

## **Assessment of Agency Progress**

**Seismic Safety of Federal and Federally Assisted, Leased, or  
Regulated New Building Construction:**

**A Progress Report on Federal Agencies' Execution of  
Executive Order 12699**

**I. Executive Order 12699**

**A. Introduction**

Substantial seismic safety measures for new Federal buildings are required by Executive Order 12699, *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction*, issued on January 5, 1990. Executive Order 12699 directs Federal agencies to issue regulations or procedures by 1993 that incorporate cost-effective seismic safety measures for all new Federal buildings and buildings that are leased, assisted, or regulated by the Federal Government. It is expected that the execution of Executive Order 12699 by Federal agencies will result in a significant number of all newly constructed buildings being seismic resistant within the next 25 years.

Federal Government leadership in seismic safety with its own buildings, and those which it leases, assists, or regulates, should rapidly encourage governmental jurisdictions throughout the nation to adopt and enforce adequate seismic safety codes, or risk losing Federal financial assistance and guarantees for the construction of homes and other buildings. The strong tie of seismic safety requirements to the availability of Federal funds for construction is expected to strongly motivate local governments and private sector building designers and contractors to update their codes and practices.

This volume of *Seismic Safety of Federal and Federally Assisted, Leased, or Regulated New Building Construction: A Progress Report on the Federal Agencies' Execution of Executive Order 12699* contains a detailed assessment of Federal agency activities in the execution of Executive Order 12699 during Fiscal Year (FY) 1991 and 1992. This volume also contains the Executive Order; individual agency reports; the format for reporting to the Federal Emergency Management Agency (FEMA); and the progress assessment criteria. An abbreviated version of the assessment is provided in the first volume to this report.

## **B. Requirements**

### ***Design and Construction Standards and Practices***

Executive Order 12699 reinforces the requirements of Public Law 100-678, *A Bill To Improve the Efficiency and Effectiveness of Management of Public Buildings*, which directs the General Services Administration (GSA) or any other Federal agency to comply with nationally recognized model building codes in the construction or alteration of buildings. Under the Executive Order, each affected Federal agency is independently responsible for ensuring that appropriate seismic design and construction standards are applied to new building construction under its jurisdiction. Section 3 of the Executive Order requires that nationally recognized private sector standards and practices, *i.e.*, nationally recognized model building codes, be used, unless the agency finds that none is available to meet its requirements. Section 4(a) of the Order makes the Interagency Committee on Seismic Safety in Construction (ICSSC) responsible to FEMA for recommending seismic design and construction standards and practices that are appropriate for implementing the Order.

In response to this requirement, the ICSSC developed its *Recommendation of Design and Construction Practices in Implementation of Executive Order 12699 by the Interagency Committee on Seismic Safety in Construction to the Federal Emergency Management Agency*, March 4, 1992. This recommendation is contained in RP 2.1-A, *Guidelines and Procedures for Implementation of the Executive Order on Seismic Safety of New Building Construction*, June 1992, a guidance document prepared by the ICSSC to assist Federal agencies in their implementation of the Order. In this document, the ICSSC recommends the use of the most recent edition of those standards and practices that are substantially equivalent to or exceed the seismic safety level in the most recent or immediately preceding edition of the *National Earthquake Hazards Reduction Program (NEHRP) Recommended Provisions for the Development of Seismic Regulations for Buildings*. The *NEHRP Recommended Provisions* were developed as nationally applicable seismic safety guidelines suitable for use by national standards and model code agencies and by legislative bodies.

The ICSSC, with funding from FEMA and through the National Institute of Standards and Technology (NIST) as its Technical Secretariat, engaged the Council of American Building Officials (CABO), to conduct a comparative study of four model codes (the Uniform Building Code (UBC), the National Building Code (NBC), the Standard Building Code (SBC), and the CABO one- and two-family dwelling codes) with the 1988 edition of the *NEHRP Recommended Provisions*. The result was published in a report, NIST GCR 91598, *Assessment of the Seismic Provisions of Model Building Codes*.

The ICSSC *Recommendation* identifies the following model codes as substantially equivalent to the *NEHRP Recommended Provisions* on the date of issuance of the ICSSC *Recommendation*.

- 1991 Uniform Building Code of the International Congress of Building Officials (ICBO)
- 1992 Supplement to the Building Officials and Code Administrators (BOCA) National Building Code
- 1992 Amendments to the Southern Building Code Congress (SBCC) Standard Building Code

Now that all three principal model building codes in the nation are substantially equivalent to the *NEHRP Recommended Provisions*, their use will facilitate the incorporation of seismic safety measures, particularly in regions not aware of seismic hazards.

Executive Order 12699 provides that local building codes may be used by Federal agencies if the codes have been determined by the agency or the ICSSC to provide adequately for seismic safety. However, each agency that decides to accept local building codes as part of its seismic safety program should institute a procedure for their evaluation. Moreover, the evaluation criteria and procedures for local codes should be established at the department level to ensure uniformity within a program and among related or similar agency programs. To assist the Federal agencies in accomplishing this goal, NIST, with funding provided by FEMA, contracted with the National Conference of States on Building Codes and Standards, Inc. (NCSBCS), to conduct a study on the status and enforcement of seismic design and construction provisions adopted by state and local jurisdictions. The result of the study was published in a report, NIST GCR 91599, *Seismic Provisions of State and Local Building Codes and Their Enforcement*.

Special seismic standards and practices also may be used for unique agency missions, such as programs involving new construction to house hazardous materials, valuable property, or special populations, including persons with disabilities, persons requiring health care, or persons held against their will.

### ***Regulations or Procedures***

A key provision of Executive Order 12699 is the requirement governing the development of regulations or procedures. Section 4(b) of the Order requires that each agency issue or amend existing regulations or procedures to comply with the Order by January 5, 1993, and plan for their implementation through the usual budget process. In addition, Section 8(a) of Public Law 101-614, the *National Earthquake Hazards Reduction Program Reauthorization Act*, states that the President shall ensure the issuance by all Federal agencies of final regulations required by Section 4(b) of the Order before February 1, 1993. The Executive Order also requires that each Federal agency review, within a period not to exceed 3 years,

its regulations or procedures to assess the need to incorporate new or revised standards and practices.

It is important to note that Executive Order 12699 does not allow a reduction in the stringency of existing seismic safety programs, and that existing programs meeting the requirements of the Executive Order are endorsed.

#### ***Assessment and Reporting on Agency Execution of the Order***

Each Federal agency is independently responsible for ensuring the application of appropriate seismic safety design and construction standards for new building construction. Executive Order 12699 does not provide any one agency with oversight or enforcement responsibilities; however, the Order does give FEMA an execution assessment and reporting role.

Specifically, the Order requires that FEMA request from each agency affected by the Order information on the status of its procedures, progress in its implementation plan, and the impact of the Order on its operations. The Director of FEMA is responsible for reporting to the President on the execution of the Order, and for including an assessment of the execution of the Order in its biennial report to the Congress on the NEHRP.

Under the Order, the ICSSC, using consensus procedures, is responsible to FEMA for recommending for adoption the cost-effective seismic design and construction standards and practices described above. In addition to the *ICSSC Recommendation*, the ICSSC has developed a model preamble for the development of rules and regulations to assist Federal agencies in their execution of Executive Order 12699.

#### **C. Purposes**

The purposes of Executive Order 12699, as applied to new Federal buildings, are to reduce risks to the lives of occupants of buildings owned by the Federal government and to persons who would be affected by the failures of Federal buildings in earthquakes; to improve the capability of essential Federal buildings to function during or after an earthquake; and to reduce earthquake losses of public buildings, all in a cost-effective manner.

The language of Executive Order 12699 distinguishes between the seismic safety purposes of the requirements as they are applied to Federally leased, assisted, or regulated buildings. The purposes as they affect these types of buildings are to reduce risks to the lives of persons affected by earthquake failures and to protect public investments, all in a cost-effective manner.

It is significant that the purposes of Executive Order 12699 go beyond the protection of the lives of building occupants to improving the capability of buildings to function during and after an earthquake and to reducing earthquake losses. The extension of seismic safety concerns beyond those traditionally associated with life safety presents new and formidable

challenges to earthquake engineers and program planners, particularly when these new seismic safety objectives must be achieved in a cost-effective manner.

#### **D. Scope**

Executive Order 12699 applies to all Federal agencies responsible for the following activities.

- Design and construction of new Federally-owned buildings
- Construction and lease of new buildings for Federal use
- Assistance in the financing through grants or loans of newly constructed buildings
- Guaranteeing the financing through loan or mortgage insurance programs of newly constructed buildings
- Regulating the structural safety of buildings

The Federal agencies responsible for construction projects of the first two types listed above must demonstrate compliance for all projects for which development of detailed plans and specifications is initiated subsequent to the date of the Order. Federal agencies administering the other types of programs listed above have until February 1, 1993, to establish an appropriate seismic hazard reduction program by adoption and enforcement of appropriate regulations, policies, or procedures.

#### **E. Execution**

By consensus, the ICSSC prepared and endorsed guidelines and procedures for implementing Executive Order 12699, *Guidelines and Procedures for Implementation of the Executive Order on Seismic Safety of New Building Construction*, ICSSC RP 2.1-A. The *Guidelines* recommend that each agency name a Seismic Safety Coordinator to serve as a focal point for the agency's seismic safety program. The *Guidelines* also provide recommendations for determining the adequacy of local building codes. Recommended implementation procedures include requiring written acknowledgement of meeting agency seismic design and construction requirements from the building architect, contractor, and/or owner.

Individual agency responsibility for the execution of Executive Order 12699 extends to a number of specific requirements. First, each agency must determine whether it is affected by the Order. Second, in many Federal agencies, some programs will be affected by the Order and others will not. The ICSSC *Guidelines* recommend that all programs be

considered affected until it has been suitably demonstrated that they are exempt. Moreover, agencies that are involved only intermittently with building construction should not be considered exempt. The *Guidelines* also recommend that no program affected by the Executive Order be allowed to self-exempt, and that exemption criteria for reasons such as non-applicability or low regional seismicity be uniform across each agency. Finally, agencies and programs that identify themselves as exempt should have the exemption verified by legal counsel. Even if no new building construction projects are underway at the time of assessment, a seismic safety program should be in place by the end of the 3-year lead-in period.

Policy and seismic safety plan development for program implementation of the Executive Order, another important requirement for individual agency execution, should be at the agency level. According to the *Guidelines*, each agency should determine the level at which evaluations and decisions are to be made and issue appropriate implementing rules and procedures. The *Guidelines* also state that agencies with unique missions requiring exceptional seismic safety considerations should establish and promulgate appropriate implementation and enforcement policies and procedures. Absent unique mission requirements, program implementation should be cost-effective and enforcement efforts reasonable.

With regard to program implementation, agencies with technically trained staffs are encouraged to include building plan reviews in their seismic safety programs. For agencies without technical staffs, reasonable implementation and enforcement would include notifying appropriate responsible parties, such as the building owner, architect, engineer, or contractor, of the required minimum standards, and requiring a written acknowledgement of awareness of the requirements and of the intent to comply. In addition, the ICSSC *Guidelines* advise that no contract or grant should be entered into without receipt of written acknowledgement. For Federally owned or leased buildings, a form of certification or statement of compliance may be required before acceptance of the building. Such statements of compliance may include the engineer's and architect's signed and stamped verification of seismic design codes, standards and practices used in the design and construction of the building, construction observation reports, local or state building department plan review documents, or other documents deemed appropriate by the agency.

#### **F. Activities of the Federal Emergency Management Agency under the National Earthquake Hazards Reduction Program**

FEMA, as the lead agency in the NEHRP, has taken an active role in helping to launch Executive Order action by the principal NEHRP agencies and by the other affected Federal agencies. The Director of FEMA wrote directly to the heads of those agencies to enlist their assistance in ensuring that the implementation actions were initiated and coordinated by their programs. Further, the Director sent the agencies copies of the ICSSC *Guidelines* for

implementation and the ICSSC recommended design and construction practice standards appropriate for agency adoption.

FEMA supported the ICSSC in its writing of the *Guidelines*, the recommended standards, and the model preamble distributed to assist agencies in the development of rules and regulations required by the Executive Order.

Two interagency workshops were sponsored by FEMA to familiarize Federal agencies with the Executive Order and to assist them in the formulation of the required regulations and procedures for implementation.

Action by state and local governments, multistate organizations, and professional groups is critical to the successful implementation of the Order throughout the nation. To assist in this area, FEMA conducted workshops, briefing sessions, and cooperative activities with a number of these organizations. An individualized home study program on the Order is being developed that will provide state and local officials with the information needed to implement the Order.

## **II. Federal Agencies Affected by Executive Order 12699**

The extent of Federal Government involvement in new construction is indicated by recent data from the General Accounting Office (GAO). According to the GAO report, *Federal Buildings: Many Are Threatened by Earthquakes, but Limited Action Has Been Taken*, GAO/GGD-92-62, May 1992, the Federal Government owned approximately 417,000 buildings in 1989, and had 68,000 different lease locations, representing 3 billion square feet of space. Approximately 40 percent of Federal buildings, lease locations, and employees are located in seismically active areas, where the risk of earthquake damage varies from moderate to very high. The report concludes that although many Federal buildings and employees are at risk from earthquakes, the efforts of Federal agencies to reduce building vulnerability have been limited.

Of the 29 Federal agencies that own buildings or lease space, 6 manage over 85 percent of Federal space: the Departments of the Army, Navy, Air Force, and Veterans Affairs (VA); the GSA; and the United States Postal Service (USPS). Of these six agencies, only the VA is legislatively mandated (by the *Veterans Health Care Expansion Act of 1973*) to reduce the vulnerability of its buildings to earthquake damage.

Two of the agencies reporting to FEMA on their progress in the execution of Executive Order 12699 during FY 1991 and 1992 are implementing the Order on a voluntary basis. The USPS and the Architect of the Capitol, as independent organizations, are not required to comply with the Order. However, both have offered to voluntarily execute the requirements



of Executive Order 12699 in the interest of ensuring the life safety of their building occupants and the seismic safety of their buildings.

The following paragraphs provide a brief description of the new building construction/seismic safety responsibilities and jurisdictions of the Federal agencies responsible for execution of Executive Order 12699.

Several agencies within the Department of Agriculture (USDA) have the authority to design and construct various structures or assist in the financing of newly constructed buildings. Affected programs within USDA include Electric, Telephone, and Rural Development.

The Architect of the Capitol is responsible for new building design in the Capitol complex and the operation and renovation of existing buildings under the House Office Building Commission and the Senate Committee on Rules and Administration. This office will voluntarily incorporate seismic safety design into new buildings.

The Central Intelligence Agency (CIA) is responsible for new building construction worldwide.

Two bureaus within the Department of Commerce (DOC) are responsible for the construction and/or lease of new facilities: the NIST and the National Oceanic and Atmospheric Administration (NOAA). NIST periodically constructs research facilities and NOAA constructs small buildings to house new radar equipment.

Within the Department of Defense/Air Force, affected programs include the Military Construction Program (appropriated funds); Non-Appropriated Fund (NAF) projects, such as Base Exchanges; Morale, Welfare, and Recreational (MWR) Facilities; and Operations and Maintenance (O&M) projects. The Air Force is responsible for the construction and lease of new buildings worldwide.

The Department of Defense/Army, U.S. Army Corps of Engineers, is responsible for new building construction throughout the world. Affected programs are divided into Civil Works Programs and Military Construction Programs.

The Department of Defense/Navy is responsible for the construction and lease of new buildings throughout the world. Affected programs include the Military Construction Program; Special Projects Program; and the Leasing Program.

Within the Department of Education (DOEd), the Library Programs, Higher Education (Incentives Programs), and Office of Research (Star Schools Program) are affected by Executive Order 12699. The DOEd is responsible for direct Federal and Federally assisted construction projects.

The Department of Energy (DOE) is responsible for the construction of new buildings and for providing financial assistance for the design and construction of new buildings. Affected DOE programs include Conservation and Renewable Energy Programs; Energy Research; Fossil Energy Programs; and Congressionally-mandated projects.

The primary programs affected within the Environmental Protection Agency (EPA) by the Executive Order are EPA-owned and EPA-leased buildings; facilities constructed under EPA's municipal construction program; and Congressionally-mandated projects.

The Federal Deposit Insurance Corporation (FDIC) has the authority to lease, purchase, and construct property. However, the FDIC has no construction underway or planned in the near or distant future.

Affected new building construction programs within the FEMA are under the State and Local Programs Directorate (Disaster Assistance Programs, Emergency Management Programs, Technological Hazards Programs, and the Emergency Management Institute Program); the National Preparedness Directorate (Regional Office Programs and Special Facility Programs); and the United States Fire Administration (USFA). The responsibilities and jurisdiction of the USFA extend to renovation and construction projects for all of the buildings and associated systems at the National Emergency Training Center. Overall, FEMA responsibility is occasional and includes new building construction and Federal financial assistance for new building construction.

The GSA is one of the Federal agencies most involved in the design and construction of new Federal buildings and the lease of new Federal buildings. GSA serves the building and space needs of numerous Federal agencies; a significant number of buildings housing the activities of other Federal agencies are either constructed or leased by GSA. (The USPS and GSA account for 77 percent of all space leased by the Federal Government.) In instances where GSA furnishes space for other agencies, it is GSA's responsibility to ensure that the space meets established seismic safety safeguards. GSA also is responsible for providing consensus standards for existing Federal buildings.

The Department of Health and Human Services (DHHS) is responsible for direct construction activities and Federal assistance construction projects. (The Public Health Service (PHS) Inventory includes over 2,600 buildings that contain approximately 20.6 million square feet.) Affected direct construction programs include Federal Research Facility construction and Federal Hospital and Quarters construction. Major Federal assistance programs include community health centers, migrant health centers, and research centers.

The Department of Housing and Urban Development (HUD) is responsible for design and construction standards for new and rehabilitated residential properties under mortgage insurance and subsidy programs. All of HUD's Domestic Assistance programs involving new building construction are potentially affected by Executive Order 12699. HUD is

separately charged under the *1990 Cranston-Gonzalez National Affordable Housing Act* (Public Law 101-625) to submit a biennial report to the Congress summarizing activities taken to carry out Executive Order 12699.

Seven bureaus within the Department of Interior (DOI) are responsible for new building construction, including the Bureau of Reclamation (BOR), which builds large power plants and visitors centers; the Bureau of Indian Affairs (BIA), which is responsible for the design and construction of schools, gymnasiums, law enforcement centers, shops, and warehouses; and the National Park Service (NPS), which has a significant annual construction program for visitor centers and other park buildings. Four DOI agencies report leasing responsibilities: the Office of Surface Mining (OSM), the Fish and Wildlife Service (FWS), the Bureau of Land Management (BLM), and the United States Geological Survey (USGS). The Minerals and Management Service (MMS) has regulatory authority for the design and construction of new facilities offshore (platforms and pipelines).

The Department of Justice (DOJ) is involved with new construction and renovation of existing structures. The construction of prisons by the Federal Bureau of Prisons apparently is one of the most active new building programs in the Federal Government. A significant number of facilities housing DOJ activities are either constructed or leased by the GSA for occupancy.

The Facilities Engineering Office of the National Aeronautics and Space Administration (NASA) is responsible for NASA's Construction of Facilities program and its leasing activities.

The National Archives is responsible for the construction of Presidential libraries. The requirements of Executive Order 12699 will be applied to the design and construction of the George Bush Presidential Library.

The National Endowment for the Arts is responsible for new construction or renovation through its Challenge Program. Of the 20,000 grants in the past 5 years, only 19 had design submissions for new construction or renovation.

On rare occasions, the National Science Foundation (NSF) is responsible for the design and construction of new buildings. Design and construction work by the NSF is always tied to large-scale research enterprises.

The Nuclear Regulatory Commission (NRC) regulates civilian nuclear facilities to protect public health and safety from radiological risks. Affected programs include power reactors; Class 104 Licenses for Medical Therapy and R&D Facilities; Processing of Uranium Ores in Milling Operations; High Level Waste Repository Licensing; Licensing of Independent Spent Fuel Storage Installation and Monitored Retrievable Storage Installation; Licensing of

Plutonium Processing and Fuel Fabrication Plants; and Review of License Applications for Uranium Enrichment Facilities.

The USPS, which has agreed to voluntarily follow the requirements of Executive Order 12699, is responsible for the design and construction of all new postal facility projects.

Under the Guaranteed Loan Program and Disaster Assistance Program, the Small Business Administration (SBA) provides financial assistance to small business concerns for the construction of buildings.

The Smithsonian Institution designs and constructs new facilities. The affected program is the construction program administered by the Office of Design and Construction (ODC).

The Department of State (DOS) is responsible for the acquisition, design, construction, and maintenance of land and buildings overseas. As a facility management organization, the Foreign Building Operations (FBO) of the DOS has direct control over all DOS overseas properties.

The Tennessee Valley Authority (TVA) owns or leases its facilities, which include power plants (fossil and nuclear), hydroelectric dams and nonpower dams, power distribution systems, office buildings, laboratories, roads, and bridges. TVA is responsible for the seismic safety of its own and leased facilities.

Affected programs within the Department of Transportation (DOT) include Urban Mass Transportation Administration (UMTA Grant Programs, WMATA Construction Grants, and Interstate Transfer Grants); the United States Coast Guard (Acquisition, Construction, and Improvements, Operating Expenses, and Non-appropriated Fund Activity); the Federal Aviation Administration (FAA); and the Maritime Administration (Real Property Management, Operations, and Training Appropriation).

The VA constructs and leases new buildings and provides Federal financial assistance under grant programs. Affected programs within the VA include the Veterans Health Administration (VA-owned facilities, including hospitals, outpatient clinics, research centers, and nursing homes, and grants to states); the Veterans Benefits Administration (VA-owned regional facilities and the Loan Guaranty Service, which assists veterans in the purchase of homes); and the National Cemetery System (national sites and the State Cemetery Grants Program).

### **III. Assessment of Federal Agency Execution**

#### **A. Assessment Criteria**

Each agency affected by Executive Order 12699 is required to provide FEMA with information on the status of its procedures, progress in its implementation plan, and the impact of the Order on its operations. A format for reporting progress during FY 1991 and 1992 was provided to the Federal agencies by FEMA.

The following criteria used by FEMA to assess Federal agency execution of Executive Order 12699 reflect the full range of activities which could be used by the agencies to meet the intent of Executive Order 12699.

- Leadership
- Adoption of Standards
- Program Implementation
- Formulation of Regulations or Procedures
- Coordination
- Agency Impact

The assessment criteria are based primarily on the requirements of Executive Order 12699 and the ICSSC *Guidelines*. In addition, the criteria developed for assessing Executive Order 12699 build on the criteria used to assess the National Dam Safety Program and the criteria developed for evaluating compliance with Executive Order 11988, *Floodplain Management*.

#### **B. Overall Progress in the Execution of Executive Order 12699**

The Federal agency submissions on the execution of Executive Order 12699 indicate that the agencies have made considerable progress in the effort to improve the seismic safety of all new Federal buildings and buildings that are leased, assisted, or regulated by the Federal Government. Most of the affected Federal agencies have issued procedures or regulations to implement Executive Order 12699 and have adopted one or more of the recommended minimum standards for seismic safety; the Federal agencies primarily involved in the direct construction of new buildings, such as the Army, Navy, Air Force, the DOS, GSA, the NRC, and VA, reported that they were already in substantial compliance with the Executive Order at the time of its issuance.

While real progress has been made, there is much that still needs to be accomplished before both the intent and the requirements of Executive Order 12699 are met by all affected Federal agencies, particularly by those agencies primarily involved in grants and loans for new building construction. The principal concern is the slow progress on the part of many of the agencies providing Federal domestic assistance for new building construction toward establishing the final regulations or procedures required for compliance before February 1, 1993. In addition, coordination procedures and activities for implementing Executive Order 12699 must be improved.

### **C. Findings and Recommendations**

The following findings describe the specific accomplishments in the Order's execution by Federal agencies. Recommendations formulated to address those areas requiring improvement follow each description of accomplishments.

#### *Leadership*

##### *Assessment Overview*

Agency-wide leadership in the execution of Executive Order 12699 is of paramount importance in meeting both the intent and the requirements of the Order. Providing a strong and well-coordinated program at the agency level for implementing Executive Order 12699 is particularly important in light of one of the primary goals of the Order--for the Federal Government to exercise a leadership role in seismic safety, thereby encouraging states and communities throughout the nation to adopt and enforce seismic safety codes.

To evaluate the agency submissions for leadership efforts, FEMA looked at each agency's activities in the areas of agency-wide policy directives and regulations; appointment of policy level officials; establishment of plans and schedules for program implementation; procedures for ensuring compliance with the Order; and special activities and initiatives. In the area of leadership, FEMA also considered the relevance of seismic safety to the agency. For example, some agencies, such as GSA and DOE, have a critical interest in seismic safety because of the nature of their missions and can obtain top level attention in this area. For other agencies, however, funding and resources for seismic safety issues are not and will not be a priority and strong leadership cannot be expected. Nonetheless, the structure and components of DOE's seismic safety program can serve as a model for other Federal agencies interested in strengthening leadership, regardless of the priority and scope of their seismic safety programs.

One agency, DOE, is outstanding in this area and can serve as a model to other Federal agencies on how to implement an agency-wide leadership role in seismic safety. From the

information provided by the agencies, it appears that GSA, DOI, and the TVA also are well on their way toward establishing strong, agency-wide programs in seismic safety.

### ***Findings***

At the DOE, an exemplary program has been established that contains all the elements of an agency seismic safety program. The DOE program can serve as the model for other agencies in leadership and program implementation activities for execution of Executive Order 12699.

In January 1990, DOE published final rule changes to the DOE Financial Assistance Rules (10 CFR Part 600) to comply with Executive Order 12699. The rule changes extend the seismic requirements of the UBC to financially assisted activities where DOE funds are used for design and construction. In addition, DOE is reviewing the rules specific to loan guarantees to determine if there is a need for revision. Implementing procedures for the new rules are expected to be in place by January 1993.

New Orders also are being developed to formalize DOE seismic safety programs and responsibilities, and to improve technical requirements and standards. For example, a Seismic Safety Order is under development that will formalize DOE seismic safety programs and provide linkage to the program elements in other DOE directives, the NEHRP, and Executive Order 12699.

DOE also has very clearly delineated levels of responsibility, starting at the Assistant Secretary level, for implementing Executive Order 12699. In addition to taking a lead role in ICSSC/NEHRP activities, the Assistant Secretary for Environment, Safety, and Health has overall responsibility for establishing non-nuclear safety policy and implementing guidance at all facilities. The assistant secretaries that manage line program organizations are responsible for the safety of their programs; the line is responsible for implementing DOE directives and includes the design and construction of DOE facilities to acceptable seismic standards. DOE also has established internal and external oversight groups whose interest areas include seismic safety. One of the functions of the oversight groups is to ensure that seismic safety actions taken are technically sound and consistent with national standards and requirements.

Other leadership activities at DOE include the establishment of the Natural Phenomena Hazards Information Center at the Lawrence Livermore National Laboratory, which is intended as a centralized source of information and reference material on natural phenomena for the DOE complex, and the Center for Natural Phenomena Engineering at Oak Ridge, Tennessee. This center is mainly involved in the testing, evaluation, standards development, and retrofit of existing masonry construction in collaboration with universities and other Federal agencies. DOE also has a very active technical assistance, training, and education program in seismic safety. Activities include conferences, workshop training, technical newsletters, information exchange meetings with other Federal agencies, and the development of an earthquake alert system.

Initiatives at GSA to improve seismic safety for new buildings include the development of a building standards, *Facilities Standards for the Public Buildings Service (PBS/PQ-100)*, which gives criteria and policy direction to all architects and engineers contracted by GSA; the development of standard lease solicitation language; and the development of a code seminar and code compliance training for all GSA architects and engineers involved with the building process.

The Secretary of HUD is directed by the *1990 Cranston-Gonzalez National Affordable Housing Act* (Public Law 101-625) to assess the risk of earthquake-induced damage to properties assisted under programs administered by the Secretary and to develop seismic safety standards for such properties. In November 1991, HUD established a Seismic Safety Committee and appointed a Seismic Safety Coordinator. Each Assistant Secretary appointed a representative as a Seismic Safety Liaison Officer to the Committee. The purpose of the Committee is to review rulemaking procedures for adding seismic safety criteria to all Department programs, including the Minimum Property Standards (MPS), Housing Quality Standards (HQS), and the Manufactured Home Construction and Safety Standards (MHCSS). Each program office representative to the Committee will ensure that seismic design and construction requirements are referenced, as appropriate, in the programs administered by the respective Officers.

In 1993, agency representatives from the DOI will meet to begin development of seismic safety provisions for the agency's Departmental manual. The provisions will provide consistent management instruction on the responsibilities for implementing the Department's seismic safety program and Executive Order 12699. The NPS of the DOI will use the Directive approach (NPS Staff Directives) to implement Executive Order 12699.

TVA is actively involved in seismic safety and is committed to achieving and maintaining seismic integrity of its structures and lifelines. TVA has set timeframes for implementing its seismic safety program that parallel the national program. The TVA's seismic safety policy will be adopted by its Board of Directors in early FY 1993; currently, the model building codes are being used for new TVA construction.

The DHHS is in the process of developing a seismic safety program. The *ICSSC Guidelines* already have been incorporated into DHHS and PHS Grants Policy Documents.

Numerous Federal agencies report training and education activities and initiatives designed to assist in implementing Executive Order 12699. Many agencies have sponsored training workshops and conferences geared to in-house staff, such as those sponsored by the Smithsonian Institution, FEMA, DOE, TVA, and the EPA, while others have focused on dissemination of seismic safety information through written materials. For example, FEMA has conducted numerous state and local outreach activities in seismic safety, including briefing sessions on Executive Order 12699. FEMA, in cooperation with NIST, also has conducted two workshops to assist all affected Federal agencies in drafting regulations and