismic Safety and Construction are now carried out under the Interagency Coordinating Committee.

FEMA has established an independent panel headed by Mr. Karl Steinbrugge to review the national earthquake hazard reduction program 5-year plan. Mr. Steinbrugge has formed a group of 25 experts representing all related disciplines to conduct these reviews and will be testifying here today on these activities.

As chair of the Subcommittee on Federal Earthquake Response Planning, FEMA has initiated an extensive planning effort involving at least 22 departments and agencies. The subcommittee has developed a planning guide that could be used as an interim operative plan for response and as the framework in developing a comprehensive national Federal plan. We expect that to be published in the Federal Register on March 4.

During the past year FEMA has continued to pursue a two-pronged activity to foster the development of improved seismic safety building provisions in both the private and public sectors. For the private sector, the Building Seismic Safety Council is conducting trial designs with tentative provisions developed by the Applied Technology Council.

This activity will result in the issuance of a source document for use by code organizations as well as State and local building officials. A program to encourage its adoption by the private sector is planned.

In a parallel effort, FEMA has continued to encourage Federal agencies to adopt similar and, if necessary, more stringent seismic provisions in their construction and grant leasing activities. The ICSSC has been restructured and given new policy level membership.

Under this new leadership, with increased high level management attention and greater resources, the ICSSC will show results during the next year.

It is essential that the program proceed in a cost-effective and organized manner. Therefore, I recommend that Public Law 95-124 be reauthorized for at least 3 years.

Thank you, Mr. Chairman. This concludes my testimony.

[The statement follows:]

STATEMENT OF DAVE McLOUGHLIN, DEPUTY ASSOCIATE DIRECTOR OF STATE AND LOCAL PROGRAMS AND SUPPORT, FEDERAL EMERGENCY MANAGEMENT AGENCY

It is my pleasure to appear before this subcommittee on behalf of Louis O. Giuffrida, Director of the Federal Emergency Management Agency (FEMA), to present FEMA's comments on the National Earthquake Hazard Reduction Program (NEHRP) in connection with the reauthorization of the Earthquake Hazards Reduction Act of 1977.

FEMA assumed the leadership and coordination of the NEHRP when the program was transferred to FEMA with the establishment of the Agency in 1979 under the Presidential Reorganization Plan No. 3 of 1978. The United States Geological Survey (USGS), the National Science Foundation (NSF), and the National Bureau of Standards (NBS) are the other principal agencies involved in the NEHRP and represent the largest portion of the program activities and budget allocations. In addition, numerous other Federal agencies participate in various phases of the activities of the program.

The Earthquake Hazards Reduction Act of 1977 (P.L. 95-124), as amended, identifies some of the objectives of the NEHRP as being:

1. Development of technologically and economically feasible design and construction methods and procedures to make new and existing structures, in the areas of seismic risk, earthquake resistant, giving priority to the development of such methods and procedures for nuclear power generating plants, dams, hospitals, schools, public utilities, public safety structures, high-occupancy buildings, and other structures which are especially needed in the time of disaster;
2. Implementation in all areas of high or moderate seismic risk of a system (including personnel, technology, and procedures) for predicting damaging earthquakes and for identifying, evaluating, and accurately characterizing seismic hazards;
3. Development, publication, and promotion, in conjunction with State and local officials and professional organizations, of model codes and other means to coordinate information about seismic risk with land-use policy decisions and building activity;
4. Development, in areas of seismic risk, of improved understanding of, and capability with respect to, earthquake-related issues, including methods of controlling the risks from earthquakes, planning to prevent such risks, disseminating warnings of earthquakes, organizing emergency services, and planning for reconstruction and redevelopment after an earthquake.
5. Education of the public, including State and local officials, as to earthquake phenomena, the identification of locations and structures which are especially susceptible to earthquake damage, ways to reduce the adverse consequences of an earthquake, and related matters;
6. Development of research on
 - (A) Ways to increase the use of existing scientific and engineering knowledge to mitigate earthquake hazards;
 - (B) The social, economic, legal, and political consequences of earthquake prediction;
 - (C) Ways to assure the availability of earthquake insurance or some functional substitute; and
7. Development of basic and applied research leading to a better understanding of the control or alteration of seismic phenomena.

These stated objectives can be grouped into four general categories of activities: basic research, mitigation, preparedness/response, and public education/information dissemination. All NEHRP activities fall into one of these categories in achieving the program objectives.

Last year, this Committee expressed concerns in its report on the hearing regarding FEMA's leadership role, NEHRP management and direction, and some specific program activities. Specifically:

The Committee wondered whether FEMA could effectively be the lead agency when other agencies have programs so much larger (budgets eight to ten times as large) and whether FEMA is devoting adequate resources and priority to meeting its responsibilities.

The Committee requested that the NEHRP or the Administration conduct an intensive review, preferably under independent leadership, to determine the best way to manage, structure, and staff the NEHRP to achieve the objectives stated in the Act and ensure adequate program management and direction.

The Committee requested the NEHRP to develop a detailed program plan—with increased cohesion among the four principal agencies, including conduct of joint projects and development of better-coordinated efforts and more-compatible budgets.

The Committee requested the NEHRP to increase the utilization and implementation of research-derived knowledge and FEMA to direct its attention to mitigation as well as post-earthquake response considerations.

The Committee expressed concern that the United States was still far from having an earthquake prediction capability comparable to ones that exist elsewhere in the world and international information exchange efforts should be increased.

In addressing these concerns, I would first like to assure the Committee that FEMA takes its responsibilities as the lead and coordinating agency for the NEHRP seriously and will devote whatever resources are required to ensure that the program receives the priority and attention needed to meet its objectives within FEMA and throughout the Federal Government. FEMA's activities in this regard will be discussed in addressing the specific management concerns expressed by the Committee.

The fact that FEMA has the smallest portion of the program activities is, we believe, an advantage rather than a disadvantage in providing the necessary leadership and management direction. FEMA has a broad perspective, a strong State and local interaction and interface network, and an integrated emergency management framework. This along with USGS's close working relationship with the various State geologists insures that all the objectives of the Act are met.

The response to the Committee's concerns regarding the direction of the program, the need for a five-year program plan, and FEMA's management and coordination roles, FEMA last spring selected Mr. Karl V. Steinbrugge, the internationally known expert, to conduct an independent review of the NEHRP. He was given a free hand to proceed in this task as he deemed best, and he in turn, selected a group of 25 experts representing all relevant disciplines and State/local governments to aid him. FEMA has provided this Panel with a draft five-year plan, which represents a synthesis of materials provided by other Federal agencies conducting earthquake-related activities. The work of this review panel continues and Mr. Steinbrugge is testifying today on the status of his activities. Completion of the five-year plan will follow shortly after the review panel accomplishes its mission.

FEMA has assumed an active leadership role in the earthquake program. I would like to cite several examples of those leadership responsibilities. First, I have established an Earthquake Policy Group consisting of Drs. Jack Sanderson, Dallas Peck, John Lyons and me—the Administration officials charged with running our respective Agencies' earthquake programs. We have already met on several occasions to discuss substantive issues—the five-year earthquake plan and pending program hearings. This group directs the overall activities of the Interagency Coordinating Committee for the National Earthquake Hazards Reduction Program (ICC NEHRP) and charges them with specific tasks.

The ICC NEHRP has continued to meet and to discuss substantive issues. To ensure that there was only one coordinating committee, we have brought under the umbrella of the ICC NEHRP the responsibilities for developing the Federal response plan for the catastrophic earthquake as well as the activities of the Interagency Committee for Seismic Safety in Construction (ICSSC). Both activities are now carried out as subcommittees of the ICC NEHRP.

A third example is the development of the five-year plan, which I discussed previously. As a final example, FEMA and the USGS have executed a Memorandum of Understanding directed toward coordinating our joint efforts in specific earthquake-related areas. Already staff from our respective agencies have begun work in the