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**Variation in State Seismic Mitigation Policies:  
A Comparative Analysis of Seismic Risk and Policy Development**

By

Brian D. Gouran

Accepted in Partial Completion of the  
Requirement for the Degree  
Master of Science

Kathleen L. Kitto, Dean of the Graduate School

ADVISORY COMMITTEE

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## MASTER'S THESIS

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Brian D. Gouran  
February 4, 2014

**Variation in State Seismic Mitigation Policies:  
A Comparative Analysis of Seismic Risk and Policy Development**

A Thesis  
Presented to  
The Faculty of  
Western Washington University

In Partial Fulfillment  
of the Requirement for the Degree  
Master of Science

By  
Brian D. Gouran  
February 2014

## Abstract

Risks associated with earthquakes vary widely from state to state. California and the western United States are widely recognized as having the potential for significant damages and loss of life from earthquakes, however all states have some degree of seismic risk. Considering that public safety and the general welfare of citizens are paramount responsibilities of state government, some states have adopted policies designed to reduce risks from hazards such as earthquakes. California, Missouri and a few other states have embraced policy development as a key method to mitigate against earthquake hazards. Alaska, Washington and a number of other states with significant seismic risk have a much lower level of policy coverage. Through the compilation and consideration of hazard mitigation policies for 47 states, this study examines the role of earthquake related policy development and implementation relative to individual states' seismic risk. The results of this analysis indicate that a number of states have below optimal policy coverage which suggests that factors other than seismic risk likely influence policy development.

## Acknowledgements

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## Section 1 – Introduction

On March 10, 1933 a magnitude 6.4 earthquake occurred just outside of Long Beach, California at 5:55 p.m. Although this was only a moderate earthquake in terms of magnitude, 115 lives were lost and there was significant structural damage throughout the Los Angeles area. Most notably, over 230 schools were destroyed or sustained significant structural damage. It was immediately acknowledged that had this earthquake occurred four hours earlier, when schools were in session, a much greater tragedy would have occurred. Exactly 30 days later on April 10, 1933 the Governor of California signed the Field Act into law. The Field Act required earthquake-resistant design and construction of all public schools in California and to this day still governs the design and construction of all public schools. The Field Act represents an example of a state level policy that is aimed at reducing risks associated with seismic events. Although a major tragedy was narrowly missed and the Field Act has proven to be highly successful, legislative action was taken only *after* the Long Beach earthquake occurred. This example shows how, when motivated, individual states can develop and implement policies aimed at reducing risks from seismic hazards.

## Statement of the Problem

In addition to California, the entire western United States is a seismically active geographic region prone to earthquakes and related seismic events. Seismic activity and earthquakes of all magnitudes are common enough that the West has been dubbed as “Earthquake Country.” Of course seismic activity occurs globally and is not limited to the western United States. In fact, all 50 states have some degree of seismic risk. A variety of methods can be employed to mitigate or preemptively address these seismic risks with the aim of saving lives and reducing injuries and limiting damages. These efforts can include seismic specific engineering and design approaches, post

construction retrofits, as well as state, federal and local polices that require specific seismic considerations and mitigation efforts.

A number of federal policies such as the Disaster Relief Act of 1974 (Public Law 93-288), the Robert T. Stafford Act (Stafford Act) (Public Law 93-288), the Disaster Mitigation Act of 2000 (DMA 2000) (Public Law 106-390), the Earthquake Reduction Act (Public Law 95-124), and the National Flood Insurance Act (Public Law 42 U.S.C. Section 4121) form umbrella policies at the federal level that encourage individual states to develop and adopt hazard mitigation policies. These federal policies are aimed at reducing threats from hazards that may occur within individual states but do not prescribe specific measures that states must take. For example the Stafford Act states that it is intended to: *“provide an orderly and continuing means of assistance by the Federal Government to State and local governments in their responsibilities to alleviate the suffering and damage which result from disasters.”* The Stafford Act aims to accomplish this by encouraging the development of disaster preparedness and assistance plans and programs on the state and local level; encouraging individuals, states and local governments to obtain insurance coverage; encouraging hazard mitigation measures including land use and construction regulations; and providing Federal assistance programs for both public and private losses sustained in disasters. As an amendment to the Stafford Act, DMA 2000 establishes additional hazard mitigation planning requirements for state and local governments. DMA 2000 emphasizes pre-disaster hazard mitigation planning and implementation by adding incentives for state and local governments to develop detailed hazard mitigation plans. These federal laws encourage states to implement mitigation policies that are aimed at the hazards that occur most commonly in their region. However, they do not mandate the enactment of any specific policy or legislation. In fact some research suggests that federal policies and strategies aimed at increasing preparedness and reducing risk by focusing on regional hazards

may actually result in significant policy gaps between and within seismic-prone regions in the United States (May, 1991).

To what extent individual states implement policies to address seismic hazards likely depends on the level of risk that each state experiences. One would expect that states in the western U. S. and other seismically active regions such as the New Madrid Seismic Zone in the south central U.S. (Missouri, Arkansas, Tennessee, Kentucky and southern Illinois) would have a higher level of earthquake awareness and in turn have a higher number of earthquake related policies. However, the development and implementation of any policy or legislation is influenced by a number of factors such as state government structures, limitations on legislative powers, and/or variability in political will. These factors may also be influenced by focusing or trigger events that can change political opinions regarding policy development. A comparative analysis of state level seismic policies aimed at reducing earthquake damage and preventing loss of life could provide an indication of how individual states are addressing and accounting for seismic risks through policy implementation. Cataloging the number and types of mitigation policies relative to each state's potential for damaging earthquakes allows for an evaluation of differences in the types of policies that states are using to address seismic risks. This may help to identify individual states or geographic regions that are leading (or lagging) in seismic policy development.

### **Goal of Research**

The purpose of this research is determine if greater levels of seismic risk lead states to implement a greater number and different types of earthquake related policies. It is anticipated that if states and regions have a greater level of seismic risk, then they will also have a greater number of seismic mitigation policies in place to address that risk. This study will also determine if states tend

to develop different types of seismic policies in an order of increasing policy focus/strength with increasing seismic risk.

In order to answer the research question and test the research hypothesis this study will 1) compile and catalog state level seismic related policies; 2) analyze correlation between the number/types of state seismic policies and seismic risk; 3) determine and discuss how states rank in state level seismic policy development relative to their respective seismic risks; and 4) evaluate if seismic policies are developed and implemented in an order of increasing policy strength relative to seismic risk. These objectives will assist in the determination of whether there is a distinct and measurable difference between how individual states approach seismic mitigation through legislative policy development and implementation. The research allows for an evaluation of how different states and regions compare relative to their seismic risk and the number and types and sequence of seismic mitigation policies they have enacted.

## **Organization of Thesis**

Section 1 of this thesis provides an introduction to the issue and presents the objectives of the research. Section 2 discusses previous research and reviews existing literature related to state-level seismic policy research and cross-state policy comparisons. Section 3 describes the data collection and analytical methods used in this research. Section 4 presents the results of the data analysis and the cross-state comparisons. Section 5 discusses the results and presents potential future research opportunities that could build upon or strengthen this study. Appendix A provides a list of key words and phrases used to search hazard mitigation plans for applicable policies. Appendix B provides links to state legislative databases. Appendix C presents the State Seismic Policy Catalog.

## Section 2 - Literature Review

Each state in the U.S. is situated in a unique physical and political setting. State-level seismic risk is influenced by variability in seismic conditions, population distributions and other factors such as existing building stock. Each state also has a unique political character in which legislation and policies are developed and implemented (May, 1997). Cross-state policy comparisons can identify how different states compare to each other in both seismic risk and the number and types of seismic mitigation policies they have enacted. This thesis builds upon an existing body of research that has examined, to one degree or another, how seismic related policies are addressed on the state and local level.

A considerable volume of earthquake and disaster related research aimed at providing a better understanding of the science and risks associated with these hazards has been conducted, including some policy related research (Comerio, 2004; Flynn, Slovic, Mertz, & Carlisle, 1999; Mushkatel & Nigg, 1987). However, the amount of research focused on cross-state policy comparisons is relatively limited. Much of the existing research has focused on analyses of personal risk perceptions (Atwood & Major, 2000; Celsi, Wolfenbarger, & Wald, 2005; Lindell, Arlikatti, & Prater, 2009; Lindell & Prater, 2002; Palm, 1998; Spittal, McClure, Siegert, & Walkey, 2008; Spittal, Walkey, McClure, Siegert, & Ballantyne, 2006), household preparedness (Heller, Alexander, Gatz, Knight, & Rose, 2005; Russell, Goltz, & Bourque, 1995; Tanaka, 2005) and planning/resiliency (P. R. Berke, 1998; P. R. Berke & Campanella, 2006; Godschalk, Brody, & Burby, 2003; Wallace & Wallace, 2008).

Some research has been completed on federal, state and local seismic policies. These include research on state and local implementation of federal policies (May, 1991), variability in the

effectiveness of state mandates (P. R. Berke, Dale J, Kaiser, & Burby, 1996), and comparison of state building code enforcement (May, 1997). Additionally, a number of studies have been completed that focus on cross-state policy analysis (P. R. Berke, Beatley, T., 1992; May & Birkland, 1994; May & Feeley, 2000) which form a foundation upon which this thesis builds. These studies are described in greater detail below.

May (1991) assessed how state and local jurisdictions implement federal seismic policies and found no correlation between state and local seismic policy regimes and regions of greater seismic risk. Instead, risk perception and awareness were found to influence regional differences in the development and implementation of earthquake policies and preparedness. Seismic risks are commonly recognized and acknowledged in states and regions with greater seismic activity but can receive limited policy engagement or attention from stakeholders and decision makers. May observed that limited public attention as well as factors such as inconsistent or episodic federal focus can result in less state or local emphasis on policy development. May notes that the exception to this is most notable in the immediate aftermath of major events (also known as focusing events) where the public and government agencies have a heightened awareness of seismic risks.

Advisory councils, such as the California Seismic Safety Commission (Wiley, 2000) or the Washington State Seismic Safety Committee (*A Policy Plan for Improving Earthquake Safety in Washington - Fulfilling Our Responsibility*, 1991) have completed some analysis of seismic policies for individual states. However, few studies (P. R. Berke, Dale J et al., 1996; May, 1997) have been aimed at directly comparing states with respect to adopted state legislation or other state-level policies.

Berke et al. (1996) studied the variability and effectiveness of state mandates for planning (non-seismic specific) at the local level, looking at California, Florida, North Carolina, Texas, and

Washington. Analyzing 139 local land use plans (comprehensive plans), Berke et al. found that state mandates result in the creation of plans in communities that would not otherwise create a plan. In addition, due to state mandates, these plans tend to be of higher quality than plans made without a mandate (P. R. Berke, Dale J et al., 1996). Although not directly related to seismic policies, this study provides background and potentially applicable methodologies for cross-state policy comparisons.

May (1997) conducted a nation-wide comparative analysis of state building codes and the variability in enforcement mechanisms. The analysis of 33 states with building codes considered the type of code, the role of regulatory enforcement, amount of discretion for local governments, the existence of revocation authority, and the existence of state review. This study utilized a hierarchical cluster analysis and defined states as Minimalistic, Enabling, Mandatory, or Energetic and concluded that a number of factors including political culture and taxing authority contribute to how and why states develop and enforce codes.

Other studies examine the context or efficacy of local policies within a state or an individual state policy (Burby, 1998; May, 1989; Puszkin-Chevlin & Esnard, 2009; Sexton, 2008). Burby examined effectiveness of local building code enforcement based on variability in damage from the Northridge earthquake. The Burby study is limited in its scope but provides background on the types of seismic policies considered as part of this research and provides potentially applicable methodologies for evaluating plans and policies. Puszkin-Chevlin evaluated variability in implementation of state hazard mitigation policies using the Florida's Coastal High Hazard Area policy. Although not directly related to seismic hazards, the Puszkin-Chevlin study provides an examination of the factors that can impact policy implementation such as finding balance between conflicting policy goals, desire to accommodate multiple agenda and palatable political compromise.

Some research has been conducted on cross-state policy analysis. Most of the studies focus on local adoption and implementation of policies, such as building codes, land use controls, or planning requirements (Beatley & Berke, 1992; P. R. Berke, Beatley, T., 1992), rather than state-level adoption. Berke (1992) surveyed local seismic hazard mitigation programs in 260 communities across 22 states with significant seismic risk. Berke found that earthquake mitigation activities at the local level are much greater in California than other states. Berke evaluated local seismic mitigation programs using 21 criteria related to development regulations, building standards, planning, property acquisition, taxation and fiscal policies, and information dissemination. They found the most common policies adopted were not specifically related to earthquakes. Policies that specifically address earthquakes were more frequently found in California (P. Berke, Beatley, T., Wilhite, S., 1989). These findings suggest that policy advocates are often needed for adoption of earthquake-specific policies.

May and Feeley (2000) conducted a local seismic policy comparison for eleven western states and also found California to be unique. The study utilizes local-level policy development and enforcement as a comparative measurement to classify the states as “aggressive” (California), “attentive” (Alaska, Oregon, Nevada, Utah, and Washington) and “minimalist” (Arizona, Idaho, Montana, New Mexico, and Wyoming) (May & Feeley, 2000). Building officials throughout the U.S were surveyed to evaluate building code adoption and enforcement. May and Feeley normalized the survey results with regional peak ground acceleration (May, Feeley, Wood, & Burby, 1999). Their results indicate that building officials in many of the states with the highest seismic risk have greater awareness and appropriately prioritize the application of building codes more than those in states with intermediate or low seismic risk (May et al., 1999). May and Birkland (1994) performed cluster analysis on data gathered from local jurisdictions in California and Washington via questionnaires and interviews. They identified local-level leaders and laggards in risk reduction policies. May and



Birkland indicate that differences in risk reduction policies depended on local political demands and resources. The study concludes that better targeting of federal and state earthquake policies and stronger state mandates are needed to address gaps in local risk-reduction efforts (May & Birkland, 1994). However, May and Birkland did not identify specific policies or mandates that could be applicable to earthquake risk reduction. The research conducted for this thesis builds upon May and Birkland's recommendation by identifying existing state-level policies.

A number of the policy studies described above also provide potentially applicable methodologies for comparing policy development between jurisdictions and states. Berke (1989) compared local earthquake planning processes and utilized regression analysis to evaluate the significance of factors that may influence development of planning programs based on survey responses. Since the research for this thesis is not evaluating *why* states do or do not implement specific policies, this methodology does not directly apply. Berke also utilized frequency analysis (counts) for comparison between California and other states. Berke observed that California's policy development at the local level was advanced enough that it warranted separate consideration from other jurisdictions. May (1997) utilized hierarchical cluster analysis to identify groupings of states with respect to their regulatory approaches related to building codes at the state level. Hierarchical cluster analysis was initially considered as a potentially applicable methodology for this research to compare between states seismic policies. However, May's study was aimed at addressing what factors may influence why state adopt specific codes. Therefore a number of factors other than policy frequency were built into the cluster analysis. Factors such as political culture and enforcement mechanisms, etc. are not considered in this research, which limits the ability to develop cluster analysis parameters.

Robert (2007) conducted a cross-state comparison of state environmental justice policies and utilized a unidimensional scale analysis (Guttman scale) to demonstrate how states develop and implement environmental justice policies (Robert, 2007). Although not related to seismic policies, Robert showed that a Guttman scale can be used to evaluate policy development and implementation. As described in greater detail in Section 3 (Data Collection and Methodologies), a Guttman scale is a procedure designed to evaluate the order of items relative to an underlying cumulative dimension (McIver & Carmines, 1981). In other words, is there an order to which states develop and implement policies relative to seismic risk? The Guttman Scale approach was carried forward for this research to evaluate how states develop and implement policies relative to seismic risk.

As illustrated above, existing research has examined seismic mitigation, including policy issues. However, much of the existing research has either examined policy variability between states based on *local* policy adoption and enforcement or has limited the types of policies compared between states. These studies provide a relative sense of policy adequacy but do not fully account for all types of state-level policies and do not look at policy coverage throughout the entire United States. Additionally, while some of the studies note differences in seismic risk between states and utilize risk as a variable (May & Birkland, 1994; May & Feeley, 2000), none of the studies use a defined seismic risk metric to normalize between states. The question of *how* states develop and implement seismic policies has also not been thoroughly researched.

### **Section 3 -Data Collection & Methodologies**

As described in Section 2, existing research has examined various components of seismic policies, with the majority focusing on local issues. None of the research developed a comprehensive nation-wide catalog of state-level policies or compared policy coverage between states while normalizing for relative seismic risk. However, based on existing research, a number of methodologies were identified and considered to compare policy coverage between states for this thesis. Additionally, a method referred to as a unidimensional scale analysis (Guttman scale) was identified as a tool to evaluate how states develop and implement seismic policies.

The methods presented below accomplish two objectives of this research. First is to compile a comprehensive state-level seismic policy data set that catalogs existing state seismic policies. This catalog of policies can then be used to compare seismic policy coverage between individual states relative to their seismic risk. Second, is to analyze the cataloged policies to evaluate correlation between the number of state policies and seismic risk. This section describes the methods utilized to identify and compile state seismic policies into a comprehensive database. It also operationalizes the quantitative policy coverage comparison metrics and the approach used to develop a unidimensional (Guttman) scale.

#### **Data Collection**

In order to conduct a comparative analysis of state level seismic policies, a comprehensive catalog of state-level seismic policies is required. Prior to initiating this research, no catalog of state-level seismic policies that could be used to compare different states' legislative and programmatic approaches to seismic mitigation existed. Therefore a key component of this research included the compilation and cataloging of existing state-level seismic policies. To accomplish this, policies were



the Stafford Act/DMA 2000 requires: *“discussion of the State’s pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas...”*. This provides a starting point for policy compilation.

However, considering that the primary purpose of hazard mitigation plans is to provide guidance for state agencies on hazard mitigation, they cannot be used as the sole source of policy identification.

Each plan must follow a standardized format and include a mandated set of criteria. Individual states have flexibility in how to interpret what is required to meet these criteria. This can lead to differences in the level of detail included in the plans. Additionally, the majority of the plans were completed in 2007 which limits the ability to capture any policies put in place after the completion of the plans. An ideal policy identification method would include review of existing state legislation from searchable state databases supplemented by individual interviews with state emergency management directors or staff to confirm that current policies were identified and captured.

However, that approach is outside the scope and scale of this research. Therefore, state hazard mitigation plans were used as the key source for policy identification along with additional methods and sources as described below to supplement the policies identified in the state hazard mitigation plans.

Forty-seven state hazard mitigation plans were obtained from various sources including online versions and direct correspondence with state emergency management/mitigation officers. The plans were compiled and reviewed as the key source for descriptions of state mitigation policies. Three states (Delaware, Kentucky, and Tennessee) did not make their state hazard mitigation plans available for this study and were therefore excluded from the analysis. Although the quality of the reporting of policies within each state’s mitigation plan likely varies, the quality of

the dataset compiled from the state hazard mitigation plans is appropriate for the intended use of this methodology – developing a comprehensive database of seismic mitigation polices and utilizing a scale that evaluates to what degree states adopt seismic mitigation polices relative to their seismic risk. Additionally, as noted below, supplemental policy sources were utilized to confirm and augment the data set.

Each hazard mitigation plan was reviewed to assess the document structure and to identify key sections that focus on seismic mitigation and related policies. This review identified the Capability Assessment section as the key source of mitigation policies. The Capability Assessment highlights the state’s pre- and post-disaster hazard mitigation policies and evaluates their capacity to carry the policies out (FEMA, 2003). Specifically, State Capability Assessments are required to evaluate state laws, regulations, policies and programs related to hazard mitigation and should discuss existing and emerging policies and programs for both pre- and post-disaster mitigation (FEMA, 2008b). Each plan was searched with text search and retrieval software (dtSearch) to identify key words and phrases related to seismic mitigation polices. Key words and phrases searched in all 47 hazard mitigation plans included “executive order,” “building code,” “statute,” “bill,” “legislation,” “seismic policy,” “seismic safety,” “act”, and “administrative code,” among others. A list of key words and phrases used to search hazard mitigation plans for applicable policies is presented in Appendix A. For example, by searching the Washington State Hazard Mitigation Plan for the term “act” over 130 results were identified. Although a number of these results did not apply to seismic mitigation or were duplicative, a quick review identified a number of policies applicable to hazard mitigation including: the Growth Management Act, the State Building Code Act, the Shoreline Management Act, and the State Environmental Protection Act.

In addition to state hazard mitigation plans, other data sources were used to identify and confirm state level seismic hazard mitigation policies. State legislative information systems, online state administrative codes and statutes as well as online state libraries were searched using key words including “earthquake”, “seismic”, “mitigation”, and “building code” among others. For example, a search for “seismic” in the Missouri state legislative database provided a reference to nine individual Missouri Statutes including Revised Missouri Statutes (RSMo) 44-227 Commission on Seismic Safety, 256-155 Interstate Earthquake Emergency Compact, and RSMo 319-200 Notice to Cities and Counties Subject to Earthquake to Adopt Seismic Code. A list of the state legislative databases is included in Appendix B. Other state specific reference sources such as seismic safety commission reports (*A Policy Plan for Improving Earthquake Safety in Washington - Fulfilling Our Responsibility*, 1991; Committee, 1991; Wiley, 2000) were used to identify additional applicable seismic policies. Limitations associated with this policy compilation methodology are discussed in greater detail in Section 5.

#### *Policy Compilation and Synthesis*

A catalog and database of state seismic policies was created using the document review and text search/retrieval method as previously described. The catalog includes a short title or reference for each policy, as well as a brief description of the policy (typically taken from the respective hazard mitigation plan or from the policy itself). A spreadsheet database of the policies listed in the catalog was created to facilitate searching of the catalog and quantitative analysis of the policy dataset. The database contains 310 records (rows) corresponding to the 310 policies and programs listed in the catalog. Each record contains six items (columns): the unique identifier that can be used to find the policy in the catalog; the policy title/references; the state with which the policy is associated; a set

of keywords identifying the primary subject of the policy; whether the policy is legislation, executive order, or program; and whether or not the policy is earthquake specific.

For this study, the broad definition of hazard mitigation provided in the Disaster Mitigation Act was used – *“any sustained action taken to reduce or eliminate the long-term risk to human life and property”* – to purposely include policies that may address multiple phases of the comprehensive emergency management cycle (response, recovery, mitigation, and preparedness). There are numerous references to programs, agency rules/regulations, or emergency appropriations within the state hazard mitigation plans that were presented as policies. However, many programs that may have a hazard mitigation component but were not directly associated with seismic mitigation (e.g., the Ohio Statewide Catastrophic Insurance Program which insures all state owned buildings under a single insurance policy), were not included in the database. Other programs, for example some seismic advisory committees, that may or may not have been mandated by the state’s executive or legislature were identified and included in the policy database due to their role in the identification and development of seismic policies.

The final policy catalog with brief policy descriptions is presented in Appendix C. The policies are listed for each state and the states are listed in alphabetical order. Each policy in the catalog has a unique identifier assigned to it based on the state’s two-letter abbreviation and the order in which it appears after the heading for the particular state (e.g., the first policy listed on the Alaska heading is given the identifier “AK-1.”).

### **Policy Data Analysis**

With the policy database assembled and cataloged, a number of analytical tools can be utilized to compare policy coverage between states. Descriptive statistics such as frequency (policy



counts) and average number and types of policies allow for a basic comparison between states. For this study additional quantitative comparison metrics were developed that account for states relative seismic risk and allows for a normalized policy coverage comparison. A unidimensional scale analysis was also conducted to evaluate if states tend to develop and implement seismic policies cumulatively relative to their seismic risk. The methods and approaches for how these analytical tools were used for this study are described in greater detail below.

### *Descriptive Statistics*

Using the policy catalog and database, a number of descriptive statistics were calculated for a basic policy coverage comparison between states. The descriptive statistics include total policy counts per state, a breakdown of the total policy count into legislation, program, and executive order counts as well as a count of earthquake specific policies per state. The descriptive statistics also count the number policy subjects (building codes, emergency management, land-use/zoning, seismic advisory, school seismic safety, unreinforced masonry, building inventory etc.). The descriptive statistics also include the average number of policies that states have adopted, as well as the average seismic risk to which states are exposed.

### *Quantitative Metrics – State Policy Coverage Comparison*

In addition to descriptive statistics, two simple quantitative metrics were computed to compare states relative to their seismic mitigation policy coverage while considering their relative seismic risk. A set of rankings were created based on the policy counts for each state. While the policy counts can be used to rank the states relative to their policy coverage, simply using counts does not consider other factors that may influence whether or not a particular state would need to adopt any seismic policies. In other words, a rank based solely on policy counts does not consider the relative seismic risk of each state. In order to account for this risk, the annualized earthquake

loss ratios (AELR) computed for each state by FEMA using the loss estimation software HAZUS-MH (FEMA, 2008a) was utilized. The AELR is the estimated long-term value of earthquake losses to the general building stock in any single year expressed as a fraction of the building inventory replacement value. In other words, the AELR provides a measurement of relative earthquake risk per state by accounting for the replacement value of the building inventory. For example, \$10 million in earthquake damages to the building stock of Evansville, Indiana, represents a much greater loss than a comparable dollar loss in Seattle, Washington because Seattle is a much larger city with a greater number of buildings. FEMA states that because the AELR accounts for regional building inventory and relative replacement values, the AELR can be used as a measurement of relative seismic risk and can be directly compared across regions, states, counties, and even metropolitan areas (FEMA, 2008a). For this study the AELR was combined with the policy counts in two different ways to produce two similar metrics of states' policy coverage with respect to relative earthquake risk.

The first metric – *policy risk ratio* (PRR) – is the ratio of the normalized policy count to the normalized AELR. The policy count for each state was normalized by the number of policies from the state with the most policies. The AELR for each state was similarly normalized by the AELR amount from the state with the highest AELR. The equation of the PRR is provided below:

$$Policy\ Risk\ Ratio = \frac{\frac{Policy\ Count\ of\ State}{Maximum\ Policy\ Count\ of\ all\ States}}{\frac{AELR\ of\ State}{Maximum\ AELR\ of\ all\ States}}$$

The second metric – *proportional risk count* (PRC) – is an estimate of how many policies the state with the most policies would have if that state had the same AELR as each respective state.

This was computed by subtracting the product of the normalized AELR for the respective state and

the policy count from the state with the most policies from the policy count of the respective state.

The equation for the PRC is provided below:

*Proportional Risk Count* =

$$\text{Policy Count of State} - \frac{(\text{Policy Count of State Maximum AELR})(\text{AELR of State})}{\text{Maximum AELR of all States}}$$

The PRR and PRC convey similar information, but in different ways. These metrics are based on several simplifying assumptions to provide a relatively convenient means of quantitatively comparing states' policy coverage with respect to their relative risk. However, they are not the only quantitative analysis that could be conducted using the variables of policy count and AELR. Use of additional variables would expand the ability to compute state policy coverage further.

The PRR and PRC assume that additional risk requires additional policy coverage and that each policy is an equivalent unit. In other words, it is assumed that a piece of legislation adopted in one state does not incorporate the same policies that might have been adopted in another state through multiple pieces of legislation. Lastly, it assumes that each policy topic is of equal importance, for example a building code mandate is equivalent to a planning mandate for schools. These assumptions are reasonable for this initial research with the purpose of providing a quantitative means of comparing states' policy coverage to each other with respect to seismic risk; however the information gained from this quantitative comparison should be augmented by a qualitative comparison of specific policies between particular states. The descriptive statistics and state policy coverage comparisons are presented and discussed in Section 4.

*Unidimensional Scaling (Guttman scale)*

In addition to the descriptive statistics and the state policy coverage metrics, a unidimensional scale, referred to as a Guttman scale, was constructed to evaluate whether state

seismic policies tend to be developed cumulatively, with increasing policy intensity. In other words, do states additional, more intensive seismic mitigation policies with a higher level of seismic risk? Examining state policies with a Guttman scale augments the results of the descriptive statistics and policy coverage metrics by providing another analytical tool to identify and rank states relative to policy coverage. By analyzing state policy development with a Guttman scale, it may be possible to identify broad policy categories that represent areas of coverage deficiencies for individual states. Guttman scale analysis can be used with qualitative and quantitative data (Guest, 2000).

A Guttman scale, also referred to as a scalogram, is a procedure designed to order *both* “stimuli” and “subjects” with respect to some underlying cumulative dimension (McIver & Carmines, 1981). The scale is composed of a data matrix that includes “subjects” down the left side of the matrix and “stimuli” across the top of the matrix (Figure 3-1). In this case individual states represent the subjects with policies/programs representing the stimuli. The matrix is populated with a single dichotomous response (yes or no, [1,0], etc.) for each subject and stimuli. This approach provides an empirical test to evaluate the extent to which any set of stimuli constitute a unidimensional scale (Gorden, 1977). A perfect Guttman scale with a definite underlying unidimensional cumulative component would have a uniform, incrementally increasing number of positive responses in subject stimuli (Figure 3-1). In the case of this study, a perfect Guttman scale would consist of each state adopting and implementing specific seismic policies in order, before implementing the next policy step. Each additional policy step also represents an increase in policy strength or intensity. Perfect scales are uncommon and rarely achieved. However, the basis of Guttman scale analysis anticipates that there will be deviations from the perfect scale and does not in and of itself dismiss the value of a non-perfect scale (Stouffer, 1950). The question is whether the scale has ideal properties and to what degree of deviations from the perfect scale can be tolerated (McIver & Carmines, 1981).

Deviations from a perfect scale are referred to as “errors” and can be utilized to assess the scalability of a data set.

Figure 3-1. Example of “Perfect Guttman scale”

Subjects	State	Stimuli							Score	Errors	
		Emergency Management	Building Code	Land-Use	Seismic Advisory	School Seismic	Hospital Seismic	Unreinforced Masonry			Seismic Microzonation
	A	X	X	X	X	X	X	X	X	8	0
	B	X	X	X	X	X	X	X		7	0
	C	X	X	X	X	X	X			6	0
	D	X	X	X	X	X				5	0
	E	X	X	X	X					4	0
	F	X	X	X						3	0
	G	X	X							2	0
	H	X								1	0
	I									0	0

To evaluate how closely observed conditions within a data set fit the predicted ideal response, Guttman developed the Coefficient of Reproducibility (CR), which measures the amount that a scale deviates from the ideal scale pattern. In other words, the CR is a measure of goodness of fit between the observed and the predicted ideal response patterns. The CR is expressed as:

$$CR = 1.0 - \left[ \frac{\# \text{ of errors}}{(\# \text{ of stimuli}) \times (\# \text{ of subjects})} \right]$$

Errors represent deviations from the perfect scale, seismic policies and programs represent the stimuli and the individual states represent the subjects. In practice scales with a CR of 0.90 or higher have been used as efficient approximations to perfect scales (Stouffer, 1950).

An example of a non-perfect Guttman scale with a CR  $\geq$  .90 is presented in Figure 3-2.

Figure 3-2. Example of Guttman scale with errors

State	Emergency Management	Building Code	Land-Use	Seismic Advisory	School Seismic	Hospital Seismic	Unreinforced Masonry	Seismic Microzonation	Score	Errors
A	X	Error	X	X	X	X	X	X	7	1
B	X	X	X	X	X	X	X		7	0
C	X	X	X	Error	Error	X			4	2
D	X	X	X	X					4	0
E	X	X							2	0
F	Error	X	X						2	1
G	Error	X							1	1
H	X								1	0
I									0	0

$$CR = 1.0 - [\#errors/(\#stimuli \times \#subjects)]$$

$$CR = 1.0 - [5/(8 \times 9)]$$

$$CR = .0931$$

For the purposes of this study a Guttman scale was constructed using the 47 states with available seismic mitigation policy information as the subjects. Eight seismic mitigation policy categories (emergency management, building code, land-use/zoning, seismic advisory, school seismic safety, hospital seismic safety, unreinforced masonry, and seismic microzonation) represent the Guttman scale stimuli. The stimuli categories are described in detail below:

- “Emergency Management” means that a state has legislation establishing an Emergency Management program/protocol.

- *“Building Code”* means that a state has a state adopted building code, applicable to all state facilities which may be enforced locally by counties and other municipal jurisdictions. Specific code (IBC, UBC, others) and applicability/enforcement may vary state to state.
- *“Land Use/Zoning”* means that a state has adopted critical areas legislation aimed at reducing impacts to critical areas with may include areas with high seismic risk or unstable slopes/soils.
- *“Seismic Advisory Committee”* means a state has a state sanctioned seismic advisory committee. This may include legislatively adopted Seismic Safety Commission (California) or could include membership/participation in regional seismic advisory committees/consortiums (CUSEC-Central United States Earthquake Consortium).
- *“School Seismic Safety”* means state adopted legislation that specifically addresses seismic safety at schools.
- *“Hospital Seismic Safety”* means state adopted legislation that specifically addresses seismic safety at hospitals.
- *“Unreinforced Masonry”* means state adopted legislation that addresses seismic risks associated with public and privately owned unreinforced masonry building stock.
- *“Seismic Microzonation”* means state legislation or program requiring mapping of specific seismic fault zones and other associate hazards such as liquefaction and earthquake-induced landslides.

These policy categories are arranged in an order of increasing policy strength or intensity based on a conceptual framework described below that assumes an increasing policy coverage and level of effort required to implement policies in these categories. For example, since each state is required



by federal law to have an emergency management administrative policy to be eligible for federal disaster funding. The emergency management category is therefore a baseline policy that all states would be likely to have but also represents nominal policy strength. Similarly, building codes are widely accepted and recognized as necessary for most general construction, however some states have traditionally delegated code development and enforcement authority to local jurisdictions. Changing to a state wide uniform code increases consistency throughout the states, but can take substantial effort to implement a state-wide transition. Land use and zoning laws, specifically critical areas legislation, represent broadly enforceable restrictions on land throughout the states which can provide long-term protections by excluding hazard prone areas from future development. However, property restrictions can impact future economic viability and often have a controversial stigma that limits policy development and implementation. The remaining policy categories are seismic specific and would not be expected to be implemented in states with lower seismic risk, thus represent an increase in seismic policy strength/coverage. Seismic advisory committees often advocate for specific policy development and can increase political awareness of seismic hazards. However it should be noted that there is variability in the way states authorize and use seismic advisory committees. For example California has a legislatively authorized/mandated advisory committee, where as other states have limited participation in multi-state consortiums. School seismic safety adds earthquake specific codes etc., to an important subset of public buildings. Although it would be expected that policies aimed at school safety would be widely accepted, costs and funding associated with additional requirements may require significant political will and/or trade-offs for implementation. Similarly, hospital safety is understandable and would likely be critical in the event of a major earthquake, however most hospitals are privately owned and operated and additional seismic specific requirements may be deemed burdensome or difficult to enforce/implement. Considering that the majority of earthquake related injuries, damages and

fatalities are related to nonstructural falling debris, unreinforced masonry related policies have the potential to reduce risks from earthquakes more than almost any other policy category. However, due to the sheer volume of buildings (many of which are unidentified and privately owned), the scale of implementation for this type of policy would require significant political will. The same can be said for Seismic Microzonation.

Utilizing the 47 states with available seismic mitigation policies and the policy stimuli categories listed above, a Guttman scale was constructed to evaluate the whether there is an underlying unidimensionality in how states approach the development and implementation of seismic policies. The results of the Guttman scale analysis is presented and discussed in Section 4.

## **Section 4 - Results and Discussion**

This section presents the results of the data collection and analysis described in Section 3. The results are evaluated and discussed with a focus on comparing individual states against each other with respect to seismic mitigation policy adoption relative to seismic risk. Presented first are the descriptive statistics computed from the state policy database created as part of this study. Presented second are the results of the cross-state comparisons. Presented last are the results of Guttman scaling analysis.

### **Descriptive Statistics**

Table 4-1 presents the descriptive statistics calculated from the policy database for each state. These statistics include total policy counts per state, a breakdown of the total policy count into legislation, program, and executive order counts as well as a count of earthquake specific policies per state. Table 4-2 presents the descriptive statistics for all states in aggregate. The statistics for all states in aggregate include the same counts as well as the average (mean) and

maximum for the number of policies, the number of earthquake specific policies as well as the average and maximum annualized earthquake loss ratio (AELR).

State	Annualized Earthquake Loss Ratio (\$/million\$)	Total Policies	Total Legislation	Percent Legislation	Total Non-Legislative Programs	Percent Non-Legislative Programs	Total Executive Orders	Percent Executive Orders	Total Earthquake Specific	Percent Earthquake Specific
Alabama	93	7	3	43	1	14	3	43	1	14
Alaska	951	4	3	75	1	25	0	0	1	25
Arizona	79	5	3	60	1	20	1	20	1	20
Arkansas	273	10	7	70	2	20	1	10	6	60
California	1452	34	32	94	1	3	1	3	28	82
Colorado	40	8	7	88	1	13	0	0	1	13
Connecticut	45	3	3	100	0	0	0	0	0	0
Florida	6	9	9	100	0	0	0	0	0	0
Georgia	77	3	3	100	0	0	0	0	0	0
Hawaii	488	7	5	71	2	29	0	0	2	29
Idaho	106	6	3	50	2	33	1	17	2	33
Illinois	71	4	2	50	1	25	1	25	2	50
Indiana	73	5	2	40	2	40	1	20	2	40
Iowa	6	4	4	100	0	0	0	0	0	0
Kansas	14	3	3	100	0	0	0	0	0	0
Louisiana	12	5	2	40	0	0	3	60	0	0
Maine	74	3	3	100	0	0	0	0	0	0
Maryland	21	5	5	100	0	0	0	0	0	0
Massachusetts	51	4	3	75	0	0	1	25	0	0
Michigan	6	5	5	100	0	0	0	0	0	0
Minnesota	1	3	2	67	0	0	1	33	0	0
Mississippi	117	9	7	78	1	11	1	11	1	11
Missouri	218	18	14	78	1	6	3	17	11	61
Montana	304	8	7	88	1	13	0	0	1	13
Nebraska	11	3	3	100	0	0	0	0	0	0
Nevada	617	12	10	83	2	17	0	0	5	42
New Hampshire	92	4	4	100	0	0	0	0	0	0
New Jersey	63	6	3	50	1	17	2	33	1	17
New Mexico	205	4	2	50	1	25	1	25	1	25
New York	67	5	3	60	2	40	0	0	2	40
North Carolina	62	7	4	57	1	14	2	29	1	14
North Dakota	2	8	8	100	0	0	0	0	0	0
Ohio	26	3	3	100	0	0	0	0	0	0
Oklahoma	56	4	3	75	1	25	0	0	1	25
Oregon	850	20	17	85	2	10	1	5	16	80
Pennsylvania	37	4	3	75	0	0	1	25	0	0
Rhode Island	36	4	3	75	0	0	1	25	0	0
South Carolina	363	5	4	80	0	0	1	20	0	0
South Dakota	12	4	3	75	0	0	1	25	0	0
Texas	12	1	1	100	0	0	0	0	0	0
Utah	817	8	7	88	1	13	0	0	2	25
Vermont	103	6	6	100	0	0	0	0	0	0
Virginia	32	9	7	78	0	0	2	22	0	0
Washington	884	10	7	70	3	30	0	0	5	50
West Virginia	34	3	2	67	0	0	1	33	0	0
Wisconsin	4	5	5	100	0	0	0	0	0	0
Wyoming	187	3	2	67	1	33	0	0	1	33

Table 4-1. Descriptive statistics for seismic policies (individual states)

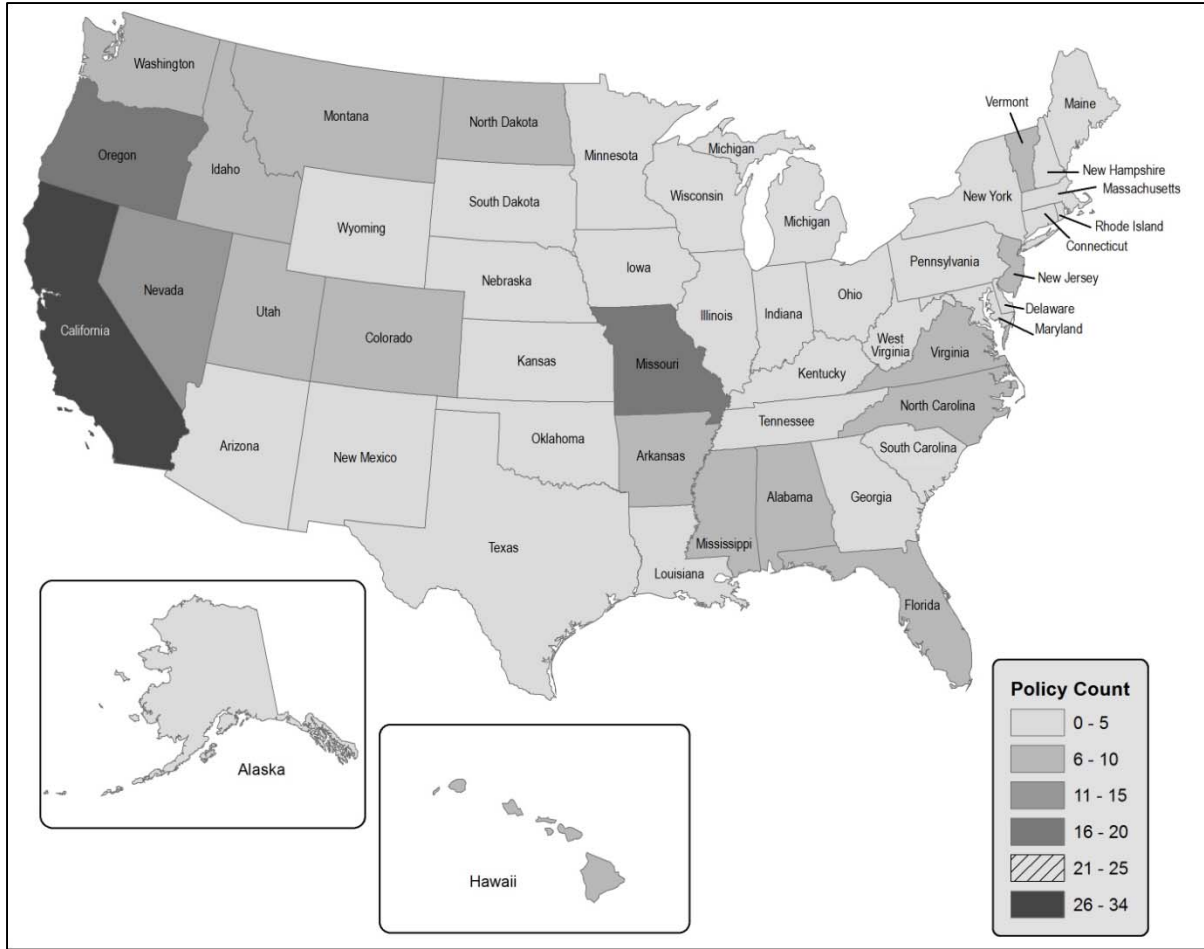
**Table 4-2. Descriptive statistics of seismic policies (all states in aggregate)**

Total policies	310
Total legislation	247
Percent legislation	80%
Total executive orders	31
Percent executive orders	10%
Total non-legislative programs	32
Percent non-legislative programs	10%
Total earthquake specific policies	94
Percent earthquake specific policies	30%
Average AELR (\$/million \$)	195.4
Maximum AELR (\$/million \$)	1452
Average # policies	6.6
Maximum # of policies	34
Average # of earthquake specific policies	2.1
Maximum # of earthquake specific policies	28

*Seismic Mitigation Policy Count*

A total of 310 policies (legislation, executive orders, or state programs) were compiled using the methods described in Section 3. Of the policies compiled, 247 (79%) are legislation, 31 (10%) are executive orders with the balance of 32 or about 11% state programs. Out of the 310 total policies, 30% (94 policies) are specific to earthquakes. Although the balancing 70% (216 policies) were not developed and adopted solely for purpose of earthquake mitigation they are applicable in function to earthquake mitigation (i.e. general emergency management, land use planning, and zoning, building codes, etc.).

Of the 47 states, California has the greatest number of seismic policies at 34. California is followed by Oregon (20), Missouri (18), and Nevada (12). Washington and Arkansas follow Nevada with a total of 10 policies each. Forty-one of the forty-seven states have less than 10 policies. Across all 47 states there is an average of about 6.6 policies per state. The complete policy count by state is presented in Table 4-1. The subset of earthquake specific policies is distributed similarly, with California maintaining the greatest number of earthquake specific policies (28 policies) followed by Oregon (16), Missouri (11), and Arkansas (6). Washington and Nevada each have 5 earthquake specific policies. Forty of the forty-seven states included in the database have two or less earthquake specific policies with 23 states having no earthquake specific policies at all. The complete state-by-state earthquake-specific policy count is presented in Table 4-1 and is summarized in Figure 4-1.

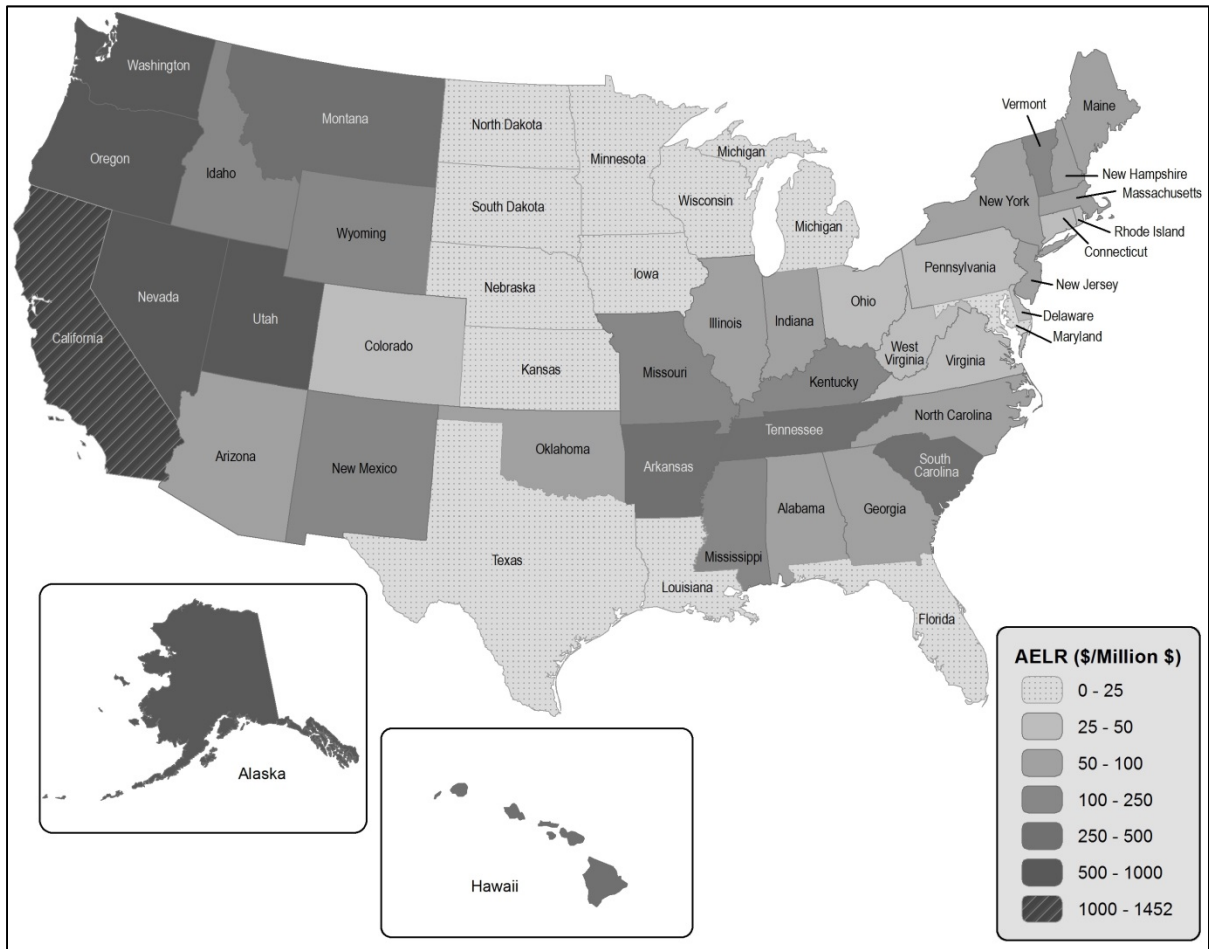


**Figure 4-1. State to State Seismic Mitigation Policy Count**

*Relative State Seismic Risk*

As discussed in Section 3 the AELR is computed for each state by FEMA using the loss estimation software HAZUS-MH (FEMA, 2008a). The AELR estimates the long-term value of earthquake losses relative to the general building stock expressed as a fraction of the building inventory replacement value. The AELR provides a measurement of relative earthquake risk per state by accounting for the replacement value of the building inventory in a given region. FEMA states that because the AELR accounts for regional building inventory and relative replacement values, the AELR can be used as a measurement of relative seismic risk and can be directly compared across regions, states, counties, and metropolitan areas (FEMA, 2008a). California has the

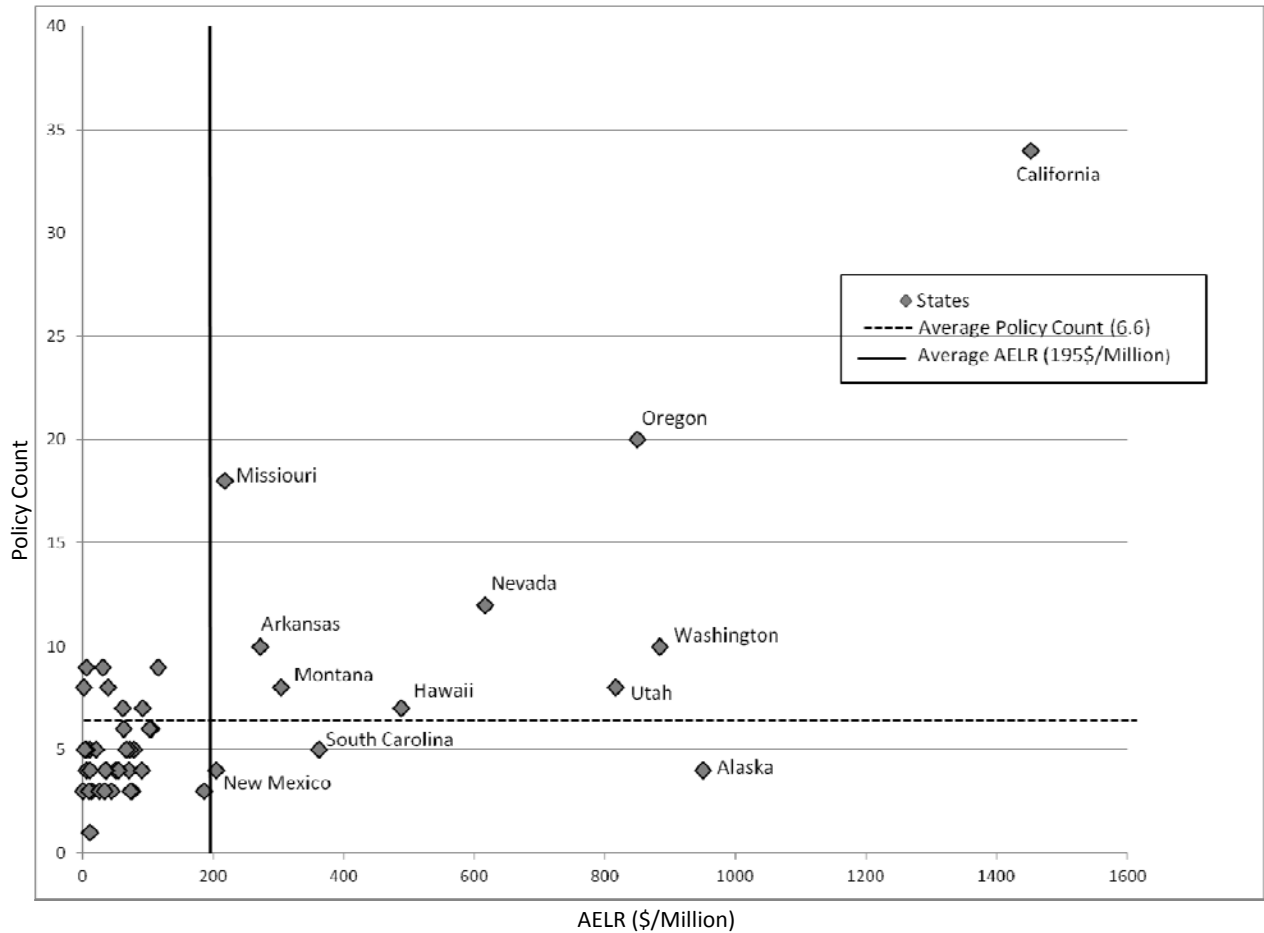
highest AELR of \$1,452 per million dollars. The ten states behind California with the highest AELR (in descending order) include: Alaska (\$951 per million), Washington (\$884 per million), Oregon (\$850 per million), Utah (\$817 per million), Nevada (\$617 per million), Hawaii (\$488 per million), South Carolina (\$363 per million), Montana (\$304 per million), Arkansas (\$273 per million), and Missouri (\$218 per million). The AELR for all 47 states included in this study is presented in Table 4-1 and is shown in Figure 4-2. The average AELR is about \$195 per million dollars, with 31 states below \$100 per million and six states below \$10 per million.



**Figure 4-2. Annualized Earthquake Loss Ratio (AELR) for each state – FEMA 2008**



The descriptive statistics indicate that states with higher seismic risk tend to have a greater number of seismic policies and not surprisingly California, which has the highest seismic risk also has the most seismic policies. In addition to California, the majority of the states with above average seismic risk (AELR > \$195 per million) also have an above average number of policies (>6.6 policies per state). Figure 4-3 shows the distribution of policy counts versus AELR and identifies states with above average seismic risk. Three states with an above average seismic risk (South Carolina, Alaska, and New Mexico) have a below average number of seismic policies. Of these three states, Alaska stands out in particular due to its high AELR, which is second only to California. Alaska has a relatively low policy count of 4, which is the same as Iowa and South Dakota. Although a simple policy count compared to seismic risk does not directly translate to a state's adequacy in policy coverage, this initial comparison does indicate that Alaska, and to a lesser extent, South Carolina and New Mexico have low seismic policy coverage relative to their seismic risk .



**Figure 4-3. State Policy Count vs. AELR**

### State Policy Coverage Metrics

Considering that a simple policy count is not adequate to fully evaluate a state’s policy coverage, two new policy metrics were developed for this study as described in Section 3: policy risk ratio (PRR) and proportional risk count (PRC). These metrics help compare seismic policy coverage between states with respect to relative seismic risk.

#### *Policy Risk Ratio*

The PRR is the normalized legislation count divided by the normalized AELR. As described in Section 3, it compares state policy counts while accounting for relative seismic risk. California has a

PRR of 1.0, meaning it is the standard against which other states are compared for this metric. A PRR greater than one indicates a state has more policy coverage than would be expected relative to its seismic risk and California's standard. A PRR less than 1.0 indicates a state has less policy coverage than would be expected.

Eight states (Alaska, Utah, Washington, South Carolina, Hawaii, Wyoming, Nevada, and New Mexico) have a PRR below one, indicating that these states have less seismic mitigation policy coverage than would be expected given their seismic risk. Thirty-eight states have a PRR greater than 1.0. The majority of these states also have below average seismic risk (AELR <\$195 per million). Only four states (Oregon, Montana, Arkansas, and Missouri) with a PRR greater than 1.0 have an above average seismic risk.

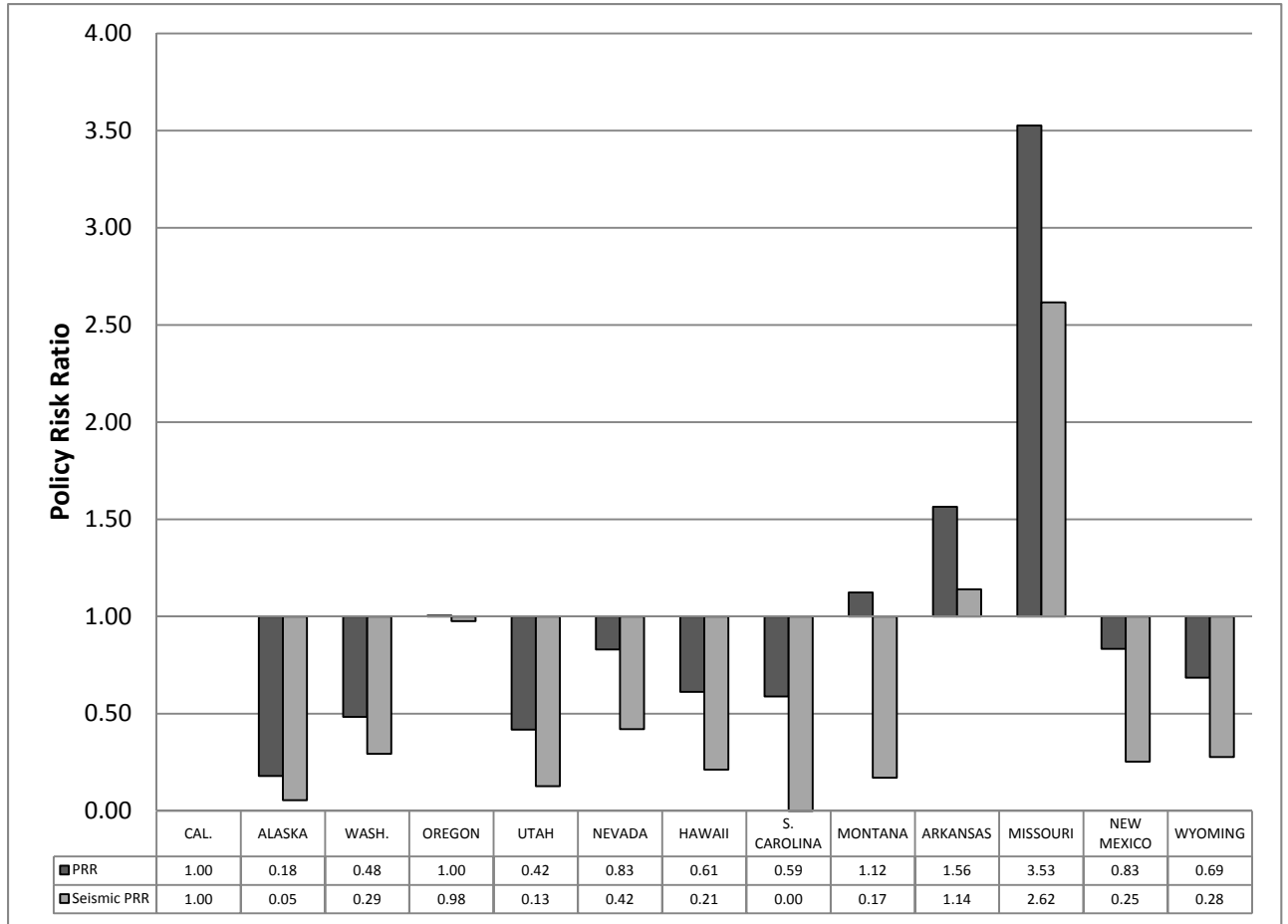
It is not surprising that states with lower seismic risk have higher policy coverage considering that that non-seismic specific policies are included in the total policy count. To account for this, a seismic-specific PRR was calculated using only earthquake specific policies for states with above average seismic risk. As with the total policy count, California has the highest earthquake specific policy count (28 earthquake specific policies) and the AELR does not change. California remains the standard for comparison and has a seismic-specific PRR of 1.0. Only two states with high seismic risk (Missouri and Arkansas) have a seismic-specific PRR greater than 1.0. Nine high risk states (Oregon, Nevada, Washington, New Mexico, Hawaii, Montana, Utah, Alaska, and South Carolina) have a seismic-specific PRR less than 1.0. Of the high seismic risk states, South Carolina is the only state with no earthquake specific policies. The PRR and the seismic-specific PRR for all states are presented in Table 4-3. A comparison of the PRR and seismic-specific PRR for high-risk states is presented in Figure 4-4.

**Table 4-3. Policy Risk Ratio and Proportionate Risk Count (All States)**

State	AELR (\$/million\$)	Policy Risk Ratio (PRR)	Seismic Specific PRR	Proportional Risk Count (PRC)	Seismic Specific PRC
Alabama	93	3.21	0.56	4.82	-0.79
Alaska	951	0.18	0.05	-18.27	-17.34
Arizona	79	2.70	0.66	3.15	-0.52
Arkansas	273	1.56	1.14	3.61	0.74
California	1452	1.00	1.00	0.00	0.00
Colorado	40	8.54	1.30	7.06	0.23
Connecticut	45	2.85	--	1.95	--
Florida	6	64.06	--	8.86	--
Georgia	77	1.66	--	1.20	--
Hawaii	488	0.61	0.21	-4.43	-7.41
Idaho	106	2.42	0.98	3.52	-0.04
Illinois	71	2.41	1.46	2.34	0.63
Indiana	73	2.93	1.42	3.29	0.59
Iowa	6	28.47	--	3.86	--
Kansas	14	9.15	--	2.67	--
Louisiana	12	17.79	--	4.72	--
Maine	74	1.73	--	1.27	--
Maryland	21	10.17	--	4.51	--
Massachusetts	51	3.35	--	2.81	--
Michigan	6	35.59	--	4.86	--
Minnesota	1	128.12	--	2.98	--
Mississippi	117	3.29	0.44	6.26	-1.26
Missouri	218	3.53	2.62	12.90	6.80
Montana	304	1.12	0.17	0.88	-4.86
Nebraska	11	11.65	0.00	2.74	-0.21
Nevada	617	0.83	0.42	-2.45	-6.90
New Hampshire	92	1.86	--	1.85	--
New Jersey	63	4.07	0.82	4.52	-0.21
New Mexico	205	0.83	0.25	-0.80	-2.95
New York	67	3.19	1.55	3.43	0.71
North Carolina	62	4.82	0.84	5.55	-0.20
North Dakota	2	170.82	--	7.95	--
Ohio	26	4.93	--	2.39	--
Oklahoma	56	3.05	0.93	2.69	-0.08
Oregon	850	1.00	0.98	0.10	-0.39
Pennsylvania	37	4.62	--	3.13	--
Rhode Island	36	4.75	--	3.16	--
South Carolina	363	0.59	--	-3.50	-7.00 <sup>1</sup>
South Dakota	12	14.24	--	3.72	--
Texas	12	3.56	--	0.72	--
Utah	817	0.42	0.13	-11.13	-13.75
Vermont	103	2.49	--	3.59	--
Virginia	32	12.01	--	8.25	--
Washington	884	0.48	0.29	-10.70	-12.05
West Virginia	34	3.77	--	2.20	--
Wisconsin	4	53.38	--	4.91	--
Wyoming	187	0.69	0.28	-1.38	-2.61

Note: Shading indicates low metric result (PRR less than 1.0 or Negative PRC)

<sup>1</sup> South Carolina has no seismic specific policies



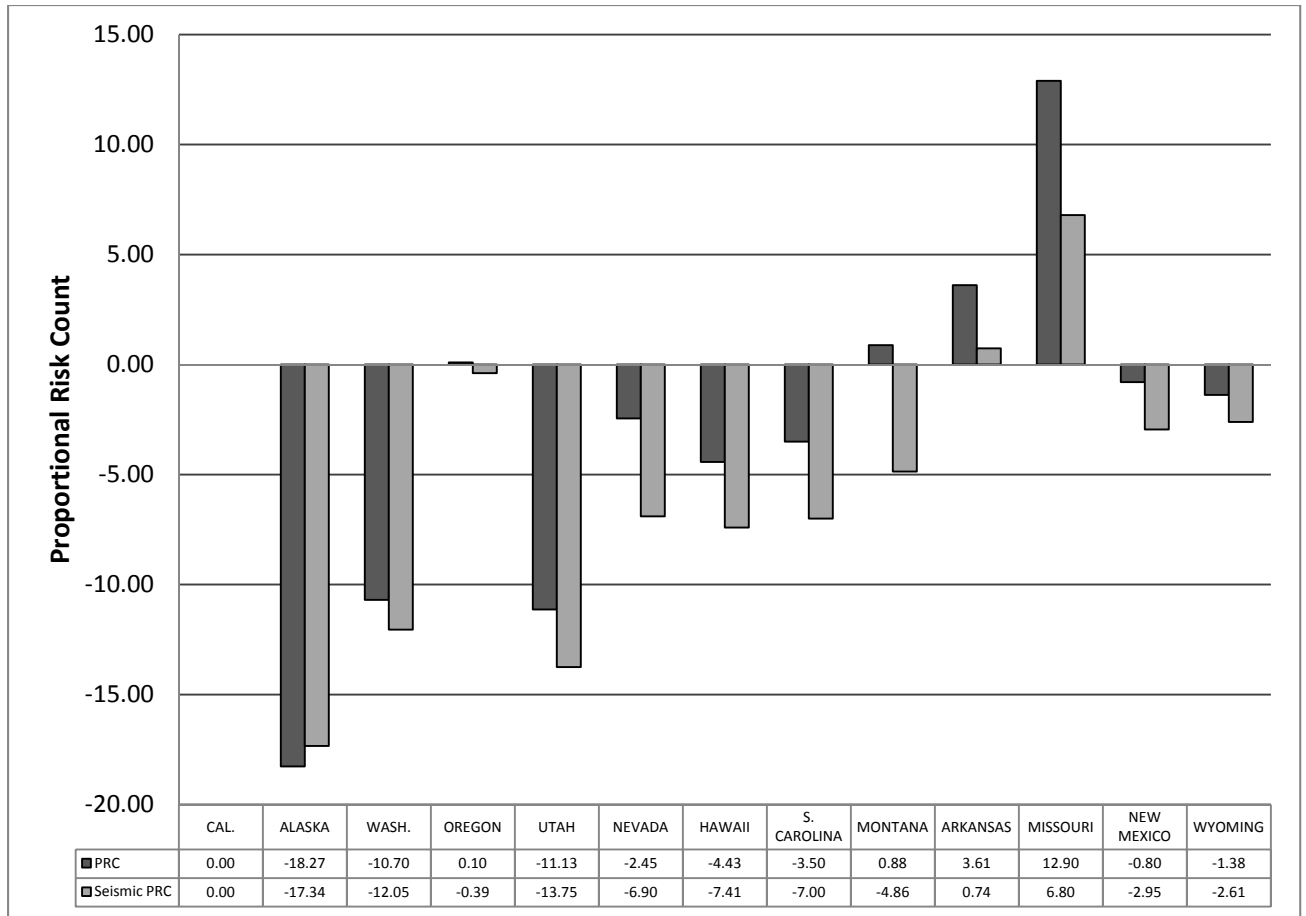
**Figure 4-4. Policy Risk Ratio (High-Risk States)**

*Proportional Risk Count*

The proportional risk count (PRC) policy metric expresses how many policies the state with the greatest seismic risk, in this case California, would have if they had the same AELR as other states. If the value of the PRC for a given state is zero, it suggests that the state in question has the same number of policies that California would have if it had the same AELR. If the value of the PRC for a given state is negative, the state has fewer policies than California would have if it had the same AELR. If the PRC is positive, the opposite is true. For example, California is again the standard, with a PRC equal to zero. Although none of the states have a PRC of exactly zero, four states (New Mexico, Oregon, Texas, and Montana) have a PRC greater than or equal to -1 and less than or equal

to 1 ( $-1 \leq \text{PRC} \leq 1$ ). This suggests that these states have a PRC approximating zero and the policy counts for these states are generally in proportion to their AELR, using California as the standard. Seven states (Alaska, Utah, Washington, Hawaii, South Carolina, Nevada, and Wyoming) have a PRC less than -1. Alaska has a PRC of -18.26, Utah has a PRC of -11.13, and Washington has a PRC of -10.70. A number of states have a PRC greater than 1 indicating that they have more policies than would be expected relative to their AERL; however the majority of these states have below average seismic risk. Only two states with high seismic risk (Arkansas and Missouri) have a PRC greater than 1. Arkansas has a PRC of 3.60 indicating a reasonable level of policy coverage relative to its AELR. Missouri's PRC of 12.89 is the highest of all states suggesting that Missouri policy coverage exceeds what would be expected given its AELR.

As with the PRR, the PRC includes non-seismic specific policies in the total policy count. To account for this, a seismic-specific PRC was calculated using only earthquake specific policies for states with above average seismic risk. California remains the standard for comparison and has a seismic-specific PRC of zero. Only Missouri has a seismic-specific PRC greater than 1. Although it has been reduced by more than half using only earthquake specific policies, Missouri still has a robust seismic-specific PRC of 6.79. Arkansas and Oregon both have a seismic-specific PRC close to zero, which suggests these states have sufficient policy coverage given their relative seismic risk (0.73 and -0.39, respectively). The eight remaining states with high seismic risk (Alaska, Utah, Washington, Hawaii, South Carolina, Nevada, Montana, and New Mexico) all have negative seismic-specific PRCs. Three states have seismic specific PRCs below -10. The seismic specific PRCs for Washington (-12.04), Utah (-13.75), and Alaska (-17.34) suggests that these states could benefit from additional policy coverage. The PRC and the seismic-specific PRC for all states are presented in Table 4-3. A comparison of the PRC and seismic-specific PRC for high risk states is presented in Figure 4-5.



**Figure 4-5. Proportional Risk Count (High-Risk States)**

*State Policy Coverage Metrics Interpretation*

Consistent with the results of the descriptive statistics, the PRR and PRC metrics show that Alaska, South Carolina, and New Mexico have low policy coverage relative to their seismic risk. However, the PRR and PRC indicate several other states with above average seismic risk also show generally lower levels of seismic policy coverage. Of the high-risk states with above average AELR (aside from California), only Arkansas and Missouri have policy coverage approaching that of California. Oregon and Montana have mixed results with their PRR and PRC showing relatively good policy coverage, but with lower results for their seismic-specific metrics. The seismic-specific metrics for Oregon are only slightly below optimum and the general PRR and PRC are well above what

would be expected relative to seismic risk, suggesting that Oregon has reasonable seismic mitigation policy coverage. In fact, of all the states, Oregon has the closest general PRR and PRC to California. Montana on the other hand has relatively strong standard PRR and PRC, but low seismic-specific PRR and PRC metrics which suggests that although at face value Montana appears to have sufficient policy coverage, in fact there may be some deficiencies in earthquake mitigation policies relative to Montana's seismic risk. Aside from Arkansas, Missouri, Oregon, and Montana, all of the states with an above average AELR show low seismic mitigation policy coverage relative to the standard and seismic specific cross-state comparison metrics (Table 4-3). The cross-state comparison metrics show that Alaska, Utah, Washington, South Carolina, Hawaii, Nevada, and New Mexico all have low seismic mitigation policy coverage. Additionally, although Wyoming has a slightly below average AELR (\$187 per million) the cross-state comparison metrics consistently show a lower policy coverage for Wyoming as well.

Of the states with above average seismic risk Alaska has the lowest standard and seismic-specific PRR and PRCs (Figures 4-4 and 4-5). Utah also shows lower policy coverage relative to seismic risk with the fifth highest AELR but the second lowest standard and seismic-specific PRR and PRCs. Washington, with the third highest AELR also has low policy coverage with the third lowest standard PRR as well as the third lowest standard and seismic-specific PRCs. On the other hand, although Washington's seismic-specific PRR was low, a number of states had lower seismic-specific PRRs suggesting that Washington has some additional seismic-specific policy coverage relative to other high-risk states. Nevada, Hawaii, South Carolina, New Mexico, and Wyoming also have low seismic mitigation policy coverage. The magnitude of the policy coverage deficiencies for these states tend to be less than Alaska, Washington, and Utah due to their lower relative seismic risk.



Although the cross-state policy comparison metrics indicate that a number of high-risk states have low seismic policy coverage. However, the variability in the metrics between states like Alaska, Washington, and Utah with low policy coverage and states with stronger policy coverage like Oregon, Arkansas, and Missouri (and California in general) indicate that there are likely other political, geographic and state specific considerations that influence policy development and implementation. Additionally, considering that the metrics are based on policy counts, there may be variability in how different states have developed and constructed policies, with the likelihood that some of the policies are more or less expansive or comprehensive that deal with multiple issues per policy. This would be understandable given that California serves as a model of possible policy topics that other states can combine into single policies.

### **Unidimensional Analysis (Guttman scale)**

As presented above, the state policy coverage metrics evaluate individual states and their policy coverage relative to seismic risk. These metrics indicate that some states have lower policy coverage than would be expected given their seismic risk, which suggests that there may be opportunities for future legislation in these states. A key step in evaluating opportunities for future legislation includes an identification of typical types of policies that other states may have already implemented. Additionally, there may be an order in which states develop and implement seismic policies related to seismic risk. If so, this can help assist in the identification of policy development opportunities.

To identify types of policies that other states have implemented and evaluate if there is an order in which states implement seismic policies a Guttman scale was constructed and analyzed (Figure 4-6). This was done utilizing the 47 states with available seismic policy information and the eight policy categories as presented in Section 3.

As described in Section 3, the 47 states were identified as “subjects” and the eight policy categories were identified as “stimuli” for evaluation in the Guttman scale. These stimuli categories include state policies and programs related to emergency management, building codes, land use/zoning, seismic advisory, schools seismic safety, hospital seismic safety, unreinforced masonry, and seismic microzonation. Of the 47 states included in the Guttman scale analysis, only California had all eight types of seismic policies. In descending order of the number of seismic policy stimuli states have: 2 states had five of the eight stimuli, 13 states had four of the eight stimuli, 23 states had 3 of the eight stimuli, 7 states had two of the eight stimuli, and 1 state had one of the eight stimuli.

The Guttman scale analysis is based on evaluation of the number of “errors” that occur as a deviation from a “perfect” Guttman scale. As described in Section 3, this does not mean that all states would be expected to have a set number of seismic policies. If there is an underlying unidimensionality, errors represent a deviation from the order in which policies are expected to be developed and implemented. If there are enough errors in a data set, it would suggest a lack of unidimensionality in the way states adopt seismic policies. A total of 13 errors occur in the Guttman scale analysis of the policy database using the eight policy stimuli categories (Figure 4-6). Two of the errors occurred where a state did not have an identified Building Code policy. Ten of the errors occurred where states did not have identified Land Use/Zoning policies. And one error occurred where a state did not have an identified Seismic Advisory policy or program. No individual state had more than one error.

The identification of errors indicates that the seismic policy analysis does not represent a perfect Guttman scale. However, a perfect scale is not expected for any data set. The coefficient of reproducibility (CR) is utilized to evaluate how closely a dataset approximates a perfect scale. In

practice, scales with a CR of 0.90 or higher are used to represent a high-quality scale (Stouffer, 1950). The CR was computed for different combinations of stimuli. A maximum CR of 0.96 was computed for the combination presented in Figure 4-6 which suggests that states adopt particular policies categories (stimuli) in a relatively sequential manner with increasing policy coverage. The highest computed CR indicates that states tend to adopt policies in the following thematic order: 1) emergency management, 2) building code, 3) land use/zoning, 4) seismic advisory, 5) school seismic safety, 6) hospital seismic safety, 7) unreinforced masonry, and 8) seismic microzonation.

As with the PRR and PRC, it is expected that relative seismic risk influences the number and type of seismic policies developed and implement by any individual state. Therefore, it is no surprise that the majority of the states in the upper portion of the Guttman scale (4 to 8 of the policy stimuli categories) are states with above average seismic risk. Arkansas is the only state with above average seismic risk with less than 4 of the policy stimuli categories. Colorado on the other hand has a below average AELR of \$40 per million and has the second most (five of the eight) policy stimuli categories, the same as Oregon and more than Alaska, Washington, Utah, Nevada, Hawaii, South Carolina, and Montana, all of which had four of the eight policy stimuli categories.

State (AELR Ranking)	Emergency Management	Building Code	Land Use - Zoning	Seismic Advisory	School Seismic Safety	Hospital Seismic Safety	Unreinforced Masonry	Seismic Microzonation	Count	Errors
California (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	
Oregon (4)	Yes	Yes	Yes	Yes	Yes				5	
Colorado (30)	Yes	Yes	Yes	Yes	Yes				5	
Alaska (2)	Yes	Yes	Yes	Yes					4	
Washington (3)	Yes	Yes	Yes	Yes					4	
Utah (5)	Yes	Yes	No	Yes	Yes				4	1
Nevada (6)	Yes	Yes	Yes	Yes					4	
Hawaii (7)	Yes	Yes	Yes	Yes					4	
South Carolina (8)	Yes	Yes	Yes	Yes					4	
Montana (9)	Yes	Yes	Yes	Yes					4	
Missouri (11)	Yes	Yes	No	Yes	Yes				4	1
Mississippi (14)	Yes	Yes	Yes	Yes					4	
Alabama (17)	Yes	Yes	Yes	Yes					4	
Arizona (19)	Yes	No	Yes	Yes	Yes				4	1
New Jersey (25)	Yes	Yes	Yes	Yes					4	
Michigan (42)	Yes	Yes	Yes	No	Yes				4	1
Arkansas (10)	Yes	Yes	No	Yes					3	1
New Mexico (12)	Yes	Yes	No	Yes					3	1
Wyoming (13)	Yes	Yes	No	Yes					3	1
Idaho (15)	Yes	Yes	No	Yes					3	1
Vermont (16)	Yes	Yes	Yes						3	
New Hampshire (18)	Yes	Yes	Yes						3	
Georgia (20)	Yes	Yes	Yes						3	
Indiana (22)	Yes	Yes	No	Yes					3	1
Illinois (23)	Yes	Yes	No	Yes					3	1
New York (24)	Yes	Yes	No	Yes					3	1
Oklahoma (27)	Yes	Yes	No	Yes					3	1
Massachusetts (28)	Yes	Yes	Yes						3	
Pennsylvania (31)	Yes	Yes	Yes						3	
Rhode Island (32)	Yes	Yes	Yes						3	
Virginia (34)	Yes	Yes	Yes						3	
Ohio (35)	Yes	Yes	Yes						3	
Maryland (36)	Yes	Yes	Yes						3	
South Dakota (38)	Yes	Yes	Yes						3	
Nebraska (41)	Yes	Yes	Yes						3	
Florida (43)	Yes	Yes	Yes						3	
Iowa (44)	Yes	Yes	Yes						3	
Wisconsin (45)	Yes	Yes	Yes						3	
North Dakota (46)	Yes	Yes	Yes						3	
Maine (21)	Yes	Yes							2	
North Carolina (26)	Yes	Yes							2	
Connecticut (29)	Yes	Yes							2	
West Virginia (33)	Yes	Yes							2	
Kansas (37)	Yes	No	Yes						2	1
Louisiana (39)	Yes	Yes							2	
Minnesota (47)	Yes	Yes							2	
Texas (40)	Yes								1	
<b>Errors</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	--	<b>13</b>
<b>Total Count</b>	<b>47</b>	<b>44</b>	<b>30</b>	<b>23</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>1</b>	--	--

CR = 1.0 – [#errors/(#stimuli x #subjects)]  
CR = 1.0 – [13/(8 x 47)]  
CR = 0.96

Figure 4-6. Guttman Scalogram Analysis

### *Graduated Policy Development and Relative Policy Coverage*

With a CR of 0.96, the Guttman scale analysis suggests that states develop and implement seismic policies in a systematic approach. The policy stimuli categories identified in the Guttman scale analysis are specific enough to evaluate whether there is an order in which states develop seismic policies and they provide some insight on potential areas of policy deficiencies but are likely too broad to identify specific deficiencies at the state level. It should be noted that although the Guttman scale analysis indicates an order to which states develop seismic policies, the policy stimuli categories are not necessarily linked or dependent upon each other. In fact, they are completely independent of each other, which is why there can be “errors” identified in the Guttman scale analysis.

The foundational policy that all states have in place is one mandating an agency to administer a disaster preparedness and response program. Utilizing this policy stimuli category as a baseline may be misleading since states are required to have an emergency management agency in order to be eligible for federal disaster relief funding (P.L. 93-288). Regardless, the establishment of an emergency management agency or office is a logical precondition for additional policy advocacy, development, and, eventually, adoption. Therefore, although states have limited flexibility in the establishment of emergency management policies, it is a valid policy category to include in the Guttman scale analysis.

Similar to emergency management policies, most states have some type of building code. Multiple building codes have been adopted by states, including those developed by code bodies, states themselves, or a combination of different codes. State building codes are generally not



There is a precipitous drop in state seismic policies beyond advisory policies and programs. Although 23 states have seismic advisory policies, only seven states have policies aimed at seismic safety for schools. Of these seven states, only four are states with above average seismic risk (California, Oregon, Utah, and Missouri). The subsequent three states (Colorado, Arizona, and Michigan) have school safety policies, which do mitigate against seismic hazards. However, these policies are more generalized and seismic considerations were not the main policy drivers. The remaining eight states with above average seismic risk (Alaska, Washington, Nevada, Hawaii, South Carolina, Montana, Arkansas, and New Mexico) do not have any school-specific seismic policies. This suggests a need for further policy analysis and development for these states with respect to school seismic safety. Beyond school seismic safety, only California has policies in the remaining policy stimuli categories (hospital seismic safety, unreinforced masonry, and seismic microzonation).

It should be noted that California was the only state that had any policies related to hospital seismic safety, unreinforced masonry, and seismic microzonation. Therefore a modified Guttman scale analysis was conducted without those categories to ensure these additional stimuli did not skew the results. That analysis also resulted in a CR > 0.90 (0.95) consistent with the previous results. The modified Guttman scale is presented in Figure 4.7.

State (AELR Ranking)	Emergency Management	Building Code	Land Use - Zoning	Seismic Advisory	School Seismic Safety	Count	Errors
California (1)	Yes	Yes	Yes	Yes	Yes	5	
Oregon (4)	Yes	Yes	Yes	Yes	Yes	5	
Colorado (30)	Yes	Yes	Yes	Yes	Yes	5	
Alaska (2)	Yes	Yes	Yes	Yes		4	
Washington (3)	Yes	Yes	Yes	Yes		4	
Utah (5)	Yes	Yes	No	Yes	Yes	4	1
Nevada (6)	Yes	Yes	Yes	Yes		4	
Hawaii (7)	Yes	Yes	Yes	Yes		4	
South Carolina (8)	Yes	Yes	Yes	Yes		4	
Montana (9)	Yes	Yes	Yes	Yes		4	
Missouri (11)	Yes	Yes	No	Yes	Yes	4	1
Mississippi (14)	Yes	Yes	Yes	Yes		4	
Alabama (17)	Yes	Yes	Yes	Yes		4	
Arizona (19)	Yes	No	Yes	Yes	Yes	4	1
New Jersey (25)	Yes	Yes	Yes	Yes		4	
Michigan (42)	Yes	Yes	Yes	No	Yes	4	1
Arkansas (10)	Yes	Yes	No	Yes		3	1
New Mexico (12)	Yes	Yes	No	Yes		3	1
Wyoming (13)	Yes	Yes	No	Yes		3	1
Idaho (15)	Yes	Yes	No	Yes		3	1
Vermont (16)	Yes	Yes	Yes			3	
New Hampshire (18)	Yes	Yes	Yes			3	
Georgia (20)	Yes	Yes	Yes			3	
Indiana (22)	Yes	Yes	No	Yes		3	1
Illinois (23)	Yes	Yes	No	Yes		3	1
New York (24)	Yes	Yes	No	Yes		3	1
Oklahoma (27)	Yes	Yes	No	Yes		3	1
Massachusetts (28)	Yes	Yes	Yes			3	
Pennsylvania (31)	Yes	Yes	Yes			3	
Rhode Island (32)	Yes	Yes	Yes			3	
Virginia (34)	Yes	Yes	Yes			3	
Ohio (35)	Yes	Yes	Yes			3	
Maryland (36)	Yes	Yes	Yes			3	
South Dakota (38)	Yes	Yes	Yes			3	
Nebraska (41)	Yes	Yes	Yes			3	
Florida (43)	Yes	Yes	Yes			3	
Iowa (44)	Yes	Yes	Yes			3	
Wisconsin (45)	Yes	Yes	Yes			3	
North Dakota (46)	Yes	Yes	Yes			3	
Maine (21)	Yes	Yes				2	
North Carolina (26)	Yes	Yes				2	
Connecticut (29)	Yes	Yes				2	
West Virginia (33)	Yes	Yes				2	
Kansas (37)	Yes	No	Yes			2	1
Louisiana (39)	Yes	Yes				2	
Minnesota (47)	Yes	Yes				2	
Texas (40)	Yes					1	
<b>Errors</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>1</b>	<b>0</b>	--	<b>13</b>
<b>Total Count</b>	<b>47</b>	<b>44</b>	<b>30</b>	<b>23</b>	<b>7</b>	--	--

CR = 1.0 – [#errors/(#stimuli x #subjects)]

CR = 1.0 – [13/(5 x 47)]

CR = 0.95

Figure 4-7. Modified Guttman Scalogram Analysis



## Section 5 – Conclusions

As stated in Section 1, the purpose of this research was to determine if greater levels of seismic risk lead states to implement a greater number and different types of earthquake related policies. It was anticipated that if states and regions have a greater level of seismic risk, then they will also have a greater number of seismic mitigation policies in place to address that risk. Based on the results described above, it appears that some states with higher levels of seismic risk had above average policy counts. However, three states (Alaska, South Carolina, and New Mexico) all have above average seismic risk and below average policy counts. Additionally, as the policy coverage metrics (PRR and PRC) showed, a number of states with high seismic risk like Washington, Alaska, Utah, South Carolina, and Utah all had lower than optimum policy coverage. The PRR and PRC also show that other states with similar or lower seismic risk such as Oregon, Arkansas, and Missouri have optimal or above optimal policy coverage compared to their seismic risk. This indicates other variables beyond seismic risk that influence policy development and implementation.

### Seismic Policy Compilation

A total of 310 state-level seismic mitigation policies from 47 states were identified and used to develop a seismic policy database. The policies were identified and cataloged using state hazard mitigation plans that are designed to provide information on applicable mitigation measures. Other data sources such as individual state legislative information systems, online state administrative codes and statutes were also used to identify and confirm state level seismic policies. State hazard mitigation plans represent an accessible and relatively comprehensive starting point for compilation of state level policies. There is not a definitive structure or order that states are required to follow in their individual plans, however federal guidance (FEMA, 2008b) has led to a general consistency

between state hazard mitigation plans. This consistency between plans provides for a straight forward and reproducible approach for identifying state polices. This approach can be adjusted to support policy research on other types of hazards which may have state or regional significance.

Although the state plans were the main source of policy data for this research, there are a number of inherent challenges with the use of hazard mitigation plans as a data source. As previously indicated, three states did not provide their hazard mitigation plans for this research which has limited the completeness of subsequent cross state comparisons. There is a general consistency between state plans, however some variability between documents was observed during this research. Additionally, the relative age of the plans may also impact the viability of using this methodology in the long-term. Considering that plan development and submittal to FEMA was required by 2007, policies subsequent to 2007 will not be identified by exclusively utilizing state hazard mitigation plans. State hazard mitigation plans will continue to be a good source of policy information for future research but will as with this research, will require augmentation through other sources. With the ever increasing accessibility to electronic data and public information through the internet, state legislative data bases and other online sources may eventually replace the applicability of the method used in this research.

### **Cross-State Policy Comparisons**

Of the 310 policies compiled, California has the greatest number with 34 policies. California is followed by Oregon (20), Missouri (18), and Nevada (12). Washington and Arkansas follow Nevada with a total of 10 policies each. Forty-one of the forty-seven states included in the database have less than 10 policies, with an average of about 6.6 policies per state. The subset of earthquake specific policies is distributed similarly, with California maintaining the greatest number of

earthquake specific policies (28 policies) followed by Oregon (16), Missouri (11), and Arkansas (6). Washington and Nevada each have 5 earthquake specific mitigation policies. Forty of the forty-seven states included in the database have two or less earthquake specific policies with 23 states having no earthquake specific policies at all.

Consistent with previous policy specific or focused cross-state comparisons (May, 1991; May, 1997; May & Feeley, 2000), the seismic policy coverage metrics completed for this research (PRC and PRR) indicate that there is a wide range of seismic policy coverage between states. Not surprisingly, states with lower seismic risks tend to have higher policy coverage ratios since these states would not be expected to have many (if any) earthquake related policies. On the other hand, using California as the benchmark for high-risk states, only three states with above average seismic risk (Oregon, Missouri, and Arkansas) have the number of seismic policies that would be expected given the earthquake hazards associated with these states. Eight states with above average seismic risk (Alaska, Washington, Utah, Nevada, Hawaii, South Carolina, New Mexico, and Wyoming) consistently showed lower policy coverage than would be expected given their seismic risk.

It should be noted that simple policy counts do not fully account for the complexity of individual state legislation and a number of factors other than seismic risk can influence the development of state policies. However, these metrics suggest that the majority of high risk states have some level of seismic policy coverage gaps. Alaska appears to have the largest gap with the second highest seismic risk in the country (\$951 per million) and only four policies identified. Alaska is followed by Utah and Washington which also have lower than expected seismic policy coverage. Additionally, although South Carolina has a lower level of seismic risk than most of the western states, there is known seismic activity in and around South Carolina which makes it surprising that no seismic-specific mitigation policies were identified for that state. The cross-state comparison

metrics indicate that high-risk states with low policy coverage would benefit from a detailed evaluation of policy gaps to identify potential future legislative opportunities.

### **Guttman Scale Analysis**

The state policy database was also used to evaluate if states tend to develop and implement different types of policies relative to seismic risk. A Guttman scale analysis indicates that there is a unidimensionality to state policy development. States will tend to develop and implement seismic policies categorically in the following order (with increasing seismic risk): emergency management, building code, land use/zoning, seismic advisory, school seismic safety, hospital seismic safety, unreinforced masonry, and seismic microzonation. This analysis also identified the policy categories where coverage tends to drop off for many of the high-risk states (school and hospital seismic safety). Although the Guttman analysis conducted for this research does not provide extensive policy details or evaluation, it does help identify areas where high-risk states may focus future policy development efforts. For example, although Washington and Alaska have policies in place for the first four categories (emergency management, building code, land use/zoning, and seismic advisory) future legislative efforts may best fit into the subsequent policy categories identified in the Guttman scale (school seismic safety and hospital seismic safety).

### **Future Research Opportunities**

The research completed for this thesis contributes to the existing body of state-level policy research in three key areas: development of a methodology to compile and catalog state-level hazard mitigation policies; completion of a cross-state policy coverage comparison that evaluates state level policy coverage relative to seismic risk; and an evaluation of how states develop and

implement types of seismic mitigation policies relative to seismic risk. All of these research components contribute to a comprehensive screening of state-level seismic policy coverage.

This study examined seismic mitigation policy coverage on a state by state basis using policy counts as the primary comparison metric. However, the policy catalog and database compiled for this study could be utilized in a number of ways to support or inform future research. Research could be expanded beyond policy counts to start looking at other policy components including effectiveness, duration, and/or coverage extent. For example, considering the differences in policy coverage identified in this study between Missouri and a number of other states with high seismic risk are there differences in the types of policies adopted by other states that may bundle or compile different types of policies that Missouri may have implemented individually? Similarly, how do policy variables such as date of implementation or duration impact the policy effectiveness? A state that only recently adopted an internationally recognized building code could have the same policy count as a state that has a building code for years but would likely have a more vulnerable existing building stock based on less rigorous local or no building codes. In this case the effectiveness of the building code policy could be significantly different than the policy count would indicate.

Policy development factors that could be examined include evaluation of risk awareness at the state level to consider the influence of factors such as “trigger/focusing events” on policy development. Other seismic policy development factors that future research could evaluate include known historic events that are built into state historic narratives, seismic policy champions such as influential politicians, political climates, and citizen response policy development and implementation. Other factors that could influence policy development include the role of seismic

advisory committees including the effectiveness of committees depending on authorization through legislation or less formal “volunteer” committees.

Future research evaluating specific policy categories and/or states with consideration of additional variables in the development and implementation of seismic policies would strengthen this study. Additionally considering that much of this research focused on identifying and compiling seismic polices at the state level, future research may benefit from policy compilation methods for other types of regional hazards such as hurricanes and floods.

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## Appendix A

### Policy Search Key Words & Phrases

<b>Hazard Mitigation Plan Search Criteria - Key Words &amp; Phrases</b>
Act
Administrative
Administrative Code
Adopt
Advisory
Amend
Annotated
Bill (s)
Building Code
Chapter
Code (s)
Commission
Consortium
Council
Earthquake
Executive
Executive Order
Governor
Law
Legislation
Legislature
Policies
Policy
Program
Promulgate
Regulation
Revised
Rule (s)
Seismic
Seismic Policy
Seismic Safety
Statute (s)
Title
Uniform
Zoning

## Appendix B

### State Legislative Database Links

State Code/Rule	State	Description	Link
Code of Alabama 1975	Alabama	State Statutes	<a href="http://alisondb.legislature.state.al.us/acas/ACASLoginie.asp">http://alisondb.legislature.state.al.us/acas/ACASLoginie.asp</a>
Alabama Administrative Code	Alabama	Administrative Code-Compilation of the rules of all state agencies covered by Alabama Administrative Procedure Act.	<a href="http://www.alabamaadministrativecode.state.al.us/">http://www.alabamaadministrativecode.state.al.us/</a>
Alaska Statutes (AS)	Alaska	State Statutes	<a href="http://www.legis.state.ak.us/basis/folio.asp">http://www.legis.state.ak.us/basis/folio.asp</a>
Alaska Administrative Code (AAC)	Alaska	Administrative Code-Combined with the Alaska Administrative Register contains the regulations of state agencies filed under the Alaska Administrative Procedure Act (AS 44.62)	<a href="http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac">http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac</a>
Arizona Revised Statutes	Arizona	State Statutes	<a href="http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp">http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp</a>
Arizona Administrative Code	Arizona	Administrative Code-Official compilation of the rules that govern state agencies, boards, and commissions.	<a href="http://www.azsos.gov/public_services/table_of_contents.htm">http://www.azsos.gov/public_services/table_of_contents.htm</a>
Arkansas Code Annotated (ACA)	Arkansas	State Statutes	<a href="http://www.arkansas.gov/fdemb/statutes.html">http://www.arkansas.gov/fdemb/statutes.html</a>
Arkansas Administrative Rules	Arkansas	Administrative Rules-Administrative Procedures Act (ACA 25-15-201) requires state agencies, boards and commissions to file copies of rules adopted by agencies	<a href="http://www.sos.arkansas.gov/rules_and_regs/index.php/rules/search/new">http://www.sos.arkansas.gov/rules_and_regs/index.php/rules/search/new</a>
Chaptered Bills	California	State Statutes	<a href="http://www.leginfo.ca.gov/statute.html">http://www.leginfo.ca.gov/statute.html</a>
California Code of Regulations (CCR)	California	Administrative Code-Official compilation and publication of the regulations adopted, amended, or repealed by state agencies pursuant to the Administrative Procedure Act (APA).	<a href="http://www.oal.ca.gov/CCR.htm">http://www.oal.ca.gov/CCR.htm</a>
Colorado Revised Statutes (C.R.S.)	Colorado	State Statutes	<a href="http://www.state.co.us/gov_dir/leg_dir/olls/colorado_revised_statutes.htm">http://www.state.co.us/gov_dir/leg_dir/olls/colorado_revised_statutes.htm</a>
Code of Colorado Regulations (CCR)	Colorado	Administrative Code-Administrative rules of the executive agencies.	<a href="http://www.sos.state.co.us/CCR/Welcome.do">http://www.sos.state.co.us/CCR/Welcome.do</a>
General Statues of Connecticut	Connecticut	State Statutes	<a href="http://www.cga.ct.gov/asp/menu/Statutes.asp">http://www.cga.ct.gov/asp/menu/Statutes.asp</a>
Connecticut state agency regulations (administrative code)	Connecticut	Administrative Code-Not available on-line	<a href="http://www.cslib.org/law.htm#P20_2303">http://www.cslib.org/law.htm#P20_2303</a>
Delaware Code	Delaware	State Statutes	<a href="http://delcode.delaware.gov/">http://delcode.delaware.gov/</a>
Delaware Administrative Code	Delaware	Administrative Code	<a href="http://regulations.delaware.gov/AdminCode/">http://regulations.delaware.gov/AdminCode/</a>
Florida Statues	Florida	State Statutes	<a href="http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&amp;SubMenu=1&amp;Tab=statutes&amp;CFID=249547754&amp;CFTOKEN=68724163">http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&amp;SubMenu=1&amp;Tab=statutes&amp;CFID=249547754&amp;CFTOKEN=68724163</a>

Florida Administrative Code	Florida	Administrative Code-Official compilation of administrative rules for the state of Florida in accordance with Administrative Procedures Act	<a href="https://www.flrules.org/default.asp">https://www.flrules.org/default.asp</a>
Official Code of Georgia Annotated (O.C.G.A.)	Georgia	State Statutes	<a href="http://www.lexisnexis.com/hottopics/gacode/layout.htm">http://www.lexisnexis.com/hottopics/gacode/layout.htm</a>
Rules and Regulations of the State of Georgia	Georgia	Administrative Code-Compilation of the rules and regulations of state agencies pursuant to the Georgia Administrative Procedures Act	<a href="http://sos.georgia.gov/rules_regs.htm">http://sos.georgia.gov/rules_regs.htm</a>
Hawaii Revised Statutes (HRS)	Hawaii	State Statutes	<a href="http://www.capitol.hawaii.gov/">http://www.capitol.hawaii.gov/</a>
Hawaii Administrative Rules	Hawaii	Administrative Code-published individually by departments and agencies	<a href="http://hawaii.gov/lrb/desk/hi3.html">http://hawaii.gov/lrb/desk/hi3.html</a>
Idaho Statutes (Idaho Code)	Idaho	State Statutes	<a href="http://www.legislature.idaho.gov/idstat/TOC/IDStatutesTOC.htm">http://www.legislature.idaho.gov/idstat/TOC/IDStatutesTOC.htm</a>
Idaho Administrative Code	Idaho	Administrative Code-Compilation of all legally-promulgated administrative files that are currently in effect and enforceable	<a href="http://adminrules.idaho.gov/">http://adminrules.idaho.gov/</a>
Illinois Compiled Statutes (ILCS)	Illinois	State Statutes	<a href="http://www.ilga.gov/legislation/ilcs/ilcs.asp">http://www.ilga.gov/legislation/ilcs/ilcs.asp</a>
Illinois Administrative Code	Illinois	Administrative Code	<a href="http://www.ilga.gov/commission/jcar/admincode/titles.html">http://www.ilga.gov/commission/jcar/admincode/titles.html</a>
Indiana Code	Indiana	State Statutes	<a href="http://www.in.gov/legislative/ic/code/">http://www.in.gov/legislative/ic/code/</a>
Indiana Administrative Code	Indiana	Administrative Code	<a href="http://www.in.gov/legislative/iac/">http://www.in.gov/legislative/iac/</a>
Iowa Code	Iowa	State Statutes	<a href="http://search.legis.state.ia.us/nxt/gateway.dll/ic?f=templates&amp;fn=default.htm">http://search.legis.state.ia.us/nxt/gateway.dll/ic?f=templates&amp;fn=default.htm</a>
Iowa Administrative Code	Iowa	Administrative Code-Composite of all rules written by the executive branch which have the full force and effect of law	<a href="http://www.legis.state.ia.us/IAC.html">http://www.legis.state.ia.us/IAC.html</a>
Kansas Statutes Annotated (K.S.A.)	Kansas	State Statutes	<a href="http://www.kslegislature.org/li/b2011_12/statute/">http://www.kslegislature.org/li/b2011_12/statute/</a>
Kansas Administrative Regulations (K.A.R.)	Kansas	Administrative Code-Regulations are enacted by an agency to implement or interpret legislation.	<a href="http://www.kssos.org/Pubs/pubs_kar.aspx">http://www.kssos.org/Pubs/pubs_kar.aspx</a>
Kentucky Revised Statutes (KRS)	Kentucky	State Statutes	<a href="http://lrc.ky.gov/krs/titles.htm">http://lrc.ky.gov/krs/titles.htm</a>
Kentucky Administrative Regulations	Kentucky	Administrative Code	<a href="http://www.lrc.state.ky.us/kar/frntpage.htm">http://www.lrc.state.ky.us/kar/frntpage.htm</a>
Louisiana Revised Statutes	Louisiana	State Statutes	<a href="http://www.legis.state.la.us/">http://www.legis.state.la.us/</a>
Louisiana Administrative Code (LAC)	Louisiana	Administrative Code-The LAC is the official compilation of administrative rules published by agencies and boards in the state of Louisiana	<a href="http://doa.louisiana.gov/osr/lac/lactitle.htm">http://doa.louisiana.gov/osr/lac/lactitle.htm</a>



Maine Revised Statutes	Maine	State Statutes	<a href="http://www.maine.gov/legis/ros/meconlaw.htm">http://www.maine.gov/legis/ros/meconlaw.htm</a>
Code of Maine Rules (CMR)	Maine	Administrative Code-	<a href="http://www.maine.gov/sos/cec/rules/rules.html">http://www.maine.gov/sos/cec/rules/rules.html</a>
Unannotated Code of Maryland	Maryland	State Statutes	<a href="http://www.lexisnexis.com/hottopics/mdcode/">http://www.lexisnexis.com/hottopics/mdcode/</a>
Code of Maryland Regulations (COMAR)	Maryland	Administrative Code	<a href="http://www.dsd.state.md.us/comar/">http://www.dsd.state.md.us/comar/</a>
Massachusetts General Laws (M.G.L.)	Massachusetts	State Statutes	<a href="http://www.malegislature.gov/Laws/GeneralLaws/">http://www.malegislature.gov/Laws/GeneralLaws/</a>
Code of Massachusetts Regulations (CMR)	Massachusetts	Administrative Code-The Code of Massachusetts Regulations (CMR) contains regulations promulgated by state agencies pursuant to the Administrative Procedures Act (M.G.L. c. 30A).	<a href="http://www.sec.state.ma.us/spr/sprcode/infocode.htm">http://www.sec.state.ma.us/spr/sprcode/infocode.htm</a>
Michigan Compiled Laws (MCL)	Michigan	State Statutes	<a href="http://www.legislature.mi.gov/(S(bzpuv545vqzxsu1z4zt1grv))/mileg.aspx?page=MCLBasicSearch">http://www.legislature.mi.gov/(S(bzpuv545vqzxsu1z4zt1grv))/mileg.aspx?page=MCLBasicSearch</a>
Michigan Administrative Code	Michigan	Administrative Code	<a href="http://www.michigan.gov/lara/0,4601,7-154-35738_5698---,00.html">http://www.michigan.gov/lara/0,4601,7-154-35738_5698---,00.html</a>
Minnesota Statutes	Minnesota	State Statutes	<a href="https://www.revisor.mn.gov/pubs/">https://www.revisor.mn.gov/pubs/</a>
Minnesota Administrative Rules	Minnesota	Administrative Code-An administrative rule is a general statement adopted by an agency to make the law it enforces or administers more specific or to govern the agency's organization or procedure.	<a href="https://www.revisor.mn.gov/rules/">https://www.revisor.mn.gov/rules/</a>
Mississippi Code of 1972 Unannotated	Mississippi	State Statutes	<a href="http://www.lexisnexis.com/hottopics/mscode/">http://www.lexisnexis.com/hottopics/mscode/</a>
Mississippi Administrative Procedures	Mississippi	Administrative Code	<a href="http://www.sos.state.ms.us/busserv/adminprocs/Default.asp">http://www.sos.state.ms.us/busserv/adminprocs/Default.asp</a>
Missouri Revised Statutes (RSMo)	Missouri	State Statutes	<a href="http://www.moga.mo.gov/homestatsearch.asp">http://www.moga.mo.gov/homestatsearch.asp</a>
Missouri Code of State Regulations (CSR)	Missouri	Administrative Code-	<a href="http://www.sos.mo.gov/adrules/csr/csr.asp">http://www.sos.mo.gov/adrules/csr/csr.asp</a>
Montana Code Annotated (MCA)	Montana	State Statutes	<a href="http://data.opi.mt.gov/bills/mca_toc/index.htm">http://data.opi.mt.gov/bills/mca_toc/index.htm</a>
Administrative Rules of Montana (A.R.M.)	Montana	Administrative Code-	<a href="http://www.mtrules.org/">http://www.mtrules.org/</a>
Nebraska Revised Statutes (RRS)	Nebraska	State Statutes	<a href="http://uniweb.legislature.ne.gov/laws/laws.php">http://uniweb.legislature.ne.gov/laws/laws.php</a>
Nebraska Administrative Code	Nebraska	Administrative Code	<a href="http://www.sos.state.ne.us/rules-and-regs/regsearch/index.html">http://www.sos.state.ne.us/rules-and-regs/regsearch/index.html</a>

Nevada Revised Statutes	Nevada	State Statutes	<a href="http://search.leg.state.nv.us/NRS/NRS.html">http://search.leg.state.nv.us/NRS/NRS.html</a>
Nevada Administrative Code (NAC)	Nevada	Administrative Code	<a href="http://search.leg.state.nv.us/NAC/NAC.html">http://search.leg.state.nv.us/NAC/NAC.html</a>
New Hampshire Revised Statutes	New Hampshire	State Statutes	<a href="http://www.gencourt.state.nh.us/rsa/html/indexes/default.html">http://www.gencourt.state.nh.us/rsa/html/indexes/default.html</a>
New Hampshire Administrative Rules	New Hampshire	Administrative Code-The Office of Legislative Services, Administrative Rules is the New Hampshire state government office where all proposed and adopted administrative rules subject to RSA 541-A, the Administrative Procedure Act, must be filed by state executive branch agencies to make the adopted rules effective and therefore have the force of law.	<a href="http://www.gencourt.state.nh.us/rules/default.htm">http://www.gencourt.state.nh.us/rules/default.htm</a>
New Jersey Permanent Statutes	New Jersey	State Statutes	<a href="http://lis.njleg.state.nj.us/cgi-bin/om_isapi.dll?clientID=198725487&amp;depth=2&amp;expandheadings=off&amp;headingswithhits=on&amp;infobase=statutes.nfo&amp;softpage=TOC_Frame_Pg42">http://lis.njleg.state.nj.us/cgi-bin/om_isapi.dll?clientID=198725487&amp;depth=2&amp;expandheadings=off&amp;headingswithhits=on&amp;infobase=statutes.nfo&amp;softpage=TOC_Frame_Pg42</a>
New Jersey Administrative Code	New Jersey	Administrative Code-all State Executive Branch rulemaking notices for compliance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., and the Office's Rules for Agency Rulemaking, N.J.A.C. 1:30.	<a href="http://www.state.nj.us/oal/rules.html">http://www.state.nj.us/oal/rules.html</a>
New Mexico Statutes Annotated 1978 (NMSA 1978)	New Mexico	State Statutes	<a href="http://www.nmlegis.gov/lcs/statutes.aspx">http://www.nmlegis.gov/lcs/statutes.aspx</a>
New Mexico Administrative Code (NMAC)	New Mexico	Administrative Code-	<a href="http://www.nmcpr.state.nm.us/nmac/">http://www.nmcpr.state.nm.us/nmac/</a>
New York Consolidated and Unconsolidated Laws	New York	State Statutes	<a href="http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS">http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS</a>
New York Codes, Rules and Regulations (NYCRR)	New York	Administrative Code-The NYCRR primarily contains state agency rules and regulations adopted under the State Administrative Procedure Act (SAPA). The 23 Titles include one for each state department, one for miscellaneous agencies and one for the Judiciary.	<a href="http://www.dos.state.ny.us/info/nycrr.html">http://www.dos.state.ny.us/info/nycrr.html</a>
North Carolina General Statutes	North Carolina	State Statutes	<a href="http://www.ncga.state.nc.us/gascripts/Statutes/StatutesTOC.pl">http://www.ncga.state.nc.us/gascripts/Statutes/StatutesTOC.pl</a>
North Carolina Administrative Code (NCAC)	North Carolina	Administrative Code	<a href="http://reports.oah.state.nc.us/ncac.asp">http://reports.oah.state.nc.us/ncac.asp</a>
North Dakota Century Code	North Dakota	State Statutes	<a href="http://www.legis.nd.gov/information/statutes/cent-code.html">http://www.legis.nd.gov/information/statutes/cent-code.html</a>
North Dakota Administrative Code	North Dakota	Administrative Code-The Legislative Council publishes the Administrative Code which is the codification of all rules of state administrative agencies, as that term is defined by North Dakota Century Code Section 28-32-02.	<a href="http://www.legis.nd.gov/information/rules/admincode.html">http://www.legis.nd.gov/information/rules/admincode.html</a>

Ohio Revised Code (ORC)	Ohio	State Statutes	<a href="http://codes.ohio.gov/orc">http://codes.ohio.gov/orc</a>
Ohio Administrative Code (OAC)	Ohio	Administrative Code	<a href="http://codes.ohio.gov/oac">http://codes.ohio.gov/oac</a>
Oklahoma Statutes	Oklahoma	State Statutes	<a href="http://www.oklegislature.gov/tsrs_os_oc.aspx">http://www.oklegislature.gov/tsrs_os_oc.aspx</a>
Oklahoma Administrative Codes (OAC)	Oklahoma	Administrative Code-The Oklahoma Administrative Procedures Act [75 O.S., Sections 250 et seq.] requires the Secretary of State's Office of Administrative Rules to publish the Oklahoma Administrative Code and the Oklahoma Register.	<a href="http://www.oar.state.ok.us/oar/codedoc02.nsf/frmMain?OpenFrameSet&amp;Frame=Main&amp;Src=75tnm2shfcdnm8pb4dthj0chedppmcbq8dtmmak31ctijujrgcln50ob7ckj42tbkdt374obdcli00">http://www.oar.state.ok.us/oar/codedoc02.nsf/frmMain?OpenFrameSet&amp;Frame=Main&amp;Src=75tnm2shfcdnm8pb4dthj0chedppmcbq8dtmmak31ctijujrgcln50ob7ckj42tbkdt374obdcli00</a>
Oregon Revised Statutes	Oregon	State Statutes	<a href="http://www.leg.state.or.us/ors/">http://www.leg.state.or.us/ors/</a>
Pennsylvania Consolidated and Unconsolidated Statutes	Pennsylvania	State Statutes	<a href="http://www.legis.state.pa.us/cfdocs/legis/LI/PUBLIC/cons_index.cfm">http://www.legis.state.pa.us/cfdocs/legis/LI/PUBLIC/cons_index.cfm</a>
Pennsylvania Code	Pennsylvania	Administrative Code-The Pennsylvania Code is an official publication of the Commonwealth of Pennsylvania. It contains regulations and other documents filed with the Legislative Reference Bureau under the act of July 31, 1968 (P. L. 769, No. 240) (45 P. S. §§ 1102, 1201—1208 and 1602) and 45 Pa.C.S. Chapters 5, 7 and 9, known as the Commonwealth Documents Law (CDL). It consists of 55 titles.	<a href="http://www.pacode.com/about/about.html">http://www.pacode.com/about/about.html</a>
State of Rhode Island General Laws	Rhode Island	State Statutes	<a href="http://www.rilin.state.ri.us/Statutes/Statutes.html">http://www.rilin.state.ri.us/Statutes/Statutes.html</a>
Code of Rhode Island Rules	Rhode Island	Administrative Code	<a href="http://sos.ri.gov/rules/">http://sos.ri.gov/rules/</a>
South Carolina Code of Laws	South Carolina	State Statutes	<a href="http://www.scstatehouse.gov/code/statmast.php">http://www.scstatehouse.gov/code/statmast.php</a>
South Carolina Code of Regulations	South Carolina	Administrative Code	<a href="http://www.scstatehouse.gov/coderegs/statmast.php">http://www.scstatehouse.gov/coderegs/statmast.php</a>
South Dakota Codified Laws	South Dakota	State Statutes	<a href="http://legis.state.sd.us/statutes/index.aspx">http://legis.state.sd.us/statutes/index.aspx</a>
South Dakota Administrative Rules	South Dakota	Administrative Code	<a href="http://legis.state.sd.us/rules/index.aspx">http://legis.state.sd.us/rules/index.aspx</a>
Texas Statutes	Texas	State Statutes	<a href="http://www.statutes.legis.state.tx.us/">http://www.statutes.legis.state.tx.us/</a>
Texas Administrative Code	Texas	Administrative Code	<a href="http://info.sos.state.tx.us/pls/pub/readtac\$ext.ViewTAC">http://info.sos.state.tx.us/pls/pub/readtac\$ext.ViewTAC</a>
Tennessee Code	Tennessee	State Statutes	<a href="http://www.lexisnexis.com/hottopics/tncode/">http://www.lexisnexis.com/hottopics/tncode/</a>

Tennessee Rules and Regulations	Tennessee	Administrative Code-As provided by T.C.A. Title 4 Chapter 5, the rules and regulations are the current and official rules and regulations presented as the official compilation-Rules and Regulations of the State of Tennessee and are inclusive of all amendments, repeals, and/or deletions.	<a href="http://state.tn.us/sos/rules/index.htm">http://state.tn.us/sos/rules/index.htm</a>
Utah Code	Utah	State Statutes	<a href="http://le.utah.gov/Documents/code_const.htm">http://le.utah.gov/Documents/code_const.htm</a>
Utah Administrative Code	Utah	Administrative Code-The Utah Administrative Code is an official publication of the Division of Administrative Rules, mandated by Section 63G-3-402. It is Utah's equivalent to the Code of Federal Regulations. The Utah Administrative Code is "evidence of the administrative law of the state of Utah" and an "authorized compilation of the administrative law of Utah" (Section 63G-3-701).	<a href="http://www.rules.utah.gov/publicat/code.htm">http://www.rules.utah.gov/publicat/code.htm</a>
Vermont Statutes	Vermont	State Statutes	<a href="http://www.leg.state.vt.us/statutesMain.cfm">http://www.leg.state.vt.us/statutesMain.cfm</a>
Code of Vermont Rules	Vermont	Administrative Code-	<a href="http://vermont-archives.org/aparules/">http://vermont-archives.org/aparules/</a>
Code of Virginia	Virginia	State Statutes	<a href="http://leg1.state.va.us/000/src.htm">http://leg1.state.va.us/000/src.htm</a>
Virginia Administrative Code	Virginia	Administrative Code	<a href="http://leg1.state.va.us/cgi-bin/legp504.exe?000+men+SRR">http://leg1.state.va.us/cgi-bin/legp504.exe?000+men+SRR</a>
Revised Code of Washington (RCW)	Washington	State Statutes-The Revised Code of Washington (RCW) is the compilation of all permanent laws now in force. It is a collection of Session Laws (enacted by the Legislature, and signed by the Governor, or enacted via the initiative process), arranged by topic, with amendments added and repealed laws removed. It does not include temporary laws such as appropriations acts. The official version of the RCW is published by the Statute Law Committee and the Code Reviser.	<a href="http://apps.leg.wa.gov/rcw/">http://apps.leg.wa.gov/rcw/</a>
Washington Administrative Code (WAC)	Washington	Administrative Code-Regulations of executive branch agencies are issued by authority of statutes. Like legislation and the Constitution, regulations are a source of primary law in Washington State. The WAC codifies the regulations and arranges them by subject or agency. The online version of the WAC is updated twice a month. Copies of the WAC as they existed each year since 2004 are available in the WAC archive.	<a href="http://apps.leg.wa.gov/wac/">http://apps.leg.wa.gov/wac/</a>
West Virginia Code	West Virginia	State Statutes	<a href="http://www.legis.state.wv.us/WVCODE/Code.cfm">http://www.legis.state.wv.us/WVCODE/Code.cfm</a>
West Virginia Code of State Rules (CSR)	West Virginia	Administrative Code	<a href="http://www.sos.wv.gov/administrative-law/Pages/adlawpages.aspx">http://www.sos.wv.gov/administrative-law/Pages/adlawpages.aspx</a>
Wisconsin Statutes	Wisconsin	State Statutes	<a href="http://legis.wisconsin.gov/rsb/stats.html">http://legis.wisconsin.gov/rsb/stats.html</a>
Wisconsin Administrative Code	Wisconsin	Administrative Code	<a href="http://legis.wisconsin.gov/rsb/code.htm">http://legis.wisconsin.gov/rsb/code.htm</a>

Wyoming Statutes	Wyoming	State Statutes	<a href="http://legisweb.state.wy.us/titles/statutes.htm">http://legisweb.state.wy.us/titles/statutes.htm</a>
Code of Wyoming Rules	Wyoming	Administrative Code	<a href="http://soswy.state.wy.us/AdminServices/RulesOverview.aspx">http://soswy.state.wy.us/AdminServices/RulesOverview.aspx</a>
All Fifty States-Administrative Codes	50 States	Administrative Codes	<a href="http://soswy.state.wy.us/AdminServices/Rules50.aspx">http://soswy.state.wy.us/AdminServices/Rules50.aspx</a>

**Appendix C**  
**State Seismic Policy Catalog**

## Alabama

### State Policies

**(AL-1) Alabama Emergency Management Act of 1955 (as amended)** -- As a result of the State's continuing legislative review process, Act 522 was signed into law by Governor Bob Riley on April 20, 2006. The Act amended the Alabama Emergency Management Act of 1955 (Sections 31-9 et seq, Code of Alabama), which first established the Alabama Emergency Management Agency and defined the roles, powers, and duties for emergency management within the State. Sections 31-9-3, 4, 8, and 10, related to State emergencies and AEMA were strengthened to provide for emergency proclamations, expand the authority of State and local responders, establish degrees of emergency classifications, and provide for the powers of political subdivisions for emergency management.

**(AL-2) Title 11, Chapter 52, Planning, Zoning, and Subdivisions of the Code of Alabama** - Section 11-52 et seq is the State planning enabling legislation for municipalities only. First enacted in 1935, the statute provides municipalities' broad powers for comprehensive planning, capital improvements programming and the regulation of land use, development, and conservation of land areas through zoning ordinances and subdivision regulations. It permits municipalities to create planning commissions to oversee planning and land use controls, and Boards of Adjustments to hear appeals. It is the basis for floodplain management regulations within all municipalities and provides additional powers to control the location and types of development activities that might be affected by other natural hazards, including landslides and land subsidence.

**(AL-3) Title 41, Article 6, Code of Alabama**, establishes a State Building Commission and adopts the Standard Building Code of the Southern Building Code Congress. The Standard Building Code has since been superseded by the International Code Series of the International Code Council. The Building Commission oversees the planning, acquisition, and construction of all State buildings. Section 41-9-166 of Article 6 authorizes municipalities and counties to adopt and enforce building and technical codes.

**(AL-4) Executive Order No. 14** June 14, 1971 provides for "Assignment of Emergency Preparedness Functions to State Departments and Agencies," as of June 14, 1971, and was adopted by reference by AEMA.

**(AL-5) Executive Order No. 27** March 3, 1966 provides for the "Creation of the State Office of Emergency Planning," as of March 3, 1966, and was adopted by reference by the Alabama Emergency Management Agency. Executive Orders 27 and 14 authorize the Governor to use the services, equipment, supplies and facilities of existing State departments, offices and agencies for emergency management purposes. In the event of an impending or actual attack or manmade, technological or natural disaster, Section 4 of Executive Order 14 authorizes the transfer of direction, personnel or functions of state agencies, boards, and commissions for the purpose of performing or facilitating disaster or emergency services.

**(AL-6) Executive Order 19**, February 24, 2004 established Alabama's State Hazard Mitigation Team directing all State agencies to participate in development of the State Hazard Mitigation Plan. The SHMT is directed to develop the Plan, and to assist in prioritizing and selecting of hazard and pre-

disaster mitigation grant program project applications. The SHMT is intended to function for the duration of Plan development, and remain in place until the three year plan to update the hazard mitigation plan has been approved by FEMA. The SHMT is active in development of local plans statewide, with a focus on information sharing, issues resolution, and commonality of approach and objectives.

## State Programs

**(AL-7) Central US Earthquake Consortium (CUSEC)** – Alabama membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN.

## Alaska

### State Policies

**(AK-1) Alaska Disaster Act, Alaska Statute 26.23.010:** States the purpose of DHS&EM is to reduce vulnerability of people and communities to damage, injury and loss of life and property resulting from a disaster; Prepare for the prompt and efficient rescue, care and treatment of persons victimized or threatened by disaster; Provide a setting conducive to rapid and orderly restoration following a disaster; Clarify and strengthen the roles of state agencies and local communities to prevent, prepare for, respond and recover from disasters; Authorize and provide for cooperation in disaster prevention, preparedness, response and recovery; Authorize and provide for coordination of activities relating to disaster prevention, preparedness, response and recovery; and Assist in the prevention of disasters caused or aggravated by inadequate planning for, and regulation of, public and private facilities and land use.

**(AK-2) AS 29.40.040 Land Use Regulation:** Comprehensive Plan shall adopt or amend provisions governing the use and occupancy of land that may include: Zoning regulations restricting use of land and improvements by geographic district; Land use permit requirements designed to encourage or discourage specified uses and construction of specified structures, or to minimize unfavorable effects of uses and construction of structures; and Measures to further goals and objectives of comp plan.

**(AK-3) 13 AAC 50.020. Building Code:** The Division of Fire Prevention reviews and adopts building codes every three years. The Division makes necessary changes to tailor the code to Alaska's conditions. Building codes are enforced by the Division of Fire Prevention and apply to all new construction, repair, remodel, addition, or change of occupancy of any building/structure or installation or change of fuel tanks, except for residential housing that is a triplex or smaller. Some jurisdictions, namely Anchorage, Juneau, Fairbanks, Kenai, Seward, Kodiak, Sitka, and Soldotna have the ability to adopt and enforce their own building codes provided they are at least as restrictive as the State adopted code.

### State Programs

**(AK-4) Western States Seismic Policy Council (WSSPC)**-Alaska Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction



programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Arizona

### State Policies

**(AZ-1) Arizona Revised Statutes (ARS), Title 26**, establishes the Arizona Division of Emergency Management under the Department of Emergency and Military Affairs. Title 26 states the Division shall prepare for and coordinate those emergency management activities that may be required to reduce the impact of disaster on persons or property. ADEM is organized into four operational sections: Logistics, Preparedness, Operations, and Recovery. ADEM is also responsible for the administrative oversight of the Arizona Emergency Response Commission. The Mitigation Office falls under the Operations Section. The Mitigation Office is staffed by five employees which includes the State Hazard Mitigation Officer, Grant Program Manager, State and Local Hazard Mitigation Planning Program Manager, Programs and Projects Specialist (outreach and education), and an Administrative Assistant. The Operations Section coordinates emergency response and conducts hazard mitigation planning through the coordination and application of federal and state resources. It liaises with federal, state and local agencies to conduct a daily all-hazard threat assessment to ensure the emergency management community is not caught unaware.

The Recovery Section manages the Public Assistance Program (406 Mitigation). The Recovery Section is extremely proactive in regards to 406 Mitigation on federal as well as state disasters. Each Disaster Recovery Coordinator has received training on hazard mitigation and works with the subgrantees to include any and all potential 406 Mitigation measures in the project worksheets. The Arizona Administrative Code (R8-2-314) states, "The applicant shall comply with any mitigation requirements specified by the Director for repair or replacement projects subject to repeated damage from flooding or other threats to life or property", which advocates for mitigation on Public Assistance projects. The Mitigation Office and the Recovery Section coordinate very closely before, during and following disasters. The Recovery Section includes 406 and 404 mitigation information in all of their Applicant Briefings and training sessions. If there is a mitigation project which does not meet the requirements of 406 Mitigation, the Recovery Section will notify the Mitigation Office so it may be looked at for Mitigation grant funding.

The Preparedness Section is responsible for the State of Arizona Emergency Response and Recovery Plan (SERPP) which addresses the consequences of any emergency, disaster or incident in which there is a need for state resources in providing prevention, preparedness, response and/or recovery assistance activities. It is applicable to natural hazards and human-caused incidents. The Recovery and Mitigation Annex within the SERPP was consolidated and has been completely revised in mid-2007 as part of ESF #14.

The Arizona State Emergency Response Commission (AZSERC) oversees 15 Local Emergency Planning Committees and supports community, industry and government and academia in:

planning, release and incident reporting, data management guidance for inventory reporting, public disclosure about hazardous chemicals and development of training and outreach programs. Also provides consultative services, workshops and coordinates development and review of plans and programs for local planning committees.

**(AZ-2) Growing Smarter and Growing Smarter Plus Acts:** Through a partnership among the Arizona Legislature, interested citizens, and the Arizona Governor's Office, a comprehensive effort was undertaken to address growth-related issues that resulted in the passage of the Growing Smarter Act of 1998 and the Growing Smarter Plus Act of 2000. Taken together, the Growing Smarter legislation provides comprehensive land use planning and zoning reforms, including the acquisition of open space, and gives residents of Arizona cities, towns, and counties a number of tools to shape growth in their own communities, such as the right to vote on general plans and restrictions on how general and comprehensive plans can be amended.

**(AZ-3) Executive Order 2002-5 (Amending Executive Order 2001-2) Growing Smarter Oversight Council:** Established Growing Smarter Oversight Council to continue to address growth-related issues and evaluate the effectiveness of the Growing Smarter and Growing Smarter Plus Acts. The Oversight Council consists of 25 appointed members representing a variety of private and public interests who are charged with the following tasks: monitoring the implementation of Growing Smarter and Growing Smarter Plus Acts; identifying obstacles to implementation and suggesting refinements to facilitate implementation; developing a method for measuring the effectiveness of the Acts; determining how compliance with the Acts should be addressed and suggesting improvements to the Acts; reporting annually to the Legislature, Governor's Office, and the citizens of Arizona.

**(AZ-4) Arizona Administrative Code Title 7 Education Chapter 6 Section 760. Laws and Building Codes:** To the extent required by law, school buildings shall be in compliance with federal, state and local building and fire codes and laws that are applicable to the particular building. At a minimum, the 1997 Uniform Building Code (UBC) is required to be met for new school facility construction and, as required, for building renovations in existing schools.

## State Programs

**(AZ-5) Western States Seismic Policy Council (WSSPC)-Arizona Member State.** The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Arkansas

### State Policies

**(AR-1) Arkansas Code Annotated 12-75-101 et al:** Directs the Arkansas Department of Emergency Management to maintain a management system that effectively and efficiently provides mitigation of and recovery from the effects of natural and man caused disasters. This goal is accomplished through a series of programs designed to identify all disasters threatening the State; assist state agencies, local governments, volunteer and other organizations in determining the means to

mitigate disaster effects; develop procedures for fast and efficient deployment of identified resources to effectuate mitigation and recovery; continually exercise all plans, evaluate results and make modifications to ensure procedures are effective; and, coordinate the efforts of all organizations responding to disasters.

**(AR-2) Executive Order EO 04-02:** Executive order signed by Governor Mike Huckabee on August 4th, 2004 that orders that, as directed by Section 322 of the Federal Disaster Mitigation Act of 2000, all state offices, agencies, departments, and commissions integrate sound mitigation measures into all future planning initiatives and coordinate these efforts with the Arkansas Department of Emergency Management and the Arkansas All-Hazards Mitigation Plan. Provides 3 million annually for mitigation programs.

**(AR-3) Act 247 Arkansas Earthquake Program (ACA 12-77 et seq.)**– ADEM, under the authority granted by The Earthquake Preparedness Act of 1989 (Act 247)," works to ensure the safety and well being of the citizens of Arkansas from the risks associated with earthquakes within the state of Arkansas, as well as from seismic events outside the state which would have a direct effect on the state. The Earthquake Program carries out this mandate in a number of program areas. The law places emphasis on earthquake mitigation, preparedness, response, and recovery related functions, requiring the full cooperation of all other state and local government agencies, departments, and personnel. The pre-disaster program is required to coordinate comparable functions of the federal government including its various departments and agencies with recent earthquake program initiatives include consultation with the SONS 07 exercise as well as the Catastrophic Earthquake Planning effort.

The Arkansas Department of Emergency Management, under the authority granted by Act 247 of 1989, works to ensure the safety and well-being of citizens from the risks associated with earthquakes within or near the state of Arkansas. The Earthquake Program carries out this mandate in a number of program areas. The law places emphasis on earthquake mitigation, preparedness, response, and recovery related functions, requiring the full cooperation of all other state and local government agencies, departments, and personnel. The program is required to coordinate comparable functions of the federal government including its various departments and agencies with other states and localities, and with private agencies of every type.

**(AR-4) Act 511 (Amendment 1049) Arkansas Hazard Mitigation Program** – In 1993, the Arkansas Legislature approved Amendment 1049 to Act 511, establishing Arkansas as the first state in the nation to develop a state hazard disaster fund of \$1 million. The goal of the program is to assist county governments that have suffered repetitive disaster losses. This is accomplished by funding projects that permanently solve these repetitive problems. The Arkansas Hazard Mitigation Grant Program is available for all counties to use. Every year, county judges are encouraged to apply for projects within their jurisdictions. Created by Amendment 1049 and 116 to Act 511, the Arkansas Mitigation program provides funding for projects in counties that have had repetitive damage situations, whether it is from floods, wind storms, earthquakes or other types of disasters. State mitigation programs challenge counties to select priority sites where repetitive damages occur and find permanent solutions to these problems. Completed projects have saved thousands of dollars. As more projects are funded, the savings to Arkansas will continue to grow. This Pre-Disaster program supports loss reduction by providing funding for mitigation initiatives.

The Arkansas Hazard Mitigation Program provides funding for projects in cities, counties, or municipalities that have had repetitive damage situations from flooding or any type of hazard. State mitigation programs challenge communities to select priority sites where repetitive damages occur and find permanent solutions to these problems. Projects must be cost effective. All Arkansas counties are eligible and can apply. The cap on projects is \$150,000.00 and requires a 50% local match. Completed projects have saved thousands of dollars. As more projects are funded, the savings to Arkansas will continue to grow. To date, 188 projects from throughout the state have been funded at a total of \$5,271,019. Most of these projects have been for bridge replacements, drainage improvements, and other projects not normally funded by federal mitigation programs.

**(AR-5) Act 1100 (ACA 12-80-101 et seq.) Earthquake Resistant Design for Public Structures:** It is the purpose of this chapter to protect the public by requiring that all public structures be designed and constructed to resist destructive forces when an earthquake occurs in the New Madrid Seismic Zone. Requires earthquake resistant design for all public structures and set penalties for non-compliance.

**(AR-6) Act 136:** Appropriated \$125,000/yr. for the Arkansas Center for Earthquake Education and Technology Transfer at the University of Arkansas at Little Rock, also originated from the GEAC.

**(AR-7) Arkansas Code Annotated 15-21-601 et seq. (Earthquake Activity):** Earthquake activity in Arkansas has never been closely monitored by a local network of seismic stations and that the realistic assessment of seismic hazards in this state can only be accomplished by long-term local monitoring of earthquake activity in this state. Although the monitoring systems operated by St. Louis University and the Center for Earthquake Research and Information at the University of Memphis have provided a great deal of information for risk assessment in the New Madrid seismic zone, the need for monitoring within Arkansas has become apparent. It would be most beneficial to the residents of this state for a collaborative program to be established between St. Louis University, the University of Memphis, and the Arkansas Center for Earthquake Education and Technology Transfer at the University of Arkansas at Little Rock in order to coordinate efforts and prevent duplication. The Arkansas Center for Earthquake Education and Technology Transfer is ideally located to handle the logistics of installing and maintaining a network of seismic monitoring stations within this state and is committed to offering the necessary personnel and facilities to efficiently handle the undertaking. The focus will be on establishing long-term, continuous monitoring of earthquake activity in Arkansas in order to provide reliable data for a realistic seismic hazard assessment, and it is the intent of this subchapter to accomplish that purpose. The Arkansas Seismological Observatory shall: Monitor earthquake activity throughout the state; Assist in emergency planning and in providing early warning; Provide public education regarding earthquake hazards; Provide information useful for earthquake hazard mitigation; Provide the scientific community with relevant data; Provide real-time, immediate data regarding seismic activity to government agencies such as the Arkansas Department of Emergency Management, the Arkansas Geological Survey, and critical facilities that operate in the region such as Arkansas Nuclear One, the National Center for Toxicological Research, and the Army Nerve Gas Facility; and Establish a collaborative relationship with St. Louis University and the University of Memphis in order to coordinate efforts and prevent duplication of effort.

**(AR-8) Arkansas Fire Prevention Code (ACA 12-13-101 through 116) –** The “building code” in Arkansas is part of the Arkansas Fire Prevention Code. The Arkansas Fire Prevention Code consists of three volumes: Volume I is the Fire Code based on the International Fire Code; Volume II is the

Building Code based on the International Building Code; Volume III is the Residential Code based on the International Residential Code. The Arkansas Fire Prevention Code is adopted by the state and applies statewide.

## State Programs

**(AR-9) Governors Earthquake Advisory Council (GEAC)** The GEAC was appointed by then Governor Clinton in 1984. Members are representatives from state agencies, utilities, universities, hospitals, engineers, geologists, local government, and legislators. It serves as a forum for sharing ideas and information, networking of professionals, lobbying for legislative changes, search for programs and funds, and planning. Past activities include promotion of seismic safety for the state, retrofit projects in schools and hospitals, school safe rooms, promotion of disaster resistant communities, creation of the Hazard Mitigation Planning Sub-Committee, formation of a Disaster Resistant Home Coalition, and the formation of the Pre-Disaster Mitigation Advisory Council.

**(AR-10) Central US Earthquake Consortium (CUSEC)** –Arkansas membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN.

## California

### State Policies

**(CA-1) Field Act (Education Code-§17281, et seq.)** -In 1933, one month after the Long Beach Earthquake destroyed 70 schools, seriously damaged 120 others, and caused minor damaged to 300 more, California passed the Field Act to ensure seismic safety in new public schools. The Act establishes regulations for the design and construction of K-12 and community college buildings. The Division of the State Architect within DGS enforces the Field Act.

**(CA-2) Riley Act** -Following the 1933 Long Beach Earthquake, the state also passed the Riley Act, which requires local governments to have building departments that issue permits for new construction and alterations to existing structures and conduct inspections. Permit fees paid by building owners generally fund the work of local building departments. The Act also set minimum seismic safety requirements that have since been incorporated into all building codes.

**(CA-3) Garrison Act**-Requires school boards to assess building safety of pre-Field Act schools, ordered modernization of non-field act compliant structures.

**(CA-4) Strong Motion Instrument Act (Public Resources Code§§2700-2709.1)**-The state passed the Strong Motion Instrumentation Act in 1972 in response to the extensive damage to buildings and bridges caused by the 1971 San Fernando Earthquake. The earthquake highlighted the need for more data on strong ground shaking during earthquakes and on the response of structures to the shaking. The Act established a statewide network of strong motion instruments to gather vital earthquake data for the engineering and scientific communities. Data obtained from the strong motion instruments is used to recommend changes to building codes, assist local governments in the development of their general plans, and help emergency response personnel in the event of a disaster.

**(CA-5) Seismic Safety General Plan Element (Government Code § 65302)**-Requires city and county plans to include seismic safety elements.

**(CA-6) Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code § 2621-2630)**-The state passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures built for human occupancy. The law was another response to the 1971 San Fernando Earthquake, which produced extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. The Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. Before issuing building permits, cities and counties must require a geologic investigation to ensure that proposed buildings will not be constructed across active faults. Proposed building sites must be evaluated by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault.

**(CA-7) Alfred E. Alquist Hospital Facilities Seismic Safety Act (Health and Safety Code §129675)**- The loss of emergency functions and hospital collapses due to the 1971 San Fernando Earthquake prompted passage of the Hospital Seismic Safety Act of 1973. Regulates the design, construction and alteration of hospitals; set seismic safety standards for new hospitals; created an advisory Hospital Building Safety Board. Office of Statewide Health Planning & Development enforces this Act.

**(CA-8) Seismic Safety Commission Act (Business and Professions Code §1014)**-The 1971 San Fernando Earthquake highlighted weaknesses in California's earthquake risk management policies. To address these weaknesses, in 1975 the state legislature created the independent California Seismic Safety Commission (CSSC) to provide a consistent earthquake policy framework for the state. The mission of CSSC is "to provide decision makers and the general public with cost-effective recommendations to reduce earthquake losses and expedite recovery from damaging earthquakes." The commission is also responsible for implementing the California Earthquake Hazards Reduction Act, which requires CSSC to "prepare and administer a program setting forth priorities, funding sources, amounts, schedules, and other resources needed to reduce statewide earthquake hazards."

**(CA-9) Earthquake Hazard Reduction Program (Senate Bill 1279)**-Directs California Seismic Safety Commission to assess policy and program implications of earthquake prediction and to develop seismic safety program and financing plan for the state.

**(CA-10) Alquist Hospital Facilities Seismic Safety Act of 1983 (Health and Safety Code §§130000-130070)**- Requires design and construction standards for hospitals; requires that after Jan. 1, 2008 any general acute care hospital building determined to be at potential risk of collapse or poses a risk of significant loss of life be used only for nonacute care.

**(CA-11) California Earthquake Hazards Reduction Act of 1986 (Government Code §8870, et seq.)**- After the 1985 Mexico City Earthquake, in 1986 California passed the Earthquake Hazards Reduction Act, which called for a coordinated state program to implement new and expanded activities to significantly reduce earthquake threat. The program is coordinated by California Seismic Safety Commission, which is required to specify priorities, funding sources and amounts, schedules, and other resources. Although historically funded by the state general fund, since the 2003-2004 fiscal year, the program was funded by fees imposed on property insurance companies.

**(CA-12) Un-reinforced Masonry Building Law (Government Code §§ 8875-8875.10)**-In response to the 1983 Coalinga Earthquake, in 1986 the state legislature enacted the Un-reinforced Masonry Building Law, which requires local governments in high seismic regions of California to inventory un-reinforced masonry buildings, establish mitigation programs, and report progress to the CSSC. As of 2003, 251 local governments have established programs and 16,761 buildings have either been retrofitted or demolished. Cities and counties rely on a variety of funding sources, including building permit fees, to pay for these programs. Some local programs offer financial, planning, and zoning incentives to building owners for retrofit. The CSSC periodically reports on the progress made by local programs in a publication entitled Status of the Un-reinforced Masonry Building Law, most recently in 2003.

**(CA-13) Essential Services Building Seismic Safety Act (Health and Safety Code §16000)**-In 1986 the state passed the Essential Services Building Seismic Safety Act to require enhanced regulatory oversight by local governments during the design and construction of new essential service facilities, such as fire and police stations and emergency communications and operations facilities. The Division of the State Architect within DGS enforces this Act. Pursuant to the Act, the Division of the State Architect within DGS adopted regulations that apply to the construction of all new essential services buildings (California Code of Regulations, Title 24, Part 1, §4-201 to §4-249). There are no statewide regulations for evaluating and retrofitting locally regulated essential services buildings that existed prior to 1986 except for unreinforced masonry buildings in some jurisdictions. Some local governments and state agencies have voluntarily retrofitted or replaced their vulnerable buildings.

**(CA-14) Katz Act (Education Code §§35295-35297)**-Requires all private schools to develop disaster plans and an earthquake emergency procedure system.

**(CA-15) Bridge Seismic Retrofit Program (Senate Bill 2104)**-Requires CalTrans to prepare an inventory of all state-owned bridges which require strengthening or replacement to meet seismic-safety standards, and prepare a plan and schedule for completion. **Note:** Since the 1971 San Fernando Earthquake, CalTrans has been authorized to seismically retrofit vulnerable state and local bridges. Phase 1 consisted of retrofitting 1,039 state-owned single- and multiple-column bridges at a cost of \$815 million. Phase 2 consisted of retrofitting the remaining 1,364 multiple-column state bridges at a cost of approximately \$2 billion. Approximately \$1.5 billion is being spent to replace major non-toll bridges and \$4.6 billion for major toll bridge retrofits and replacements. Replacement costs include significant non-seismic upgrades. Costs for retrofitting 1,212 locally owned bridges are expected to be approximately \$1 billion. Funds come from the State Transportation Improvement Fund, the State Highway Account, FEMA public assistance, sales tax increments, and gasoline taxes.

**(CA-16) Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990 (Prop 122 & Government Code §§ 8878.50-8878.52)**-Proposition 122 was passed by voters in June 1990 after the 1989 Loma Prieta earthquake revealed vulnerabilities to state-owned and essential services buildings. The bond measure authorized the state to issue \$300 million in general obligation bonds for the seismic retrofit of state and local government buildings (\$250 million for state-owned buildings and \$50 million for partial financing of local government essential services facilities). The Seismic and Special Programs Section of DGS' Real Estate Services Division administers Proposition 122 grant programs.

**(CA-17) Seismic Hazards Mapping Act (Public Resources Code §§ 2690-2699.6)**-The Seismic Hazards Mapping Act, passed in 1990, directs the Department of Conservation to identify and map areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the Act is to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating these seismic hazards. The Act requires geotechnical investigations to identify hazards and formulate mitigation measures before permitting most developments within mapped Zones of Required Investigation.

**(CA-18) Health & Safety Code § 1226.5**-Establishes seismic safety standards for ambulatory surgical centers; requires fixed medical equipment (floor roof or wall mounted) to be installed using services of licensed architect or structural engineer; and requires inspection every five years.

**(CA-19) Health and Safety Code §§ 19210-19214**- Requires new and replacement water heaters to be braced and anchored.

**(CA-20) Executive Order D-86-90**-Requires CalTrans to prepare plan to retrofit transportation structures; requests UC and requires CSU to give priority consideration to seismic safety in allocation of funds for construction projects.

**(CA-21) California Earthquake Authority (Insurance Code §§ 10089.5-10089.54)**-Creates the California Earthquake Authority and authorized CEA to issues policies of basic earthquake insurance.

**(CA-22) Education Code§17317**- Requires Department of General Services to conduct inventory of public school buildings that are concrete tilt-up or have nonwood frame walls that do not meet requirements of 1976 UBC by Dec. 31, 2001

**(CA-23) Government Code §8587.7**-Program Requires Office of Emergency Services, in cooperation with State Department of Education, Department of General Services and the Seismic Safety Commission to develop an educational pamphlet for use by K-14 personnel to identify and mitigate risks posed by nonstructural earthquake hazards.

**(CA-24) Health and Safety Code §§19180-83 & §§19200-05**-Authorizes local governments to adopt ordinances requiring installation of earthquake sensitive gas shutoff devices in buildings due to motion caused by an earthquake; allows Division of the State Architect to establish a certification procedure for installation.

**(CA-25) Streets & Highways Code §188.4**-Program Authorizes retrofit of state-owned toll bridges using seismic toll surcharge.

**(CA-26) Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 (Proposition 1B, Government Code §8879.23(i))**-2006 Essential facility seismic safety Program Provides \$125 million funding for seismic retrofit work on local bridges, ramps, and overpasses; establishes Local Bridge Seismic Retrofit Account.

**(CA-27) California Emergency Services Act (Government Code §8550)**- The California Emergency Services Act provides the legal authority for emergency management and the foundation for



coordination of state and local emergency response, recovery, preparedness, and mitigation activities throughout California.

**(CA-28) Disaster Recovery Reconstruction Act, Government Code §8877.1**-The Legislature finds and declares that the impact of the Mexico City earthquake disaster of September 19, 1985, has rendered more cogent and compelling the findings of the Legislature set forth in Section 8870, particularly subdivision (c) thereof, and heightened the need for authority for local agencies to engage in effective pre-event and post-event activity to accomplish those goals set forth in paragraph (4) of subdivision (b) of Section 8872. It is the intent of this chapter to provide that authority. 8877.3. It is the purpose of this chapter to authorize, guide, and otherwise enable cities, counties, and other entities to prepare in advance of a disaster, such as a devastating earthquake, for the expeditious and orderly recovery and reconstruction of the community or region. Each city, county, or other local subdivision of the state, may prepare, prior to a disaster, plans and ordinances facilitating the expeditious and orderly recovery and reconstruction of the area under its jurisdiction, should a disaster occur. These plans and ordinances may include any of the following: An evaluation of the vulnerability of specific areas under its jurisdiction to damage from a potential disaster, together with streamlined procedures for the appropriate modification of existing general plans or zoning ordinances affecting those areas after a disaster. A contingency plan of action and organization for short-term and long-term recovery and reconstruction to be instituted after a disaster.

**(CA-29) Economic Disaster Act of 1984, Government Code §8695** - The Legislature finds and declares that the disaster response of state agencies does not adequately focus on the economic impact of a natural disaster on the business community. 8696. It is the purpose of this chapter to institutionalize the planning and response of state agencies to disasters in order to reduce economic hardship stemming from these disasters to business. Upon the completion of the emergency phase and the immediate recovery phase of a disaster, appropriate state agencies shall take actions to provide continuity of effort conducive to long-range economic recovery. The Director of the Office of Emergency Services shall invoke the assignments made pursuant to Section 8595, specifying the emergency functions of each agency or department. The Director of the Office of Emergency Services, in executing the purposes of this chapter, shall establish appropriate task forces or emergency teams to include concerned elements of federal, state, and local governments and the private sector.

**(CA-30) Natural Disaster Assistance Act, Government Code §8680**-provides state financial assistance for recovery efforts to counties, cities and/or special districts after a state disaster has been proclaimed. The applicant must incur a minimum aggregate total damage cost of \$2,500 state share for each declared disaster for costs to be eligible under CDAA. A local agency must submit a Project Application ([OES 126](#)) to the California Emergency Management Agency (Cal EMA) within 60 days after the date of a local proclamation. When filing an application for assistance, an applicant may attach a List of Projects ([OES 95](#)). Applicants are also required to have on file with Cal EMA, a resolution designating an authorized representative ([OES 130](#)) for each disaster. Cal EMA coordinates the state's response to major emergencies in support of local government. The primary responsibility for emergency management lies with local government. Local jurisdictions first use their own resources, and as they are exhausted, obtain more from neighboring cities and special districts, the county in which they are located, and other counties throughout the state through the Statewide Mutual Aid System. Cal EMA serves as the lead agency for mobilizing the State's

resources; it also maintains oversight of the State's Mutual Aid System. During an emergency, Cal EMA coordinates the state's response efforts. After a natural or man-made event causes extensive damage and a state disaster has been declared, Cal EMA has the regulatory responsibility to act as the grantor for the California Disaster Assistance Act (CDAA). The CDAA program may be implemented as a "stand alone" funding source following a Cal EMA Agency Secretary's Concurrence for a local emergency, or a Governor's Proclamation when there is no federal declaration.

**(CA-31) Natural Hazards Disclosure Act, Civil Code §1102** - This article applies to the transfer by sale, exchange, installment land sale contract, lease with an option to purchase, any other option to purchase, or ground lease coupled with improvements, of any real property described in subdivision or residential stock cooperative, improved with or consisting of not less than one nor more than four dwelling units. NATURAL HAZARD DISCLOSURE STATEMENT-The transferor and his or her agent(s) or a third-party consultant disclose the following information with the knowledge that even though this is not a warranty, prospective transferees may rely on this information in deciding whether and on what terms to purchase the subject property. The following are representations made by the transferor and his or her agent(s) based on their knowledge and maps drawn by the state and federal governments. This information is a disclosure and is not intended to be part of any contract between the transferee and transferor. The disclosures must indicate if the real property lies within any of the following hazardous areas: A SPECIAL FLOOD HAZARD AREA (Any type Zone "A" or "V) designated by FEMA; AN AREA OF POTENTIAL FLOODING shown on a dam failure inundation map; A VERY HIGH FIRE HAZARD SEVERITY ZONE; A WILDLAND AREA THAT MAY CONTAIN SUBSTANTIAL FOREST FIRE RISKS AND HAZARDS; AN EARTHQUAKE FAULT ZONE; and/or A SEISMIC HAZARD ZONE.

**(CA-32) Planning and Zoning Law, Government Code 65000**-Establishes the protocols and authority for land-use, planning and zoning laws for local jurisdictions throughout the state. The Legislature finds and declares that California's land is an exhaustible resource, not just a commodity, and is essential to the economy, environment and general well-being of the people of California. It is the policy of the state and the intent of the Legislature to protect California's land resource, to insure its preservation and use in ways which are economically and socially desirable in an attempt to improve the quality of life in California. The Legislature also finds that decisions involving the future growth of the state, most of which are made and will continue to be made at the local level, should be guided by an effective planning process, including the local general plan, and should proceed within the framework of officially approved statewide goals and policies directed to land use, population growth and distribution, development, open space, resource preservation and utilization, air and water quality, and other related physical, social and economic development factors. 65030.2. Costs and benefits of growth. It is further the policy of the state and the intent of the Legislature that land use decisions be made with full knowledge of their economic and fiscal implications, giving consideration to short-term costs and benefits, and their relationship to long-term environmental impact as well as long-term costs and benefits. The Legislature further finds and declares that recommendation, continuous evaluation and execution of statewide environmental goals, policies and plans are included within the scope of the executive functions of the Governor and responsibility for assuring orderly administration of this process within state government should be assigned to a governmental unit reporting directly to the Governor.

**(CA-33) Assembly Bill 2202 (Chapter 1046, Statutes of 1980)**

The commission shall initiate, with the assistance and participation of other state, federal and local government agencies, and a comprehensive program to prepare the state for responding to a major earthquake prediction. The program should be implemented in order to result in specific tools or products to be used by governments in responding to an earthquake prediction, such as educational materials for citizens. This program may be implemented on a prototypical basis in one area of the state affected by earthquake predictions, provided that it is useful for application in other areas of the state upon its completion.

## State Programs

**(CA-34) Western States Seismic Policy Council (WSSPC)** - California Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Colorado

### State Policies

**(CO-1) Senate Bill 13, C.R.S. 6-6.5-101, 1984**, relates to geologic hazards in requiring all residential developers to analyze and disclose any potentially hazardous conditions to prospective home buyers. ..." (Colorado Landslide Hazard Mitigation Plan 1988)

**(CO-2) House Bill 1045, C.R.S. 22-32-124 (1), 1984**, requires that, prior to the acquisition of land for school buildings sites or construction of any buildings thereon, the board of education must consult with the Colorado Geological Survey regarding potentially swelling soils, mine subsidence, and other geologic hazards and determine the geologic suitability of the site for its proposed use." (Colorado Landslide Hazard Mitigation Plan 1988).

**(CO-3) 1974 – House Bill 1041, Chapter 106, C.R.S. 1963**, as amended. Areas and Activities of State Interest – An Act Concerning Land Use, and Providing for Identification, Designation, and Administration of Areas and Activities of State Interest, and Assigning Additional Duties to the Colorado Land Use Commission and the Department of Local Affairs, and Making Appropriations Therefore. This Act involved comprehensive treatment of hazards and charged local governments with legal responsibility for designation and administration of hazardous areas of state interest.

**(CO-4) 1974 – "House Bill 1034, C.R.S. 29-20-101, et seq., 1974**, is the "Local Government Land Use Control Enabling Act." The act gives authority to local governments to plan and regulate the use of land within their jurisdictions, including regulating development and activities in hazardous areas. The act then allows geologic hazards to be used as a basis for land-use decisions. ... (Colorado Landslide Hazard Mitigation Plan 1988).

**(CO-5) C.R.S. 30-28-101, et seq., 1972**, concerns the division of land into sites, tracts, or lots, and is often referred to as the "Subdivision Law." The bill requires that subdivision proposals be evaluated for wildfire safety and geologic conditions prior to approval by a county and applies to the division of land into parcels of less than 35 acres within a county. ..." (Colorado Landslide Hazard Mitigation Plan 1988, Wildfire Hazard Mitigation Plan 1995)

**(CO-6) C.R.S. 34-1-103.** Legislation outlines the Colorado Geological Survey's responsibilities and general statutory authority. "The Colorado Geological Survey shall function to provide assistance to and cooperate with the general public, industries, and agencies of state government...in pursuit of the following objectives...a) To assist, consult with, and advise existing state and local government agencies on geologic problems...c) To conduct studies to develop geological information...g) To evaluate the physical features of Colorado with reference to present and potential human and animal use..., and l) To determine areas of natural geologic hazards that could affect the safety of or economic loss to the citizens of Colorado (Colorado Landslide Hazard Mitigation Plan 1988).

**(CO-7) Colorado Statutes: Title 30** Government - County: County Planning and Building Codes: Article 28 County Planning and Building Codes: Part 1 County Planning: 30-28-106.

## State Programs

**(CO-8) Western States Seismic Policy Council (WSSPC)** - Colorado Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Connecticut

### State Policies

**(CT-1) Connecticut Floodplain Management and Natural Hazards Mitigation Act of 2004:** During 2004, the Connecticut Legislature passed the Connecticut Floodplain Management and Hazards Mitigation Act. The Act mandates state and local compliance with the National Flood Insurance Program (44 CFR, Part 59 et seq.) and requires municipalities to revise their current floodplain zoning regulations or ordinances to include new standards for compensatory storage and equal conveyance of floodwater. The legislation imposes an additional \$10 increase to a current land use fee in order to fund a new state hazards mitigation and floodplain management grant program, and designates the DEP as the administering department for a new mitigation grant program created by this Act. The new grant program will be known as the Connecticut Mitigation Assistance Grant (CMAG). The CMAG will provide the State the ability to fund up to 90% of the cost for projects that plan for or mitigate the effects of natural disasters including but not limited to floods, wildfires and hurricanes. These funds can be accessed by municipalities to: 1) Prepare Natural Hazards Mitigation Plans; 2) Prepare applications to participate in the NFIP's Community Rating System (CRS); or 3) complete hazards mitigation projects in accordance with approved Natural Hazards Mitigation Plans. Regulations and grant requirements are currently being developed by the DEP. At least sixty percent of the funds collected from the sale or transfer of property shall be used to fund natural hazards

mitigation activities under this Act. The remaining 40% may be used for staffing and overhead necessary to administer the planning and project grants.

**(CT-2) Connecticut General Statutes Chapter 541 (Building, Fire, and Demolition Code):** The lead agency for the adoption and administration of building code provisions for wind and seismic matters is the Office of the State Building Inspector. The 2005 State Building Code was adopted effective December 31, 2005. The 2003 International Residential Code (IRC) portion of this code regulates construction of all detached one- and two-family dwellings and all townhouses up to and including three-stories in height. The 2003 International Building Code (IBC) portion of this code regulates all other construction.

This may result in potentially large levels of structural damage for buildings built prior to 1975 in the event of a future earthquake occurring in Connecticut. Connecticut updated its building codes again in 1992 to include the new Building Officials and Code Administration (BOCA) codes for seismic activity.

**(CT-3) Connecticut General Statutes Title 28, Chapter 517, Section 28-9, 28-15a, and 28-15b, Civil Preparedness and Emergency Services:** Outlines the roles and responsibilities of the Dept. of Emergency Management and Homeland Security. DEMHS is responsible for: Providing a coordinated, integrated program for state-wide emergency management and homeland security; Directing the preparation of a comprehensive plan and program for the civil preparedness of the State; Coordinating with state and local government personnel, agencies, authorities, and the private sector to ensure adequate planning, equipment, training, and exercise activities; Coordinating emergency communications and communication systems of the state and local government personnel, agencies, authorities, the general public, and the private sector; and Distributing and coordinating the distribution of information and security warnings to state and local government personnel, agencies, authorities, and the general public.

## Florida

### State Policies

**(FL-1) Rule 9B-74 Florida Administrative Code The Florida Building Code (FBC):** The 1998 Florida Legislature passed a building code reform law which mandated a unified statewide building code. The Florida Building Code became effective on March 1, 2002 and replaces more than 400 local and State building codes. The FBC is a statewide building construction regulatory system that places emphasis on uniformity and accountability in order to ensure building strength in the events of natural disasters. The building code is implemented and enforced locally by individual counties. As a rule, all construction in the state must adhere to the Florida Building Code. By imposing and enforcing this rule, the local jurisdictions ensure that their structures are more resistant to certain types of natural disasters, especially to wind damage. The 2010 FBC update will further mitigate against natural hazards by incorporating the flood resistant standards of the International Codes.

This established a system to address natural hazards in design and construction of all public and private buildings throughout the state. It is designed to make the local building process more

efficient, increase accountability, bring new and safer products to the market, increase consumer confidence, and better protect the residents of this natural disaster prone state. The Code integrates plumbing, mechanical, gas, electrical and building codes with public school, energy and accessibility codes, and state regulations for facility licensing. The Code correlates with the fire protection and life safety requirements of the Florida Fire Protection Code. It mitigates against hazards in hazard prone areas by integrating special measures such as those for wind born debris regions and flood prone areas. The Code focuses on public safety, increases local enforcement powers, and incorporates State-of-the-art hurricane protection. Local governments now have the authority to be more stringent when justified by local conditions. Local governments may conduct plan reviews and inspections of State-owned buildings except for correctional and health care facilities. Local school boards, community colleges, and universities may opt to use their local government as the code enforcement authority or they may continue to enforce the Code themselves. The Code is maintained by the Florida Building Commission (FBC) which conducts major updates every three years. Although the Commission does not review or approve local amendments prior to local adoption, it reviews updates during major revisions and may include or rescind them.

**(FL-2) Chapter 163, Florida Statutes - Local Comprehensive Planning (Growth Management Act)**

Florida's growth management laws (F.S. 163.3178) requires all of Florida's 67 counties and 476 municipalities to adopt local government Comprehensive Plans that guide future growth and development. For coastal communities, this includes a coastal management element to safeguard lives, property, and coastal resources. The Legislature limits public expenditures in areas subject to destruction by natural disasters. All coastal management elements must have a component that outlines principles for hazard mitigation. Safe evacuation of the coastal population must be considered in current and future land-use plan elements. Additionally, a coastal high-hazard area, which is equal to a hurricane Category One evacuation zone as defined by the SLOSH model, needs to be identified in the coastal element. This statute is applicable in both pre- and post-disaster situations.

**(FL-3) Chapter 186, Florida Statutes – State and Regional Planning** Chapter 186, Florida Statutes outlines the growth management portion of the state comprehensive plan and recognizes the need for interagency and governmental unit cooperation. This section provides strategic guidance for state, regional, and local measures to implement the state comprehensive plan for physical growth and development. This statute is applicable in both pre and post-disaster situations.

**(FL-4) Chapter 187, Florida Statutes - The State Comprehensive Plan** This statute designates that Florida's State Comprehensive Plan provide long-range policy guidance for the —orderly social, economic, and physical growth of the state. The Florida Legislature reviews it biennially, and implementation of its policies requires legislative action unless otherwise specifically authorized by the constitution or law. The statute further states that—goals and policies contained in the State Comprehensive Plan shall be reasonably applied where they are economically and environmentally feasible, not contrary to the public interest, and consistent with the protection

**(FL-5) Chapter 252, Florida Statutes (State Emergency Management Act)** Chapter 252 outlines several activities vital to hazard mitigation in the State of Florida. The State Emergency Management Act: Justifies the creation of the Division of Emergency Management; Provides a framework for interstate cooperation and mutual assistance; Necessitates inter-agency, federal, private sector, and inter-governmental unit cooperation and support; Establishes emergency mitigation as a continuing process involving research and application of measures to effectively prepare for and mitigate

emergency impacts; Mandates the development and required contents of the Florida Comprehensive Emergency Management Plan (CEMP) which establishes a framework through which the State of Florida prepares for, responds to, recovers from, and mitigates the impacts of a wide variety of disasters that could adversely affect the health, safety, and/or general welfare of the residents of the state. Mandates the development and contents of individual agency comprehensive and specific disaster preparedness plans that coincide with the CEMP; Necessitates funding provisions for mitigation and provides methods or specifies their allocation.

**(FL-6) Chapter 252.38, Florida Statutes** Directs the DEM to establish a statewide competitive grant application and allocation process to construct or improve county and designated state alternate Emergency Operations Centers (EOC). It requires Florida's counties to establish a primary (and secondary) EOC to continue government and direct emergency operations. Nevertheless, no law, rule, standard or code sets forth minimum survivability or workspace criteria for county EOCs. Therefore, the emergency management EOC-function over other day-to-day uses is quite variable.

**(FL-7) Chapter 252.44, Florida Statutes – Emergency Mitigation** This section requires State Agencies to study emergency mitigation matters. The governor is to direct, consider, and use them to make recommendations to the legislature, local governments, and other appropriate public and private entities as may facilitate measures for mitigation of the harmful consequences of emergencies. The section requires State Agencies to keep land uses, construction, and facilities under continuing mitigation study as well as identify those areas particularly susceptible to manmade or natural hazards. This section also approves the governor to request legislative action if appropriate mitigation measures are not taken.

**(FL-8) Rule 9J-5, Florida Administrative Code - Review of Local Comp Plans** Rule 9J-5, FAC establishes minimum criteria for the preparation, review, consistency, and compliance of local government comprehensive plans and amendments. Rule 9J-5, mandates that local comprehensive plans be consistent with the appropriate strategic regional policy plan and the State Comprehensive Plan and recognizes the major role that local government will play in accordance with the mandates in accomplishing the goals, and policies of the appropriate comprehensive policy plan and the State Comprehensive Plan. Local Mitigation Strategies must be integrated with local comprehensive planning efforts. This statute is applicable in both pre and post-disaster situations.

**(FL-9) Rule 9G-6, Florida Administrative Code- Review of Local Emergency Management Plans** Chapter 9G-6, FAC establishes compliance criteria, as well as compliance review procedures for the County and Municipal Emergency Preparedness Management Plan (CEMP) that consist of provisions addressing aspects of preparedness, response, recovery and mitigation. Pursuant to Chapter 252.35 (b), the Chapter 9G-6 ensures that county plans (and the municipal plans for those municipalities that elect to establish emergency management programs) are coordinated and consistent with the state comprehensive emergency management plan. This statute is applicable in both pre- and post-disaster situations.

## Georgia

### State Policies

**(GA-1) Georgia Emergency Management Act of 1981, as amended, OCGA 38-3-1:** Establishes Georgia Emergency Management Agency and provisions to ensure preparations will be adequate to deal with such emergencies or disasters; generally to provide for the common defense and to protect the public peace, health, and safety; and to preserve the lives and property of the people of Georgia.

**(GA-2) Georgia Planning Act of 1989, OCGA 12-2-8-1989-**Created the State Comprehensive and Coordinated Planning Program to encourage effective growth management. This program includes the development and updates of minimum standards for local and regional planning. The DCA provides planning grants while the Regional Development Centers (RDC) assists in the preparation of comprehensive and specific plans. The DCA and this program have major responsibilities for the implementation of the statewide coordinated planning program. Many opportunities exist with this program to encourage and promote the implementation of local government hazard mitigation programs or measures in connection with the state-required preparation and implementation of local government plans. This comprehensive and vertically-integrated planning approach is especially applicable to floodplain management and construction standards (mitigation approaches). The State of Georgia's policies regarding development in hazard prone areas specifically cover the areas prone to inland and coastal flooding hazards. These policies neglect to cover development in areas prone to other hazards such as wind and seismic hazards. However, the Georgia legislation does include building code standards that regulate the actual structure instead of the development of the area.

**(GA-3) Georgia Housing Codes, OCGA 8-2-20-**Georgia Housing Codes (the Uniform Codes Act) and the Uniform Standards Code for Manufactured Homes and Installation of Manufactured and Mobile Homes Act. Essentially, Georgia's uniform construction codes are designed to help protect the life and property of citizens from faulty design and construction; unsafe, unsound, and unhealthy structures and conditions; and the financial hardship resulting from rebuilding after a hazard event. In other words, these codes require a minimum standard of construction which minimally mitigates certain hazards. The Uniform Codes Act identifies the ten "state minimum standard codes" with each code typically consisting of a base code and a set of state amendments. Georgia law dictates that eight of the 10 codes are mandatory (applicable to all construction regardless of local enforcement) and two are permissive (only applicable if the local government chooses to adopt and enforce). The codes are as follows: Mandatory Codes: Georgia State Minimum Standard Building Code (International Building Code with Georgia Amendments); Georgia State Minimum Standard One and Two Family Dwelling Code (International Residential Code for One and Two Family Dwellings with Georgia Amendments); Georgia State Minimum Standard Fire Code (International Fire Code with Georgia Amendments); Georgia State Minimum Standard Plumbing Code (International Plumbing Code with Georgia Amendments); Georgia State Minimum Standard Mechanical Code (international Mechanical Code with Georgia Amendments); Georgia State Minimum Standard Gas Code (international Fuel Gas Code with Georgia Amendments); Georgia State Minimum Standard Electrical Code (National Electrical Code with Georgia Amendments); Georgia State Minimum Standard Energy Code (International Energy Conservation Code with Georgia Supplements and Amendments). Permissive Codes: International Property Maintenance Code; International Existing Building Code

As previously noted, the building, one and two family dwelling, fire, plumbing, mechanical, gas, electrical and energy codes are mandatory codes. Essentially, Georgia law dictates that any structure built in the state must comply with these codes regardless of the local government's



decision\ to locally enforce. Though local governments do not adopt the mandatory codes, the local government must adopt administrative procedures in order to enforce the codes. However, the local government has the ability to choose which mandatory codes are enforced. The remaining codes, known as permissive codes, must be adopted by either ordinance or resolution by the local jurisdiction in order for the local government to enforce.

## Hawaii

### State Policies

**(HI-1) Hawaii Revised Statute, Chapter 26 and 126 Civil Defense Advisory Council:** The Civil Defense Advisory Council, established and organized under Hawaii Revised Statute, Chapter 26 and 126, was founded in 1951. The Governor and the Director of Civil Defense may consult with the seven-member Advisory Council on matters pertaining to emergency management.

**(HI-2) Hawaii Revised Statutes Chapter 226: State Planning Act:** The legislature finds that there is a need to improve the planning process in this State, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawaii's resources and to guide the future development of the State. The purpose of this chapter is to set forth the Hawaii state plan that shall serve as a guide for the future long-range development of the State; identify the goals, objectives, policies, and priorities for the State; provide a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and to establish a system for plan formulation and program coordination to provide for an integration of all major state, and county activities.

**(HI-3) Hawaii Revised Statutes Chapter 205, State Land Use Law:** establishes an overall framework of land use management whereby all lands in the State of Hawaii. Established the Land Use Commission. The Commission is responsible for preserving and protecting Hawaii's lands and encouraging those uses to which lands are best suited.

**(HI-4) Hawaii Revised Statutes 128-19:** Provides relief for negligence liability to private sector owners who volunteer the use of their facilities as an emergency shelter. The immunity protection that may be provided applies when an owner or controller of the facility meets the following criteria: (1) Their actions relating to the sheltering of people are voluntary; (2) They receive no compensation for the use of the property as a shelter; (3) They grant a license or privilege, or permit the property to be used to shelter people; (4) The Director of Civil Defense, or delegated agency or person, has designated the whole or any part of the property to be used as a shelter; (5) The property is used to shelter persons; and (6) The use occurs during an actual impending, mock, or practice disaster or attack.

**(HI-5) Hawaii Revised Statutes 107-22 State Building Code Council:** Act 82, SLH 2007 established the State Building Code Council (the Council) which is administratively attached to the Department of Accounting and General Services. The purpose of the Council is to establish a state building code which would eliminate the fragmented building requirements which currently exist between counties. The state building code would include the latest fire code as adopted by the State Fire

Council, the latest edition of the International Building Code, the latest edition of the Uniform Plumbing Code, and Hawaii design standards to implement Act 5, Special Session Laws, 2005 as applicable to emergency shelters and essential government facilities.

## State Programs

**(HI-6) Hawai'i State Earthquake Advisory Committee (HSEAC)** - The Hawai'i State Earthquake Advisory Committee (HSEAC) has contributed significantly to developing mitigation projects in the state. Several projects to improve decision-making were initiated through the committee, such as trying to improve the HAZUS model. When the Kīholo Earthquake took place in October 2006, several members of the committee mobilized and conducted rapid assessments in Hawai'i County. Several projects have received funding based on needs identified during post-earthquake assessments. The committee actively pursues projects that improve mitigation. The meetings occur quarterly, with communication by email in the interim.

**(HI-7) Western States Seismic Policy Council (WSSPC)** - Hawaii Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Idaho

### State Policies

**(ID-1) Idaho Disaster Preparedness Act of 1975 as amended (Idaho State Code Chapter 10, Title 46)** is the key controlling State legislation for disaster planning in Idaho, establishing the foundation for disaster damage reduction. Further, the Governor's Executive Order, 2000-04 establishes mitigation as a State priority, assigns mitigation duties to various State agencies, and directs coordination responsibilities. The Idaho Bureau of Homeland Security (BHS) in the Military Division serves as the lead coordinating agency for preparedness, response, recovery, and mitigation efforts throughout the State.

**(ID-2) Executive Order, 2000-04.** The Executive Order assigns primary responsibility for formulating and directing the State's geologic hazard reduction effort to the Idaho Geologic Survey. Duties include hazard identification, analysis and mapping of the geologic threats, and provision of representatives for hazard mitigation teams. The Executive Order also assigns the Response and Recovery duties relevant to earthquakes: **Idaho Transportation Department** - engineering support to State mitigation activities; ; **State Department of Education** – promotion of mitigation activities to reduce the risk from structural and nonstructural hazards in school facilities; **Office of the State Board of Education** - promotion of mitigation activities to reduce the risk from structural and nonstructural hazards in colleges, universities and area vocational-technical facilities. **Idaho State Historical Society/State Historic Preservation Officer** – promotion of mitigation activities to reduce the potential loss of the State's historic and cultural resources and support NEPA review of all projects within the State; **Division of Building Safety** - promotion and development of mitigation activities in conjunction with the Departments of Administration and Education and the Bureau of Homeland Security. The Division of Buildings also works with local jurisdiction in the adoption and

implementation of the IBC; and **Idaho Department of Water Resources** - Operation of the Dam Safety Program.

**(ID-3) Idaho Code Title 39 Chapter 41** establishes the IBC including seismic provisions as the statewide building code standard.

**(ID-4) Idaho Code Title 39 Chapter 80**-The Idaho Legislature enacted legislation in 1990 to assure that all new school buildings are checked for conformity with the IBC which provides minimum earthquake safety standards). The Administrator for the Idaho Division of Building Safety is charged with implementing this statute and with the inspection of public school buildings.

## State Programs

**(ID-5) Idaho Seismic Advisory Committee:** The Idaho Seismic Advisory Committee is a multi-disciplinary adhoc committee that provides information and recommendations to the Idaho Bureau of Homeland Security related to earthquake monitoring, preparedness, mitigation, risk assessment, response, and recovery. The purpose of IDSAC is to promote seismic hazard mitigation in Idaho. It is funded by and reports to the Idaho Bureau of Homeland Security (BHS). The Idaho Geological Survey (IGS) is responsible for organizing and chairing the committee.

**(ID-6) Western States Seismic Policy Council (WSSPC)** - Idaho Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Illinois

### State Policies

**(IL-1) Illinois Emergency Management Agency Act** - Created Illinois Emergency Management Agency and its authority to develop, plan, analyze, conduct, provide, implement and maintain programs for disaster mitigation, preparedness, response and recovery. (20 ILCS 3305/5) Further, the Illinois Administrative Code restates the IEMA mandate to prepare the State of Illinois to deal with disasters, to preserve the lives and property of the people of the State and to protect the public peace, health and safety in the event of a disaster. (29 Ill. Adm. Code 301.110)

**(IL-2) Executive Order Number 2 (1990) Executive Order for the Reduction of Earthquake Hazards-** Each State agency responsible for the design and construction of each new State building shall ensure that the building is designed and constructed in accord with appropriate seismic design and construction standards.

**(IL-3) Illinois Building Commission Act.** The Division of Building Codes and Regulations succeeded the Illinois Building Commission, created in 1996 by Illinois Building Commission Act. The Division acts as an informational resource to the Governor, General Assembly, governmental entities and the general public on the status of building codes in Illinois, especially codes that address State-funded construction. The Division primarily works with state codes in an attempt to understand the 30-plus state governmental agencies, 102 Counties and 1,286 Municipalities that have some jurisdiction

over the myriad of building requirements. There are over 225 Illinois statutory references to building codes within the Illinois Compiled Statutes. All new schools built with State funds must comply with the 2007 International Building Code.

## State Programs

**(IL-4) Central US Earthquake Consortium (CUSEC)** –Illinois membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN. For over 20 years, IEMA has been involved in CUSEC.

## Indiana

### State Policies

**(IN-1) Indiana Code 10-14-3 and Executive Order 05-09** - Establishing and clarifying duties of state agencies for all matters relating to emergency management “...under the provisions of IC 10-14-3, the Emergency Management and Disaster Law, the Governor is charged with the responsibility for ensuring that a comprehensive emergency management program exists that addresses all aspects of emergency and disaster mitigation, preparedness, response, and recovery;” Designated the Director of the Indiana Department of Homeland Security as the State Coordinating Officer for the for all matters relating to emergency and disaster mitigation, preparedness, response, and recovery in this State, and in all matters relating to the Federal Emergency Management Agency; Re-established and continued the Emergency Management Advisory Group and the Indiana State Mitigation Council. This executive order superseded 03-34 enacted by the previous administration.

**(IN-2) Indiana Code 10-14-3** - IC 10-14-3, the Emergency Management and Disaster Law, the Governor is charged with the responsibility for ensuring that a comprehensive emergency management program exists that addresses all aspects of emergency and disaster mitigation, preparedness, response, and recovery;”

**(IN-3) Indiana Building Codes (Title 675 Indiana Administrative Code):** Since 2002, Indiana has operated under the International Building Code for commercial buildings and the International Residential Code (IRC) for residential buildings. The greatest change in both codes is the significantly strict earthquake requirements, and the establishment of earthquake Design Areas instead of the current Earthquake Zones. In the code, eight counties (Davies, Gibson, Knox, Posey, Spencer, Sullivan, Vanderburgh, and Warwick) have strict seismic requirements on new construction of 1 and 2 family dwellings that is at least as rigorous as current commercial requirements. The rest of state will still have no seismic requirements for 1 and 2 family dwellings. There are new restrictions on townhouses in the following counties: the eight counties noted above, and Clay, Crawford, Dubois, Greene, Lawrence, Martin, Monroe, Orange, Owen and Perry.

### State Programs

**(IN-4) Indiana Earthquake Preparedness Program:** The purpose of the Indiana Earthquake Preparedness Program (EPP) is to coordinate and support the numerous earthquake mitigation, planning, training, and exercise activities for the State of Indiana. The Program involves the cooperative efforts of Indiana Department of Homeland Security (IDHS) personnel as well as local, state, regional, and federal partners. The EPP is managed through the collaborative efforts of a

Program Management Team consisting of personnel from IDHS Divisions engaged in earthquake preparedness activities. The Program Management Team is responsible for establishing and maintaining Program situational awareness for key stakeholders and decision-makers. Many earthquake-related projects, activities, and events are interconnected and will occur concurrently. Effective coordination, time management, allocation of resources, and decision-making support are critical to successfully meeting program objectives

**(IN-5) Central US Earthquake Consortium (CUSEC)** – Indiana membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN.

## Iowa

### State Policies

**(IA-1) Iowa Code Section 29** Creates Dept. of Homeland Security and requires the administrator of the Homeland Security and Emergency Management Division to prepare a comprehensive plan for Homeland Security, disaster response, recovery, mitigation and emergency resource management for the state. The comprehensive plan is composed of the following parts: Iowa Emergency Response Plan; Iowa Hazard Mitigation Plan; Iowa Disaster Recovery Plan; Iowa Critical Asset Protection Plan.

**(IA-2) Building Code**-The State of Iowa has building codes for state owned facilities and encourages, but does not require, local jurisdictions to adopt the most current State Building Code. In 2006, the State adopted a new State Building Code and a State Historic Building Code. Both became effective January 1, 2007; however compliance for state owned facilities will not become mandatory until April 1, 2007. The State Building Code's core provision is the adoption by reference of the International Building Code 2006 edition. This code provides a comprehensive set of standards and requirements for structural and life safety in building construction. The State Historic Building Code is based upon the provisions of the International Existing Building Code, 2006 edition.

Adoption of building codes is at the discretion of individual cities and counties. The State Building Code Commissioner adopts building, fire and mechanical codes. Effective January 1, 2007 the State adopted the International Building Code, 2006 as its core building code. The adoption and enforcement of building codes relates to the design and construction of structures to standards and requirements for structural and life safety in building construction, including snow loads and withstanding high winds. Since 2003, the International Code Series (ICode) which have been adopted by the State includes provisions that address all NFIP minimum floodplain management requirements.

**(IA-3) Chapter 414 of the Iowa Code-Zoning:** Delegates zoning authority to the cities and provides broad discretion to separate incompatible land uses and direct future development. Zoning provides communities with the opportunity to establish land use patterns that are logical, orderly, attractive, and convenient. They may be used to keep inappropriate development out of hazard-prone areas and can designate certain areas for such things as conservation, public use, or agriculture. Cities are free to choose whether to have zoning. Cities that adopt zoning may structure their local zoning ordinances to meet local needs. All larger cities within the state and many of Iowa's smaller communities have adopted zoning ordinances. The level of zoning varies widely depending on the

size and capabilities of the community. Many of Iowa's smaller communities that have adopted zoning have only residential, commercial, and agriculture zones.

**(IA-4) Comprehensive Plan** is required as the basis for a zoning ordinance (Iowa Code Section 414.3 (municipal) and Section 335.5 (county)). The Comprehensive Plan is a long-range (10-20 year) guide for overall development in the community. The plan's purpose is to encourage compatible land use development, provide services efficiently, and coordinate development activities between both regional and local governmental entities, specific interest groups, and the general public. Areas covered by the Plan include, transportation, employment, housing, and access to clean air, water and open spaces. Specifically the Iowa Code states that the Comprehensive plan must be —designed...to secure safety from fire, flood, panic, and other dangers: to promote health and the general welfare... These codified basic mitigation requirements are fully integrated with the hazard mitigation planning goals and objectives at the state and federal level. Upon adoption, the Comprehensive Plan serves as a local jurisdiction statement of policy and a decision make tool.

## Kansas

### State Policies

**(KS-1) Kansas Emergency Management Act – Kansas Statutes Chapter 48, Article 9:** Creates the Division of Emergency Management under the direction of the Adjutant General and outlines the emergency management responsibilities and capabilities of the Adjutant General. Appoints the governor as the Commander-in-Chief of the organized and unorganized militia and all other forces available for emergency duty as well as giving the governor the power to declare a state of disaster emergency and direct emergency operations. Directs the Division of Emergency Management to formulate a statewide emergency plan and outlines the duties of the division. Requires counties to establish and maintain a disaster agency responsible for emergency management, prepare a county emergency response plan, and coordinate efforts with the division. Establishes the Kansas Nuclear Safety Emergency Management Act.

**(KS-2) Kansas Statutes Chapter 12- Article 7 - Planning and Zoning** -Allows local governments to establish planning commissions and to adopt zoning regulations and comprehensive development plans.

**(KS-3) Kansas Underground Utility Damage Prevention Act-Kansas Statutes Chapter 66, Article 18** Promulgates regulations for utility damage prevention.

Note: The Kansas state legislature has not implemented a statewide building code nor does it require comprehensive planning by local governments.

## Louisiana

### State Policies

**(LA-1) Louisiana Emergency Assistance and Disaster Act (LEADA)** of 1993, revised in 2000, is the main legislation affecting mitigation programs in the State. Among various preparedness, response, and recovery operations, the LEADA purposes related to mitigation are as follows: To reduce

vulnerability of people and communities of this state to damage, injury, and loss of life and property resulting from natural or man-made catastrophes, riots, or hostile military or paramilitary action; To authorize and provide for cooperation in emergency or disaster prevention, mitigation, preparedness, response, and recovery; and To authorize and provide for management systems embodied by coordination of activities relating to emergency or disaster prevention, mitigation, preparedness, response, and recovery by agencies and officers of this state, and similar state-local, interstate, and foreign activities in which the State and its political subdivisions may participate.

**(LA-2) Executive Orders KBB 2004-34** establishes the Louisiana Emergency Response Commission. This 20-member committee is comprised of representatives from the following agencies or entities: The Department of Public Safety; The Department of Environmental Quality; The Department of Agriculture and Forestry; The Governor's Office of Homeland Security and Emergency Preparedness; The Louisiana Emergency Preparedness Association; and The Louisiana State University Firearm Training Program. Additionally, ten at-large members and representatives of environmental interests and the chemical industry serve on the commission.

**(LA-3) Executive Order KBB 2004-35** reestablishes the State Hazard Mitigation Team, and clarifies its duties and functions. The SHMPC is comprised of representatives of the following state agencies that also serve on the State Hazard Mitigation Team (SHMT): The Governor's Office of Homeland Security and Emergency Preparedness; The Department of Transportation and Development; The Department of Wildlife and Fisheries; The Department of Environmental Quality; The Department of Natural Resources, Office of Coastal Restoration and Management; and The Department of Agriculture and Forestry.

The role of the SHMT is to provide technical assistance to GOHSEP. One specific SHMT task is to review, prioritize, and recommend funding levels for selected HMGP project applications. The SHMT also participates in mitigation planning, program development, and implementation. As a group, the SHMT has the most direct influence on how hazard mitigation is pursued in the State of Louisiana, outside of GOHSEP.

**(LA-4) Executive Order KBB 2007-14** establishes the Homeland Security and Emergency Preparedness Advisory Council to support homeland security and emergency preparedness initiatives by linking state and local government efforts, and leveraging education, industry, and private sector initiatives, among other goals. The Council's work is related to and potentially supports hazard mitigation activities in Louisiana. The Council's ten members include representatives of: The Governor's Office of Homeland Security and Emergency Preparedness; The Louisiana National Guard; The Senate Select Committee on Homeland Security; The House Special Committee on Louisiana Homeland Security; The Department of Health and Hospitals; The Louisiana State Police; The Department of Social Services; The Department of Transportation and Development; The Department of Wildlife and Fisheries; and The Department of Justice.

**(LA-5) Louisiana State Uniform Construction Code (La R.S. 40:1730.22 & 28)** - Legislation created the Louisiana State Uniform Construction Code Council and adopted the Uniform Construction Code. The existing framework policy and regulations will be supported and enhanced. Local jurisdictions are currently charged with administration and enforcement of the State UCC, a building code adopted state-wide by the Legislature in 2005 that is consistent with the International Building Code (IBC) and International Residential Code (IRC), both developed by the International Code Council (ICC). The UCC results in structures that can withstand high winds and floods with exceptions made

for certain industrial structures as well as farm and private recreational structures. UCC requirements went into effect on January 1, 2007, although the 2007 Legislature relaxed code requirements regarding work on existing one- and two-family dwellings. This program is coordinated at the state level by the Louisiana State Uniform Construction Code Council (LSUCCC) within DPS. LSUCCC has promulgation authority for the UCC with the exception of the Plumbing Code that is enforced by Department of Health and Hospitals (DHH). Review and enforcement powers for all aspects of the UCC for private property reside at the local level. (The Office of the State Fire Marshal has no enforcement authority relative to the UCC, although it is allowed to provide plan review services at the request of local jurisdictions; the Fire Marshal does have review and construction enforcement powers related to the Life Safety Code, Americans with Disability Act accessibility guidelines, and Energy Conservation for commercial structures only, among others; it has no authority over one- or two-family dwellings or townhouses that are regulated by the UCC.) LSUCCC can initiate civil litigation for non-compliance.

It is important to note that construction of State or Federal owned facilities is not subject to local permitting requirements. State facilities adhere to the Louisiana Building Code which is administered by the Department of Facility Planning and Control within the Division of Administration. However, State owned facilities are required to comply with local floodplain management ordinances including adhering to BFE and freeboard requirements set by parishes and municipalities.

## Maine

### State Policies

**(ME-1) Maine Emergency Management Act (Title 37-B, Chapter 13)** – Establishes the Maine Emergency Management Agency to lessen the effects of disaster on the lives and property of the people of the State through leadership, coordination and support in the 4 phases of emergency management: mitigation, preparedness, response and recovery. Authorizes the creation of local organizations for emergency management in the political subdivisions of the State.

There are no mitigation programs in the State of Maine dedicated solely to lessening the impacts of earthquakes, excluding that of all-hazards emergency management planning and emergency response agencies.

**(ME-2) Maine Model Building Code (P.L. 2003, Chapter 580)** - The new law creates the Maine Model Building Code ("MMBC"), which is composed of the IRC and IBC. The law does not mandate that any municipality adopt the MMBC, but requires that, if a municipality does voluntarily choose to adopt a new residential or non-residential building code, it must adopt the MMBC. The law allows municipalities the flexibility of adopting only portions of the MMBC and of amending the MMBC locally if it wishes to do so

Adoption of the MMBC also paved the way for enactment of [P.L. 2003, chapter 605](#) (LD 1663), which directs the State Planning Office to provide assistance to any municipality that adopts a rehabilitation building code that is consistent with the MMBC.



**(ME-3) Model Downtown Rehabilitation Code (P.L. 2003, Chapter 605)** – Directs the State Planning Office to provide assistance to any municipality that adopts a rehabilitation building code that is consistent with the Maine Model Building Code.

## Maryland

### State Policies

**(MD-1) Priority Funding Areas Act:** Established in 1997, the Priority Funding Areas (PFAs) Act directs available state funding for growth related infrastructure towards identified PFAs (places or communities where governments have chosen to spend available funds). Such funding can be used for those projects such as highways, water construction, and economic development. Standards and criteria, which included permitted density, water, and sewer availability, were established for both counties and municipalities. MEMA has partnered with the Towson University Center for Geographic Information Sciences to create statewide maps identifying where Maryland's Priority Funding Areas intersect with defined hazard areas. MEMA will use this information to explore the possibility of revisions to State planning policy to take into account known hazard areas.

**(MD-2) House Bill 1141-Task Force on the Future for Growth and Development in Maryland:** This Task Force focuses on researching trends and population growth challenges as well as the impact of local policies on the environment and infrastructure. The group will study the linkage between smart growth, local land use plans, and various state-wide plans such as the state development, transportation, and housing plans. The Task Force also proposes that the state implement laws and recommendations that advance growth and development related best management practices. A final report of findings and recommendations is due out by December 1, 2008. In January 2008, the 21 members of the Task Force were announced. The Task Force will be staffed by Maryland Department of Planning and will serve as the Governor's Smart Growth Advisory Board. House Bill 1141 added four new required elements to local comprehensive plans, which include a water resources plan element, a municipal growth element, a priority preservation act element, and a workforce housing element. The first two of the required elements are particularly relevant to hazard mitigation. The water resources plan element requires that the land use sections of comprehensive plans address the effects of development on potable water supply and wastewater processing infrastructure. Counties and municipal governments, which are required to adhere to this element, must also ensure that adequate stormwater and wastewater management systems are in place. The second element of House Bill 1141 which pertains to mitigation affects only municipal governments. This element, the municipal growth element, requires that areas targeted for growth be studied to ensure that sensitive areas, such as wetlands, are protected. The review must consider land capacity, population projections, and infrastructure needs.

**(MD-3) Article 66B of the Maryland Annotated Code:** Empowers the majority of Maryland's local governments with land use and planning authority, thus providing them with the authority to guide growth and development (Articles 28 and 25A are similar regulations which apply to other local governments which are not covered by Article 66B).

**(MD-4) Code of Maryland Regulations (COMAR 05-02-07 Maryland Building Performance Standards):** Maryland's law related to building codes is called the Maryland Building Performance Standards (MBPS). It requires each jurisdiction in Maryland to use the same edition of the same

building codes that are the International Building Code and the International Residential Code. The state has modified the IBC and the IRC to coincide with other Maryland laws. Each local jurisdiction in Maryland may modify these codes to suite local conditions. Please refer to the each local jurisdiction listed to view their local ordinance that may contain their modifications. Since ordinances change from time to time, please contact the local jurisdiction to obtain current information.

**(MD-5) Maryland Emergency Management Agency Act (Title 14-101 et seq.)** - To ensure that the State will be adequately prepared to deal with emergencies that are beyond the capabilities of local authorities, to provide for the common defense, to protect the public peace, health, and safety, and to preserve the lives and property of the people of the State, it is necessary to: establish a Maryland Emergency Management Agency; authorize the establishment of local organizations for emergency management in the political subdivisions; confer on the Governor and on the executive heads or governing bodies of the political subdivisions the emergency powers provided in this subtitle; and provide for the rendering of mutual aid among the political subdivisions and with other states in carrying out emergency management functions. Effective use of resources.- It is the policy of the State and the purpose of this subtitle to coordinate, to the maximum extent possible, all emergency management functions of the State with the comparable functions of the federal government, other states, other localities, and private agencies, so that the most effective preparation and use may be made of the resources and facilities available for dealing with any emergency.

## Massachusetts

### State Policies

**(MA-1) Civil Defense Act of 1950-** Authorizes the creation of the Massachusetts Civil Defense Agency (predecessor to the Massachusetts Emergency Management Agency) and the development of a statewide civil defense program. The Massachusetts hazard mitigation program is administered jointly by the Massachusetts Emergency Management Agency (MEMA) in coordination with the Department of Conservation and Recreation (DCR).

**(MA-2) MA Executive Order 144 and MA Executive Order 242-** Amends and updates the Civil Defense Act of 1950 by creating the position of Secretary of Public Safety, coordinating emergency preparedness activities and the promulgation of a Comprehensive Emergency Response Plan for the state. The Massachusetts hazard mitigation program is administered jointly by the Massachusetts Emergency Management Agency (MEMA) in coordination with the Department of Conservation and Recreation (DCR).

**(MA-3) State Board of Building Regulations & Standards/State Building Code (780 CMR)-** Massachusetts State Building Code covers the entire state, applies to both public and private construction, and is administered through the local building inspectors with state oversight. Section 3107 of the State Building Code contains most of the NFIP construction requirements related to buildings or structures. NFIP standards are an integral section of the state building code, ensuring that all new construction and substantial improvements meet national flood resistant standards. Many communities have enacted stricter standards under their local floodplain ordinances.

**(MA-4) MGL Ch. 41 Zoning Act** -implements local subdivision regulations. The planning board's responsibilities include recommending land use regulations to protect the public health, safety, and welfare. The Planning Board is the primary vehicle at the local level that ensures that new development incorporates federal and state storm water management "best management practices." The Planning Board is responsible for maintaining floodplain bylaws and ordinances to address current floodplain issues and updating them to ensure compliance with state and federal regulations. Often coordinates the hazard mitigation planning process and the implementation of hazard mitigation plans. Provides professional expertise in plan development, bylaw drafting, and grant application preparation.

## Michigan

### State Policies

**(MI-1) 1976 PA 390, as amended, the Michigan Emergency Management Act.**-This Act and its subsequent Administrative Rules provide the Department of State Police with broad authority to carry out the emergency management activities of mitigation, preparedness, response and recovery within the State of Michigan. In addition, it empowers each state department to carry out the emergency tasks assigned to it by the Department of State Police in the Michigan Emergency Management Plan (MEMP) or other means – which includes the planning, development and implementation of hazard mitigation measures.

**(MI-2) 2006 PA 110 (Michigan Zoning Enabling Act\*)** does provide some guidance with regard to the types of zoning districts that may be established. Section 201 (1) of the Act states: "A local unit of government may provide by zoning ordinance for the regulation of land development and the establishment of one or more districts within its zoning jurisdiction which regulate the use of land and structures to meet the needs of the state's citizens for food, fiber, energy, and other natural resources, places of residence, recreation, industry, trade, service, and other uses of land, to ensure that use of the land is situated in appropriate locations and relationships, to limit the inappropriate overcrowding of land and congestion of population, transportation systems, and other public facilities, to facilitate adequate and efficient provision for transportation systems, sewage disposal, water, energy, education, recreation, and other public service and facility requirements, and to promote public health, safety, and welfare." Section 201 (3) of the Zoning Enabling Act provides for the establishment of zoning districts to address special land use problems or achieve specific land management objectives. It states: "A local unit of government may provide under the zoning ordinance for the regulation of land development and the establishment of districts which apply only to land areas and activities involved in a special program to achieve specific land management objectives and avert or solve specific land use problems, including the regulation of land development and the establishment of districts in areas subject to damage from flooding or beach erosion." This allows for such activities as floodplain management under the National Flood Insurance Program (NFIP) and coastal zone management under the Michigan Natural Resources and Environmental Protection Act (1994 PA 451, as amended). Although the Act specifically mentioned flooding and beach erosion hazards as examples, this provision is certainly flexible enough to address other known hazard areas in a community as long as the regulatory measure is legally defensible and consistently applied. The Michigan Zoning Enabling Act, and especially Section 201 (3), appears to provide sufficient flexibility and regulatory framework to allow communities to

effectively use comprehensive planning and zoning to reduce their natural hazard risk and vulnerability.

**Note:** On July 1, 2006, Michigan’s three zoning enabling acts (one each for cities and villages, townships, and counties) were officially repealed and combined into one new statute, the Michigan Zoning Enabling Act (2006 PA 110). The new Zoning Enabling Act has many improvements over the former enabling legislation. It is roughly one-third the length of the previous acts, the language is clearer, and the notification process is easier and more consistent. Enactment of the Zoning Enabling Act was the culmination of years of work by many stakeholder groups, including the Michigan Association of Planning, Michigan Townships Association, Michigan Municipal League, Michigan Association of Counties, Michigan Homebuilders Association, Michigan Realtors Association, Michigan Department of Environmental Quality, and Michigan Department of Labor and Economic Growth. Unification and modernization of the three zoning enabling acts was also one of the recommendations of the final report of the Michigan Land Use Leadership Council in August of 2003. (Note: Only counties, cities, villages, and townships that have a zoning ordinance are affected by the new Zoning Enabling Act.) On February 29, 2008, 2006 PA 110 was amended by 2008 PA 12 to make several needed “corrective amendments” to various administrative mechanisms and processes contained in the original act. 2008 PA 12 did not contain any new provisions that would significantly improve hazard risk and vulnerability reduction efforts. At the time of this writing, a bill to unify and amend Michigan’s three planning enabling acts (one each for cities and villages, townships, and counties) into a single, coordinated planning act had been presented to Governor Granholm for her signature. This new act, widely supported by various professional and advocacy organizations, would do for planning what the Michigan Zoning Enabling Act (described above) did for zoning. The enactment of a new coordinated planning act was also one of the recommendations contained in the final report of the Michigan Land Use Leadership Council in August 2003. The new act would strengthen the ability of local communities to effectively use comprehensive planning along with zoning and other regulatory tools to reduce natural hazard risk and vulnerability.

**(MI-3) Pursuant to 1972 PA 230, adopted November 5, 1974 and amended by 1999 PA 245,** all communities in Michigan are subject to the State Construction Code, which establishes general minimum construction standards for buildings and structures in all Michigan municipalities. The State Construction Code is a compilation of the International Residential Code, the International Building Code, the International Mechanical Code, the International Plumbing Code published by the International Code Council, the National Electrical Code published by the National Fire Prevention Association, and the Michigan Uniform Energy Code with amendments, additions, or deletions as the Michigan Department of Labor and Economic Growth determines appropriate. The Code became effective statewide on July 31, 2001. The State Construction Code provides for statewide uniformity of application and implementation of rules governing the construction, use, and occupancy of buildings and structures. (Prior to the 1999 PA 245 amendment, communities had the option of adopting the State Construction Code – which was the National Building Officials and Code Administrators [BOCA] Code with State amendments – or they could adopt any other nationally recognized building code such as the Uniform Building Code [UBC] or the Council of American Building Officials [CABO] Code for one and two family dwellings. Approximately 40% of Michigan communities adopted the State Construction Code and 50% followed the National BOCA Code. The remaining 10% adopted the UBC.) Provisions of the State Construction Code and other building codes are enforced through authorized local building inspection agencies and state inspectors. In

Michigan, there are 2,600 registered local inspectors and 80 state inspectors. In communities where comprehensive planning is not done, the building code is often the only land use regulatory measure available.

**(MI-4) The enactment of 2002 PA 628** 202 PA 628 amended 1937 PA 306, the Construction of School Buildings Act, which regulates the construction, reconstruction, and remodeling of certain public or private school buildings or additions to such buildings. K-12 schools are now required to adhere to the State Construction Code when constructing, remodeling or reconstructing school buildings. (Prior to 2002 PA 628, K-12 schools were exempted from most construction code and inspection requirements. K-12 schools did not have to adhere to the State Construction Code unless the school district chose to do so. This compromise resulted from hard-fought political battles wherein the school districts tried to save the cost of inspections. Architects designed school buildings to code, but builders could build the school without third party inspections. There was every reason to believe, but no guarantee, that school buildings were safe.)

**(MI-5) The Land Division Act (1967 PA 288, as amended by 1996 PA 591, 1997 PA 87, and 2004 PA 524)** governs the subdivision of land in Michigan. The Act requires that the land being subdivided be suitable for building sites and public improvements, that there be adequate drainage and proper ingress and egress to lots, and that reviews be conducted at the local, county and state levels to ensure that the land being subdivided is suitable for development. The Act also requires conformance with all local planning codes. From a hazard mitigation standpoint, that point is important because it gives the local planning commission the authority to approve subdivision development in accordance with the local comprehensive plan and regulatory standards.

## Minnesota

### State Policies

**(MN-1) 2007 MN State Statute Chapter 12 Emergency Management Policy Declaration (12.02):** It is further declared to be the purpose of this chapter and the policy of the state that all emergency management functions of this state be coordinated to the maximum extent with the comparable functions of the federal government, including its various departments and agencies, of other states and localities, and of private agencies of every type, to the end that the most effective preparations and use may be made of the nation's labor supply, resources, and facilities for dealing with any disaster that may occur.

**(MN-2) Governor's Executive Order, Section 1864-HSEM** shall have overall responsibility for supporting both local government emergency operations planning and all-hazards mitigation planning. This responsibility includes the development and maintenance of prototype emergency operations plans, mitigation plans and supporting documents, as well as planning requirements guidance.

**(MN-3) Minnesota Building Codes and Standards**-the Minnesota Department of Labor and Industry, Construction Codes and Licensing Division administers the Minnesota State Building Code - Statutory Authority (16B.59 - 16B.75) that sets construction standards to assure the health, safety, comfort and security of building occupants. One important planning document that comes out of this office is the Disaster Preparedness Manual, A Guidebook for Minnesota Building Officials produced by the

Disaster Mitigation Committee of the North Star Chapter. Included in this document are creative mitigation measures that surround building code enforcement. Unfortunately, not all counties have chosen to adopt the state's building code. Of the 855 cities in Minnesota, 405 have adopted the state building code, of the 1791 townships 253 have adopted the code and of the 87 counties, 20 have adopted the building code. Insurance companies do take note of communities that do have an adopted and enforced building code and make insurance rate adjustments accordingly.

## Mississippi

### State Policies

**(MS-1) Mississippi Emergency Management Law (Miss. Code 1972, Annotated. 33-15-7 Et. Seq.):**

Implemented under the authority of the Mississippi Emergency Management Agency. The Office of Mitigation is responsible for coordinating disaster loss reduction programs, initiatives, and policies throughout the State of Mississippi. Disaster loss reduction measures are carried out through disaster reduction programs, initiatives, and policies through the development of State and local Hazard Mitigation plans and the implementation of strategies identified in the plans. The Office of Mitigation administers the Hazard Mitigation Grant program, the National Flood Insurance Program's Community Assistance Program and Map Modernization program, the Flood Mitigation Assistance Program, and the Pre-Disaster Mitigation program, and Severe Repetitive Loss Program. The Office of Mitigation's Staff has grown from six to thirty personnel. Floodplain Management, Grants and Planning Staff are assigned to all nine districts in the state. Mitigation Bureau Staff have been extensively trained in Benefit Cost Analysis, Grants Management, National Flood Insurance Program, Plan review, CAV, CAX, environmental, project application review, HAZUS and NEMIS Entry.

**(MS-2) Miss. Code 1972, Annotated. 65-1-13:** Authorizes the Mississippi Department of Transportation-The following is a brief description of the Mississippi Department of Transportation's (MDOT) on-going hazard mitigation capabilities. Construction, reconstruction and maintenance of transportation facilities vital to evacuation, response, and re-entry. This includes but is not limited to seismic retrofitting of bridges, the upgrading of traffic control devices after destruction, construction of transportation facilities to avoid flood prone areas whenever possible, and other precautionary design work – including wetlands mitigation – which reduces risk before, during and after an emergency. Education and communication outreach programs to include information provided to the general public concerning Contraflow, pet evacuation, and general preparedness. Training for MDOT response personnel at all levels for a wide range of natural and manmade hazards. In-house emergency coordination staff increased from four in 2005 to 12 today; this group is MDOT's ESF-1 representative at the State Emergency Operations Center. Maintenance of a Comprehensive Emergency Transportation Response Plan which is updated regularly. Emergency preparedness for a 72-hour window of self-sufficiency after a disaster. This is accomplished through improvements made to emergency supplies, storage facilities, acquiring sufficient fuel reserves, as well as housing, food and water for transportation emergency workers. Improvements in communication capabilities through the purchase of additional satellite radio units to serve as redundant communications backup. In addition, a mobile communications platform and a command/control center have been deployed. Evaluation of standard operating procedures in all areas, but specifically within procurement to enable the agency to function more efficiently and quickly in the purchase of emergency supplies. Provision of remote traffic sensing, which will aid in traffic management during

evacuations and re-entries. Development of partnerships with various state, federal and/or local agencies to save lives and reduce future losses. These include: The GIS Coordinating Council in the development of the Mississippi Digital Earth Mapping Initiative. Key emergency response agencies to aid in providing fuel. These agencies include the Mississippi Emergency Management Agency, Mississippi Department of Health, and Wildlife, Fisheries and Parks. Acquiring travel trailers to provide housing accommodations for transportation emergency workers during extended events. Placement of three Mobilization Centers in northwest Mississippi to provide for command/control and serve as a base of operations to support earthquake emergency response activities.

**(MS-3) Miss. Code 1972, Annotated. 19-5-9:** Title 19, Chapter 5 authorizes certain counties to adopt, as minimum standards, building codes published by a nationally recognized code group.

**(MS-4) Miss Code 1972, Annotated. 21-19-25:** Under Title 21, Governing authorities of any municipality are authorized to adopt building, plumbing, electrical, gas, sanitary, and other codes to protect the public health, safety, and welfare.

**(MS-5) House Bill 1406-Mississippi Building Code Council:** Mississippi does not adopt or enforce a statewide building code for all structures, nor does it mandate a code for residential construction. It is up to local jurisdictions to adopt and enforce building codes. House Bill 1406, passed in 2006, creates the Mississippi Building Code Council. It also requires five coastal counties, Jackson, Harrison, Hancock, Stone, and Pearl River, and the municipalities located there, to enforce all the wind and flood mitigation requirements prescribed by the 2003 International Residential Code and the 2003 International Building Code. The Mississippi Building Codes Council adopted the 2003 International Building Code and 2003 International Residential Code for the state, but does not require local jurisdictions to adopt building codes, but requires that they use the International Codes if they do adopt codes.

**(MS-6) Miss Code 1972, Annotated. 17-1-11 et. seq.-** Title 17, Chapter 1 permits municipal and county governments to adopt zoning regulations for the purpose of ensuring the most appropriate use of community lands and to provide for the preparation, adoption, amendment, extension, and carrying out of a comprehensive plan for the purpose of bringing about coordinated physical development in accordance with present and future needs. Chapter 1 also authorizes the establishment of local planning commissions to advise municipal and county governments in matters pertaining to physical planning, subdivision of land, zoning ordinances, building set back lines, and enforcement of regulations. Title 17 further authorizes any two or more counties or municipalities to establish regional planning commissions composed of representatives from the participating counties and municipalities. Regional planning commissions are established for the purpose of advising local governments on problems related to acquisition, planning, construction, development, financing, control, use, improvement, and disposition of buildings and other structures, facilities, goods, and services.

No local land use plans are mandated by state law. State law does specify that the city or county legislative body must legally adopt a comprehensive plan to put it into effect. The state also requires that the zoning be based upon and consistent with the legally adopted plan. If a local government chooses to develop and adopt a comprehensive plan, the law does specify a list of elements that must be included, but no natural hazards element is required.

**(MS-7) Miss. Code 1972, Annotated. 21-19-23: Local Emergency Management-**Municipal governments may enter into reciprocal assistance agreements on the assignment of equipment, supplies, and materials in the event of an emergency or disaster. Each county in Mississippi has a full or part-time emergency management program. As of September 15, 2003, 59 of Mississippi's 82 counties have Emergency Management designated full-time emergency management or civil defense directors. Twenty-three counties have part-time directors. Eighty-two counties have completed comprehensive emergency management plans on file with the Mississippi Emergency Management Agency (MEMA).

**(MS-8) Executive Order 985, 2007; Mississippi State Hazard Mitigation Council-**Establishes the Mississippi Hazard Mitigation Council. Presents the Council goals, responsibilities, and membership.

## State Programs

**(MS-9) Central US Earthquake Consortium (CUSEC) –**Mississippi membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN.

## Missouri

### State Policies

**(MO-1) RSMo 44.020:** State Emergency Management Agency created. There is hereby created within the military division of the executive department, office of the adjutant general, the "State Emergency Management Agency," for the general purpose of assisting in coordination of national, state, and local activities related to emergency functions by coordinating response, recovery, planning and mitigation. This agency shall also serve as the statewide coordinator for activities associated with the National Flood Insurance Program.

**(MO-2) RSMo 44.032:** Emergency powers of governor, uses—Missouri disaster fund, funding, expenditures, procedures, purposes— aid to political subdivisions, when, procedure—expenditures in excess of \$1,000, governor to approve. There is hereby established a fund to be known as the "Missouri Disaster Fund," to which the general assembly may appropriate funds and from which funds may be appropriated annually to the state emergency management agency. The funds appropriated shall be expended during a state emergency at the direction of the governor and upon the issuance of an emergency declaration which shall set forth the emergency and shall state that it requires the expenditure of public funds to furnish immediate aid and relief. The director of the state emergency management agency shall administer the fund. Expenditures may be made upon direction of the governor for emergency management, as defined in section 44.010, or to implement the state disaster plans. Expenditures may also be made to meet the matching requirements of state and federal agencies for any applicable assistance programs.

**(MO-3) RSMo 44.080:** All political subdivisions shall establish a local emergency management organization. Each political subdivision of this state shall establish a local organization for disaster planning in accordance with the state emergency operations plan and program.

**(MO-4) RSMo 44.227-237 (Senate Bill 142): Missouri Seismic Safety Commission:** Commission on seismic safety created. Authorizes creation, duties, and powers of the Missouri Seismic Safety



Commission, as well as gives the commission responsibilities to undertake a study to determine the feasibility of establishing a comprehensive program of earthquake hazard reduction to save lives and mitigate damage to property in Missouri. The commission developed a Strategic Plan for Earthquake Safety in Missouri (1997) that identifies objectives and makes recommendations for earthquake mitigation. The commission also sponsors earthquake awareness activities each year, including exhibitions at the St. Louis Science Center and the State Capitol.

**(MO-5) RSMo 160.451:** Earthquake emergency system to be established for certain school districts. The governing body of each school district which can be expected to experience an intensity of ground shaking equivalent to a Modified Mercalli of VII or above from an earthquake occurring along the New Madrid Fault with a potential magnitude of 7.6 on the Richter Scale shall establish an earthquake emergency procedure system in every school building under its jurisdiction.

**(MO-6) RSMo 160.453:** Requirements for emergency system—public inspection of system authorized. This earthquake emergency system shall include 1) A school building disaster plan; 2) An emergency exercise to be held at least twice each school year; 3) Protective measures to be taken before, during, and following an earthquake; and 4) A program to ensure that the students and certified and noncertified employees of the school district are aware of, and properly trained in, the earthquake emergency procedure system.

**(MO-7) RSMo 160.455:** Distribution to each student certain materials on earthquake safety—duties of school district. At the beginning of each school year, each school district shall distribute to each student materials that have been prepared by the Federal Emergency Management Agency, SEMA, or by agencies that are authorities in the area of earthquake safety and that provide the following objectives: 1) Developing public awareness regarding the causes of earthquakes, the forces and effects of earthquakes, and the need for school and community action in coping with earthquake hazards; 2) Promoting understanding of the impact of earthquakes on natural features and manmade structures; and 3) Explaining what safety measures should be taken by individuals and households prior to, during and following an earthquake.

**(MO-8) RSMo 256.173:** Cities and counties to be furnished geologic hazard assessment prepared by Division of Geology and Land Survey. The Division of Geology and Land Survey in the Missouri Department of Natural Resources shall provide each county as the information becomes available a geologic hazard assessment and assistance in the use and application of the geologic hazard assessments, which will be made available to the public. The Department of Natural Resources shall provide each recorder of deeds of each county in the state a map showing the downstream area that would be affected in the event of a dam failure.

**(MO-9) RSMo 256.175:** High seismic risk area data duties of The Missouri Department of Natural Resources shall furnish to SEMA technical data, including soil liquefaction and seismic effects, on structural foundations that are located in a high seismic risk area. If requested by a local government entity, the department shall assist in the establishment of construction standards based on the data provided in this subsection. The Department shall be designated as the lead technical agency in the state to conduct studies concerning the geologic effects of earthquakes.

**(MO-10) RSMo 319.200-207:** Each city, town, village, or county that can be expected to experience an intensity of ground shaking equivalent to a Modified Mercalli of VII or above from an earthquake occurring along the New Madrid Fault with a potential magnitude of 7.6 on the Richter Scale, shall

adopt an ordinance or order requiring that new construction, additions and alterations comply with the standards for seismic design and construction of the building officials and code administrators code or of the uniform building code. Cities and counties found not to comply with the requirements of sections 319.200 to 319.207 shall not be eligible to receive any state aid, assistance, grant, loan or reimbursement until compliance has been proven to the satisfaction of the commissioner of administration.

**(MO-11) RSMo 379.975:** Insurer to provide information on earthquake insurance for coverage on property located in the New Madrid Seismic Zone, as defined by the United States Geological Survey in Missouri, susceptible to Modified Mercalli intensity VII or above from an earthquake occurring along the New Madrid Fault with a potential magnitude of 7.6 on the Richter scale, the insurer shall provide information to the applicant or policyholder regarding the availability of insurance for loss caused by earthquake.

**(MO-12) RSMo 379.978:** Every insurance company that insures property for loss caused by earthquake shall prepare and retain a written disaster plan covering earthquakes. This plan shall include specific provisions regarding procedures for handling claims under the insurance company's issued policies or endorsements covering loss or damage from the peril of earthquake.

**(MO-13) Executive Order 94-25, 1994** Establishes the Disaster Recovery Partnership to review and design new human services disaster response and recovery delivery methods, establish more rapid and complete communications to disaster victims and caregivers, and promote, train, and support local committees.

**(MO-14) Executive Order 03-23, 2003** Reaffirms the endeavors of the Disaster Recovery Partnership and ascribes to it the additional functions of a state citizen council.

**(MO-15) Executive Order 05-20, 2005** Establishes the Missouri Homeland Security Advisory Council to review and evaluate current state and local homeland security plans and make recommendations for changes to better protect Missourians and to review requests and provide recommendations on the appropriate use of Homeland Security grant funds from the federal government. Creates the Division of Homeland Security within the Department of Public Safety to coordinate activities to promote unity of effort among federal, state, local, private sector, and citizen activities related to emergency preparedness and homeland security.

**(MO-16) RSMo 44.023:** provides immunity from liability for those working in disaster volunteer programs. SEMA and the state's Executive Department worked together to write the new Catastrophic Event (Earthquake) Annex, which has been added to the State Emergency Operations Plan as Annex Y.

**(MO-17) RSMo 256.155: Interstate Earthquake Emergency Compact** - The purpose of this compact is to provide mutual aid among the states in meeting any emergency or disaster caused by earthquakes or other seismic disturbances. The full, immediate, and effective utilization of the resources of the respective states, including such resources as may be available from the United States government or any other source, is necessary to provide needed short-term earthquake disaster assistance to states requesting such mutual aid. These resources shall be incorporated into a plan or plans of mutual aid to be developed among the appropriate agencies of states that are parties to this compact. These agencies shall develop and follow procedures designed to assure the

maintenance of resource inventories and the exchange of information about earthquakes and disaster response. It is the policy of the party states to carry out this compact in a spirit of cooperation to provide the most effective earthquake disaster assistance to the residents of the states and to provide an equitable division of any necessary earthquake relief efforts in order to avoid a disproportionate allocation of contributed resources.

## State Programs

**(MO-18) Central US Earthquake Consortium (CUSEC)** –Missouri membership. Member states: AL, AR, IL, IN, KY, MS, MO, TN.

## Montana

### State Policies

**(MT-1) MCA Title 7 Local Government** Allows local governments to construct public buildings, utility services, roads, and bridges. Gives local government the right to adopt their own building codes. Limitation: Does not require local building codes or enforcement.

**(MT-2) MCA 10-3 Disaster and Emergency Services** - Establishes state and local emergency management organizations and responsibilities. Limitations: Mentions mitigation in a very limited fashion.

**(MT-3) MCA 50-60 Building Construction Standards**-Authorizes State Building Code. Allows for local county, city, or town building codes. Limitations-Except for the energy, plumbing, and electrical codes, the State Building Code is not applicable for residential structures less than five dwelling units, unless required by local jurisdictions.

**(MT-4) MCA 76-1 Growth Policy** -Requires local governments to develop growth policies by October 2006. Growth policies are the steering documents for zoning ordinances and subdivision regulations. Limitations-Does not require the consideration of natural hazards. A bill requiring a strategy for addressing natural hazards failed in 2001. Growth policies are not regulatory and do not have authority to deny land use.

**(MT-5) MCA 76-2 Planning and Zoning**-Allows local governments to establish and manage zoning districts. Limitations-Does not establish statewide zoning or require it at the local level.

**(MT-6) MCA 76-3 Montana Subdivision and Platting Act**-Requires local governments develop subdivision regulations and enforcement Establishes policy to ensure subdivisions are in the public interest. Limitations-Does not establish statewide standards for hazards.

**(MT-7) Title 24, Chapter 301 of the Administrative Rules of Montana (Building Code)**-New construction in the Intermountain Seismic Belt is taking place in areas vulnerable to earthquake damage. The State Of Montana has adopted the International Building Code (IBC), 2006 edition and seismic provisions or requirements found in the IBC are what the state requires for commercial buildings built in Montana. Seismic requirements are found throughout the code and are not condensed into a table or chart of requirements. Different building types, different occupancies and

different uses all have varying degrees of seismic requirements and even different materials utilized in those different buildings and occupancies carry additional or different requirements i.e. wood construction of a police station would have different seismic requirements than a masonry built police station. A building with an occupant load of over 300 people would require additional seismic considerations than if the building held less than 300 (same use, same materials). The staff of architects and engineers at the Montana Department of Labor and *Update to the State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment Montana DES 3-61 August 2007*

Industry, Bureau of Building and Measurement Standards perform plan reviews to ensure designers have included the seismic provisions and requirements found in the building code. The IBC recognizes the differences in seismic activity by evaluating three main parameters; 1) amount of motion – this is a site specific value derived from software using a location’s zip code, 2) site class or soil type for a specific building site, and 3) the seismic use group which is the type of building use. These three parameters are analyzed to arrive at a “seismic design category” which the code then provides for specific requirements based on a project’s seismic design category label. For example a project located in an area where the ground motion has been determined to be high, the soil type at the site is determined to be such that not much dampening of that motion is likely to occur (not hard rock – silt or loose soil present) and the building is considered an “essential facility” such as a police station or hospital then the seismic design category will calculate out to be such that higher seismic requirements will be placed on that structure. You could have the same motion and the same soil type but have a building that is not essential (could be right across the street from the police station) and the seismic design category would be such that the requirements for seismic design will be lower.

The IBC does not cover single family residences. The State Of Montana has adopted the International Residential Code (IRC), 2006 edition for one and two family residences and townhouses. The State of Montana, Bureau of Building and Measurement Standards does not have jurisdiction over single family residences (they are exempt from the requirements of a building permit by law). Local jurisdictions (cities, counties and towns) can elect to become certified to take on enforcement of single family residences. Currently there are 42 certified jurisdictions including four counties (Table 3.3.2-7) that are certified to enforce building codes; however, they must adopt the same codes and operate under the same process as the State of Montana.

## State Programs

**(MT-8) Western States Seismic Policy Council (WSSPC)**-Montana Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Nebraska

### State Policies

**(NE-1) Nebraska RRS §81-829.31 to §81-829.73** (Nebraska Emergency Management Act) The Nebraska Emergency Management Act addresses pre-disaster mitigation, post-disaster mitigation, and development in hazard prone areas. For predisaster mitigation, “the governor shall consider, on

a continuing basis, steps that could be taken to prevent or reduce the harmful consequences of disasters, emergencies, and civil defense emergencies” (§81-0829.43). It also provides the governor with the power to make recommendations for mitigation projects. This Act also gives power to NEMA and other state agencies to study and monitor vulnerable areas and then pursue appropriate mitigation actions. Section 81-0829.42 of the Nebraska Emergency Management Act lists appropriate post-disaster mitigation actions such as clearing debris and provides for “other measures as are customarily necessary to furnish adequate relief in cases of disaster, emergency, or civil defense emergency.”

**(NE-2) Nebraska Regulation on Municipal Zoning §19-901 and County §23-114** The state law regulating land use zoning in first and second class cities and villages (Revised Statute §19-901) allows local adoption of zoning regulations after the jurisdiction has done the following: 1. Establish a planning commission; 2. Hold public meetings; 3. Develop a comprehensive development plan; 4. The Municipal Planning Commissions shall prepare and adopt implemental means as a Capital Improvement Program, Subdivision Regulations, Building Codes, and a Zoning Ordinance in cooperation with other Municipal departments, and must invite public comment and advice in their preparation. (Revised Statute §19-929). A County Board has the power to create a Planning Commission, and adopt zoning resolutions. The County Planning Commission shall prepare and adopt as its policy statement a comprehensive development plan, as well as a means of implementation such as a capital improvement program. They must advise the public relating to promulgations of implemental programs (Revised Statute §12-114). The County Planning Commission may establish special districts or zones in those areas subject to seasonal or periodic flooding and such regulation may be applied as will minimize danger to life and property. (Revised Statute §23-114(c)(5)). In both of types of regulations, the municipalities and counties may develop zoning regulations but are not required to. According to the Nebraska League of Municipalities, there is no listing of cities and villages that have adopted zoning regulation. The League did state, however, that most first and second class cities and villages in Nebraska have zoning and building code regulations.

**(NE-3) Nebraska RRS §71-6401 to §71-6407 (Building Construction Act):** It is the purpose of the Building Construction Act to: (1) Adopt a state building code to govern the construction, reconstruction, alteration, and repair of buildings and other structures within Nebraska; (2) Provide state standards to safeguard life, health, property, and the public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, and maintenance of buildings and structures within this state; and (3) Provide for the use of modern and innovative methods, devices, materials, and techniques in the design and construction of buildings and other structures. 1) There is hereby created the state building code. The Legislature hereby adopts by reference: (a) The International Building Code (IBC), 2000 edition, published by the International Code Council; (b) The International Residential Code (IRC), 2000 edition, published by the International Code Council; and (c) The International Existing Building Code, 2009 Edition, published by the International Code Council. The state building code shall be the building and construction standard within the state and shall be applicable to all buildings and structures owned by the state or any state agency; and in each political subdivision which elects to adopt the state building code or any component or combination of components of the state building code.

## Nevada

## State Policies

**(NV-1) 239C.010 Chapter of the NRS**-is Nevada’s Homeland Security legislation which provides for plans to respond to terrorism and related emergencies and also statewide preparations for acts of cyber-terrorism, environmental catastrophes and other related incidents.

**(NV-2) 268.012 Chapter 268 of the Nevada Revised Statutes (NRS)** gives to the cities of the State the authority to adopt uniform building, plumbing and electrical codes which contain mitigation considerations.

**(NV-3) 278.580 Chapter of the NRS** Mandates that any governing body shall amend its building codes to include seismic provisions of the International Building Code and the standards for the investigation of hazards relating to seismic activity including, without limitation, potential surface ruptures and liquefaction.

**(NV-4) 278.160.1 (n) of the NRS:** Requires master plans adopted by planning commissions and governing bodies to incorporate a Seismic Safety Plan that consists of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting to ground shaking or to ground failures.

**(NV-5) 341.143 Chapter of the NRS**-Pertains to the construction of state facilities, the Legislature has also mandated the state Public Works Board to adopt regulations governing the design and construction of buildings or other projects of the State and to adopt into those regulations the seismic provisions of the International Building Code and the standards for the investigation of hazards relating to seismic activity, including, without limitation, potential surface ruptures and liquefaction.

**(NV-6) 353.2735 Chapter of the NRS**-Provides for the Disaster Relief Account. The account is used to stabilize the operation of the State Government, including local jurisdictions, from an emergency/disaster.

**(NV-7) Section 414.040 of the Nevada Revised Statutes-** the Chief of the Division of Emergency Management has the authority and power to assist in the development of an integrated process for the mitigation of, response to and recovery of emergencies or disasters through the various governmental agencies, business and industry, volunteer organizations and any other interested parties.

**(NV-8) 414.060(3)b of NRS-** “(b) Prepare a comprehensive state emergency management plan and develop a program for emergency management in this state to be integrated into and coordinated with the plans of the Federal Government and of other states for emergency management to the fullest possible extent, and coordinate the preparation of plans and programs for emergency management by the political subdivisions of this state to be integrated into and coordinated with the plan and program of this state to the fullest possible extent.”

**(NV-9) 414.135 Chapter of NRS**-This statute describes the Emergency Assistance Subaccount. This subaccount is to provide supplemental emergency assistance to this state or to its local governments impacted by an emergency/disaster.

**(NV-10) 461.170 Chapter of NRS-** The Nevada Legislature has adopted by statute, for the purposes of manufactured homes, the Uniform Housing Code, the Uniform Building Code, the Uniform Plumbing Code, the Uniform Mechanical Code; the National Electrical Code, the Uniform Building Code, Dangerous Building, the Uniform Building Code Standards and the American National Standards Institute Standard No. A117.1.

## State Programs

**(NV-11) Earthquake Safety Council** coordinated with the Community Emergency Response and Applied Technology training initiatives; and University of Nevada Bureau of Mines and Geology.

**(NV-12) Western States Seismic Policy Council (WSSPC)-**Nevada Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## New Hampshire

### State Policies

**(NH-1) NH Revised Statutes Annotated (RSA), 21-P:37,** Emergency Management Powers Conferred, authorizes the establishment of a “comprehensive plan and program for the emergency management of this state, such plan and program to be integrated into and coordinated with the emergency management plans of the federal government and of other states to the greatest possible extent, and to coordinate the preparation of plans and programs for emergency management by the political subdivisions of this state and private agencies, such plans to be integrated into and coordinated with the emergency management plan and program of this state to the greatest possible extent.”

**(NH-2) NH RSA 674:2** states that a Master Plan adopted under this statute may include a “natural hazards section which documents the physical characteristics, severity, frequency, and extent of any potential natural hazards to the community. It should identify those elements of the built environment at risk from natural hazards as well as extent of current and future vulnerability that may result from current zoning and development policies.”

**(NH-3) NH RSA 9-A, State Development** Plan which states, “There shall be a comprehensive state development plan which establishes state policy on development related issues....[including] A natural hazards section which identifies actions to improve the ability of the state to minimize damages from future disasters that affect land and property subject to such disasters. Homeland Security and Emergency Management works closely with the Regional Planning Commissions and the Office of Energy and Planning to ensure that these state initiatives are carried out to the local communities and their local mitigation plan.

**(NH-4) NH RSA 155-A (State Building Code)-**The State of New Hampshire has a State Building Code, which includes the International Building Code (IBC) 2000, the International Plumbing Code 2000, the International Mechanical Code 2000, the International Energy Conservation Code 2000, as published by the International Code Council, and the National Electric Code 1999. The IBC 2000

building code specifies a new generation of natural hazards design provisions. These building standard improvements incorporate the new national seismic risk maps, soil classifications and design methodology. They supersede the current obsolete and unsafe Standard Building Code provisions and are backed up by a new earthquake engineering technology base.

## **New Jersey**

### **State Policies**

#### **(NJ-1) Executive Order 101, 1980 Transfer of Emergency Management to the NJ State Police -**

Established an Office of Emergency Management in the Division of State Police, Department of Law and Public Safety. The Office of Emergency Management shall be under the supervision, direction and control of the State Director of Emergency Management

#### **(NJ-2) State Hazard Mitigation Team (SHMT), which was established by Governor's Executive Order**

**#115** (Florio), is the means that NJOEM uses to coordinate its mitigation activities with other State agencies. Since the first version of the NJ All Hazard Mitigation Plan (Plan) was approved in April, 2005, members of the SHMT have been meeting quarterly to assess mitigation projects, prioritize applications for submittal, and determine if there are any changes to the Plan.

#### **(NJ-3) State Planning Act of 1985, N.J.S.A. 52:18A-196 et seq.,**

empowered the State Planning Commission with the responsibility to prepare, revise, and readopt the New Jersey State Development and Redevelopment Plan (State Plan) every three years. The State Plan was adopted using the process of Cross-acceptance, a legislatively mandated process whereby planning policies are reviewed by government entities at all levels and the public to assess their consistency with each other and with the State Plan. The State Plan was developed for the purpose of promoting cooperative planning among municipalities, counties, regional entities and the State, to change the way land use decisions have been made in our State over the past 30 years, and to promote sustainable economic growth in a way that sensibly balances the need to protect open space. Thanks to years of work evaluating the goals, policies and strategies of the State Plan, we now have a clear framework for what the landscape of New Jersey should look like in 2025.

#### **(NJ-4) New Jersey Administrative Code, Title 5 – Dept. of Community Affairs (Building Codes)-**

The Department of Community Affairs has adopted building codes that address different hazards that affect New Jersey. The State has adopted the 2000 International Building Code (IBC) and the 2000 International Residential Code (IRC) modified to comply with State laws. These address the construction of new buildings and their relationship to weather-related and geological hazards.

**(Earthquakes** The current Building Subcode provides requirements for soils investigations before a building is designed that address these issues).

#### **(NJ-5) New Jersey Civilian Defense and Disaster Control Act-**

The purpose of this act is to provide for the health, safety and welfare of the people of the State of New Jersey and to aid in the prevention of damage to and the destruction of property during any emergency as herein defined by prescribing a course of conduct for the civilian population of this State during such emergency and by centralizing control of all civilian activities having to do with such emergency under the Governor and for that purpose to give to the Governor control over such resources of the State Government and of each and every political subdivision thereof as may be necessary to cope with any condition



that shall arise out of such emergency and to invest the Governor with all other power convenient or necessary to effectuate such purpose.

## State Programs

**(NJ-6) New York Consortium on Earthquake Mitigation**, along with New York City, New York State, the New Jersey Geological Survey, Columbia and Princeton Universities and several counties in the metro-NY area. This Consortium is concentrating efforts on assessing the vulnerabilities of the metro-NY area and what can be done to better protect life and property by running model simulations. These computer exercises reveal which areas fail first, how damages result, and what economic and socioeconomic effects result, giving a comprehensive picture of total impact.

## New Mexico

### State Policies

**(NM-1) 12-11-23 to -25, Emergency Powers Code, 2005, as amended:** provides state funds to be expended for disaster relief for any disaster declared by the Governor that is beyond local control. Such funds may also be used as a match for federal disaster relief grants;

**(NM-2) 12-10-2 to -5, NMSA 1978 as amended:** The State Civil Emergency Preparedness Act. This Act establishes the basic structure of Emergency Management as a state agency and defines the role of local government in emergency preparedness.

**(NM-3) New Mexico Administrative Code Title 14 (Housing and Construction)** -All new buildings in the state are required to meet or exceed the standards in the International Building Code or the International Residential building code. This code requires a certain level of protection be installed in new buildings, to protect against wind, snow loads, fires, earthquakes and other natural hazards. In addition, the state subscribes to and enforces the International Building Code, which requires that certain earthquake and wind-loading standards be met for specified categories of structures. Each county is responsible for monitoring its own development; the state does not have oversight on this.

### State Programs

**(NM-4) Western States Seismic Policy Council (WSSPC)**-New Mexico Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## New York

### State Policies

**(NY-1)** In 1979, **State Executive Law, Article 2-B** was signed into law and required the development of a State Disaster Preparedness Plan. Under Article 2-B, the plan was redesigned to address all-hazards emergency preparedness, response, and recovery. This new approach resulted in the development of the New York State Comprehensive Emergency Management Plan (CEMP). Section

21 of State Executive Law, Article 2-B identifies the State Disaster Preparedness Commission (DPC) and States that the DPC will coordinate the State's emergency management program. The section also identifies 23 State agencies or offices and one volunteer organization, the American Red Cross, which shall participate in emergency management activities. Section 22 of Article 2-B identifies the roles and responsibilities of the Disaster Preparedness Commission, of which includes the preparation of State disaster plans; directing State disaster operations and coordinating those with Local government operations; and coordinating with Federal, State, and private recovery efforts. Further, the State Emergency Management Office has been authorized to serve as the administrative arm to the Disaster Preparedness Commission. SEMO utilizes the authority in Article 2-B to help set the direction in a coordinated, stratified, and cohesive Statewide emergency preparedness effort. At all levels of the organization, SEMO meets frequently with various agencies and organizations to address a variety of all-hazards based preparedness, response and recovery concepts, policies, plans, and procedures.

**(NY-2) Building Codes-**As implemented by New York State Consolidated Laws, **Executive Law, Article 18, "The New York State Uniform Fire Prevention and Building Code Act"** as amended, the State Uniform Fire Prevention and Building Code contains minimum construction standards that must be met by all construction that occurs within communities in New York State (save for certain exempt categories, such as Federal).

**(NY-3) Title 19 of the New York Code of Rules and Regulations, Part 444 (19 NYCRR Part 444)** defines the Minimum Standards for Administration and Enforcement of the Uniform Code. Each municipality within New York State, with the previously noted exception of the City of New York, follows these regulations to establish specific requirements for issuing construction permits and certificates of occupancy, building and fire safety inspections, training of code compliance officials and response to complaints of code violations. Municipalities may decline to enforce the code within its boundaries, in which case, enforcement passes to the county within which the municipality is located. Likewise, counties may also decline to enforce the code and enforcement then passes to the State of New York through the Department of State. Title 19 NYCRR, Part 448 defines similar standards to Part 444 for the Administration and Enforcement of the Uniform Code for State-owned facilities. Specific State agencies with responsibility for design, construction, and renovation of State-owned facilities issue necessary permits, conduct inspections, and respond to complaints in similar fashion to the requirements for Municipalities.

## State Programs

**(NY-4) New York State Earthquake Preparedness Program-**The New York State Emergency Management Office in partnership with member agencies and organizations of the New York City Area Consortium for Earthquake Loss Mitigation (NYCEM) has completed an earthquake loss estimation study of the New York City metropolitan area using the FEMA HAZUS software. Major efforts of this study included the development of soil databases for the New York City Metropolitan Region and integration of the New York City Department of Finance's "Mass Appraisal System" database of buildings into the HAZUS model. Copies of this report are found at: <http://www.nycem.org/default.asp>

The Earthquake Program includes a cooperative effort with the New York State Geological Survey in seismic hazard mapping involving a statewide classification of the State's surficial geologic materials

according to National Earthquake Hazard Reduction Program (NEHRP) Soil Classification System. The Earthquake profile section of the plan provides county maps showing the adjustment to the USGS seismic maps based on soil factors derived from this effort. This information has also been incorporated in HAZUS models that have been used in support of state and local earthquake exercises.

**(NY-5) New York Consortium on Earthquake Mitigation**, New Jersey, New York City, New York State, the New Jersey Geological Survey, Columbia and Princeton Universities and several counties in the metro-NY area. This Consortium is concentrating efforts on assessing the vulnerabilities of the metro-NY area and what can be done to better protect life and property by running model simulations. These computer exercises reveal which areas fail first, how damages result, and what economic and socioeconomic effects result, giving a comprehensive picture of total impact.

## North Carolina

### State Policies

**(NC-1) North Carolina Emergency Management Act (N.C.G.S. 166A)** – Administered by the North Carolina Department of Crime Control and Public Safety (CC&PS), sets forth the authority and responsibilities of the Governor, state agencies, and local governments in the prevention and mitigation of, preparation for, response to, and recovery from natural or man-made disasters or hostile military or paramilitary action. As part of its duties, the Department of Crime Control and Public Safety serves as North Carolina’s Office of Homeland Security. The Department is currently spearheading efforts to strengthen the State’s terrorism defenses and response capabilities. The following Divisions within the Department of Crime Control and Public Safety are described below: North Carolina National Guard, State Highway Patrol, Civil Air Patrol, and the Division of Emergency Management. The North Carolina Emergency Response Commission and the State Emergency Response Team are also described below. The North Carolina Division of Emergency Management (NCDEM) was created by the Emergency Management Act of 1977 (N.C.G.S. 166-A), and is responsible for protecting the people of North Carolina from the effects of disasters, natural and manmade. NCDEM was reorganized in 1997 following Hurricane Fran into functional units, using the “Incident Command System” (ICS), the national model for managing emergency operations. This organizational structure mirrors the local incident command structure and the federal Emergency Response Team structure, thus streamlining and simplifying intergovernmental coordination.

**(NC-2) Senate Bill 300: An Act to Amend the Laws Regarding Emergency Management as Recommended by the Legislative Disaster Response and Recovery Commission.** Among other provisions, this bill requires that local governments have an approved hazard mitigation plan in order to receive State public assistance funds (effective for State-declared disasters after November 1, 2004). Local governments are also required to participate in the National Flood Insurance Program (NFIP) in order to receive public assistance for damage related to flooding. This legislation clearly indicates that the General Assembly realizes the critical need to plan ahead for future hazard events at the local level.

**(NC-3) N.C.G.S. Ch. 160A, Art. 19, Part 5, and Ch. 153A Art. 18, Part 4**-Local governments in North Carolina are empowered to issue building permits and to carry out building inspections. The North Carolina General Statutes authorize cities and counties to create an inspection department, and

enumerates its duties and responsibilities, which include enforcing State and local laws relating to the construction of buildings, installation of plumbing, electrical, and heating systems; building maintenance; and related matters. Some smaller incorporated areas in the state rely on the county inspections department to provide building code enforcement services.

**(NC-4) State Emergency Response Commission (SERC)- By Executive Order No. 125,** Governor Hunt created the North Carolina Emergency Response Commission. The NC Division of Emergency Management of the Department of Crime Control and Public Safety provides administrative support and staff to the State Emergency Response Commission (SERC). The Commission was created by Executive Order No. 125 in 1997, and consists of Division Heads of several state government departments. SERC's goals are to provide a forum for local, state and federal response agencies to coordinate activities, serve as a policy development/recommendation organization to address concerns of the response community and to serve as an advisory body to the Governor and the Secretary of Crime Control and Public Safety on issues of risk assessment, prevention, preparedness and mitigation strategies associated with the emergency response function.

**(NC-5) North Carolina General Statutes §143-136 Article 9 (Building Code Council and State Building Code)-**North Carolina has adopted a mandatory State-wide building code. Codes are based on the most current and up-to-date model code developed by the International Code Council (ICC), with amendments for North Carolina. The North Carolina Code is reviewed annually by the Building Code Council, whose members are appointed by the Governor. Amendments to the Code are made as new requirements and materials are introduced. Economic impact statements are prepared with each proposed change so that the Council and the public are made aware of the economic impact that code changes may produce. North Carolina does not allow local governments to make any amendments to the State mandated Building Code, except by special act of the Legislature. The North Carolina State Building Code is grounded in the State's police powers, which allow regulation of activities and property to preserve or promote public health, safety and welfare. The Codes operate as performance standards to regulate, among other things, structural integrity, fire resistance and construction materials. They include design provisions to reduce damages from multiple natural hazards such as high winds, earthquakes and floods. The Codes contain maps indicating the various wind and seismic zones. The maps are based on the maps in ASCE (American Society of Civil Engineers) 7-98. (On September 10, 2002, the Building Code Council approved a wind-borne debris region that extends 1,500 feet from the Atlantic Ocean; implemented January 1, 2004). Coverage of the North Carolina Code includes the following occupancies: 1 and 2 family dwellings; multi-family dwellings; commercial buildings (low and high-rise); industrial buildings; local and state-owned buildings; schools; hospitals; hotels and motels; and auditoriums. The North Carolina Code does not apply to farm buildings. The primary application of the code is to regulate new or proposed construction, but it also applies to reconstruction, rehabilitation and alterations to existing buildings.

**(NC-6) Executive Order No. 25 -** The Executive Order proclaims the State of North Carolina as a "Showcase State for Natural Disaster Resistance and Resilience." Although severely under-funded to carry out its full program, Blue Sky is actively pursuing the initiatives enumerated in Executive Order No. 25, with a major focus on motivating the private sector through market-driven incentives to engage in structural and preventive mitigation strategies.

## State Programs

**(NC-7) The North Carolina Earthquake Program** is designed to educate the public about the very real threat of earthquakes in the state, to evaluate structures for seismic resilience, and to promote measures to improve the safety of both public and private buildings. In 1992, NCDEM embarked on a program to conduct field assessments of schools and other public buildings in western North Carolina. The assessment included documentation of existing non-structural elements subject to damage such as unsecured bookshelves and television sets that could fall and cause injury. The field assessments were part of a broader initiative with components to: Document existing non-structural earthquake hazards; Identify mitigation retrofits to reduce those hazards; Obtain funding to make the necessary retrofits, and Provide the technical assistance necessary to allow communities to implement the retrofits. The real benefits of the public school program go well beyond the direct assistance provided to schools and other public buildings, including hospitals, libraries, and health and police departments. In several instances, communities started their own programs patterned after the state's field assessments and mitigation projects. Swain County replaced glass in several schools with glazing, plexiplastic, or other shatter-resistant material as a part of its general maintenance schedule. Other measures included bolting library bookcases to walls to prevent heavy books from falling and injuring students and staff.

## North Dakota

### State Policies

Note: N. Dakota Hazard Mitigation Plan States: Earthquake hazard mitigation is excluded or minimized in Plan due to the following:

Earthquake tremors have been felt in North Dakota, but none have exceeded intensity IV on the Modified Mercalli Scale.

North Dakota does not have a history of any significant earthquake damages.

HAZUS runs indicate little, if any, damages from earthquakes in the state.

North Dakota does not have a history of any declared state or federal earthquake disasters.

Discussion at a statewide stakeholder meeting regarding the earthquake hazard, including North Dakota Geological Survey representation, led to consensus for excluding the hazard from the plan at this time.

**(ND-1) Disaster Act of 1985 (NDCC 37-17.1)**-Establishes the Department of Emergency Services and its authorities and responsibilities, including mitigation. Has a stated purpose to reduce vulnerability of people and communities of this state to damage, injury, and loss of life and property resulting from natural or manmade disasters or emergencies, threats to homeland security, or hostile military or paramilitary action- NDCC 37-17.1-11 specifically covers disaster or emergency mitigation.

**(ND-2) State Building Code (NDCC 54-21.3)**-Establishes a state building code and an advisory committee. Establishes the North Dakota Manufactured Home Installation Program that inspects manufactured homes to ensure they are installed properly. The building code relies on individual jurisdictions to adopt and enforce the code.

**(ND-3) Municipal Master Plans and Planning Commissions-(NDCC 40-48)**-Authorizes master plans and subdivision regulations by the municipalities. In the preparation of the master plan, the planning commission shall make careful and comprehensive surveys and studies of present conditions and future growth. Does not require that subdivision regulations provide for public safety.

**(ND-4) Regional Planning and Zoning Commissions (NDCC 11-35)**-Authorizes the formation of Regional Planning and Zoning Commissions. Requires coordination between multiple jurisdictions.

**(ND-5) Regional Planning Councils (NDCC 54-40.1)** Authorizes regional planning councils. - Requires coordination between multiple jurisdictions.

**(ND-6) County Zoning (NDCC 11-33)**-Authorizes county governments to regulate and restrict the location of structures in the county. Townships and cities may have their own zoning regulations or relinquish powers to the county. The adoption and enforcement of zoning is the responsibility of the county.

**(ND-7) City Zoning (NDCC 40-47)** Authorizes city governments to regulate and restrict the location of structures in the city and in some cases immediately surrounding. The adoption and enforcement of zoning is the responsibility of the city.

**(ND-8) Subdivision Regulation (NDCC 11-33.2)**- Authorizes county governments to regulate and restrict the subdivision of land. Lists provisions that may be included in the subdivision regulations. Establishes parameters through which the regulations can be managed and enforced.

## Ohio

### State Policies

**(OH-1) Chapter 5502.22 et seq., ORC – State / Local Emergency Management Agencies**-The Chapter provides for a State EMA (which includes the Mitigation Branch), and authorizes countywide (5502.26), regional (5502.27), or local emergency management authorities (5502.271), requiring an emergency management director or coordinator and an Emergency Operations Plan for each county. The law also establishes the legal protection and authority of the EMA to work in times of a disaster. The Ohio EMA is the central point of coordination within the state for response and recovery to disasters. The Mitigation Branch of the Ohio EMA is responsible for management of FEMA mitigation program activities for the state (except for the ODNR–DOW, which is the state coordinating entity for the NFIP – see below). The Ohio EMA Mitigation Branch administers pre- and post-disaster HMGP, FMA, PDM, SRL and RFC grant programs, including project ranking, implementation, technical assistance, and monitoring. The Mitigation Branch staff coordinates with State agencies to incorporate mitigation techniques into their everyday functions and to provide assistance with project development.

**(OH-2) Title XXXVII Health-Safety-Morals, ORC -Ohio Basic Building Code (OBBC)**-The Board of Building Standards is comprised of 10 members appointed by the Governor, with the advice and

consent of the Senate. The board provides uniform standards and requirements for construction and materials to make buildings safe and sanitary for their intended use and occupancy. This refers to any building that may be used as a place of resort, assembly, education, entertainment, lodging, dwelling, trade, manufacture, repair, storage, traffic or occupancy by the public, and all other buildings or parts and appurtenances thereof erected within the state. The Ohio Department of Commerce, Division of Industrial Compliance ensures compliance with and enforcement of OBBC for industrial facilities. The Board emphasizes the importance of mitigation techniques. In 1995, the International Basic Building Code was implemented and that date is used as a marker for NFIP determinations. Homes built pre-1995 were not required to meet the same standards as those after the code's inception, and are more hazardprone. The code includes provisions for several mitigation initiatives, such as flood damage reduction, compliance with established building standards and protection of existing buildings from future hazard events.

**(OH-3) Standard State Zoning Enabling Act (SZA) of 1922-**Enables Comprehensive planning and zoning, however, the Act is criticized because it does not define 'comprehensive plan'. Neither municipal zoning enabling authority nor county/township zoning enabling authority in the ORC, Chapter 303 and 519 defines what constitutes a comprehensive or master plan. Ohio statutes do not require a comprehensive planning process prior to the enactment of a zoning ordinance or resolution, although county and township enabling statutes specify the Board of County Commissioners or the Board of Township Trustees may regulate "...in accordance with a comprehensive plan..." If a plan exists, it may support zoning regulations provided it is compiled following significant public participation and is current. In Ohio, state statutes enabling planning are permissive and not mandatory. Failure to plan does not necessarily invalidate zoning regulations.

The relationship between wise land use planning and the reduction of a community's exposure, risk, and vulnerability to hazards is clear. Experience has shown that those communities that carefully plan the location, type, and structural requirements of development to avoid (to the extent possible) hazard areas and vulnerable structures suffer much less disaster-related damage and impact than do communities that don't carefully plan for development. The benefits of wise land use and development planning, from a hazard mitigation standpoint, include: less disruption to a community's economic, social, and physical structure; less impact on the community's tax base; less impact on the provision of essential services; and less financial impact in terms of local participation in disaster program cost sharing.

In addition, communities that are more prone to disaster damage may be looked upon less favorably by potential business enterprises as a safe, secure place in which to conduct business. Wise land use planning has very practical benefits for all communities. Two ways to incorporate hazard mitigation planning into comprehensive planning is to: 1) have a hazard mitigation element in the comprehensive plan, or 2) incorporate hazard mitigation concepts, strategies, and policies into existing elements of the comprehensive plan.

## Oklahoma

### State Policies

**(OK-1) Title 63 Oklahoma Statutes:** Oklahoma Emergency Management Act requires each county to have an Emergency Manager and an Emergency Management Program. Each city with population

over 10,000 must have the same or adopt the county program. Responsible for all aspects of emergency management in their jurisdiction including: conducting a hazard analysis detailing risks and vulnerabilities, annually updating the existing all-hazard Emergency Operations Plan (EOP), conducting and arranging for necessary training of all relevant personnel, conducting annual exercises to evaluate the plan, managing resources, determining shortfalls in equipment, personnel and training, revising the EOP as necessary, establishing and maintaining an office of emergency management, communications, warnings, conducting or supervising damage assessment and other pre and post-disaster-related duties. Emergency Management Program must carry out the four phases: Response, Recovery, Preparedness and Mitigation.

The State of Oklahoma currently has 347 local Emergency Managers, 77 of these being county or city/county. In carrying out the provisions of this act, each political subdivision, in which any disaster as described in Section 683.3 of this title occurs, shall have the authority to declare a local emergency and the power to enter into contracts and incur obligations necessary to combat such disaster, protecting the health and safety of persons and property, and providing emergency assistance to the victims of such disaster. Each political subdivision is authorized to exercise the powers vested under this section in the light of the exigencies of the extreme emergency situation without regard to time consuming procedures and formalities prescribed by law (excepting mandatory Constitutional requirements) pertaining to the performance of public work, entering into contracts, the incurring of obligations, the employment of temporary workers, the rental of equipment, the purchase of supplies and materials, and the appropriation and expenditure of public funds.

**(OK-2) Oklahoma's State Hazard Mitigation Team was established by state law, House Bill #1841,** on March 9, 1999. Although it receives no direct funding support, it can tap the Emergency Fund for Public Infrastructure. This existing committee was used to form the base of the State Hazard Mitigation Planning Committee, (SHMPC) and to oversee the planning effort. The Committee consists of the following team members from 21 different departments and agencies of the state and federal governments plus private non-profit. These professionals, active in disaster planning, response, and mitigation interact with Oklahoma Emergency Management and each other on a daily basis and provided critical input in the development of the plan. The members of the team provided expertise and perspective to the planning process, including state and local emergency management, natural hazards, land-use planning, building codes, transportation, and infrastructure. They further identified potential vulnerable facilities, recommended goals, objectives, mitigation strategies and priorities for actions and wrote agency specific descriptions of their coordination with the state and their available resources, including how their programs were implemented.

**(OK-3) Title 74 Oklahoma Statutes State Government (Building Code)-**Oklahoma added the International Building Code on November 1, 2001 to the list of approved codes. (BOCA National Building Code, as last revised, the Southern Standard Building Code Congress International (SBCCI), the Uniform Building Code are still acceptable).

## State Programs

**(OK-4) Earthquake Program-**Provides coordination and oversight of seismic safety programs, supports public education and mitigation planning, and provides tools to support seismic hazard reduction.



## Oregon

### State Policies

**(OR-1) Oregon Revised Statutes 401.025-.335 (Emergency Management and Services):** Establishes Oregon Office of Emergency Management and describes agency responsibilities.

**(OR-2) Oregon Revised Statutes 516:** Added natural hazard mitigation to the enabling statute for the Department of Geology and Mineral Industries.

**(OR-3) Oregon Revised Statutes 336.071:** Requirement for earthquake education and tsunami drills to be conducted in public schools.

**(OR-4) Oregon Revised Statutes 455.448:** Provisions for entry and inspection of buildings damaged by earthquakes.

**(OR-5) Oregon Revised Statutes Chapter 455: Building Code:** All buildings in Oregon must conform to the state's codes, which influences the way buildings are constructed with respect to seismic risk, wind, snow, wildfire, and flood hazards. **Oregon State Building Codes (Seismic):** The One and Two Family Dwelling Code and the Structural Specialty Code (both included in the State Building Code) contain maps identifying the various seismic zones for Oregon, as described in Section 2 of this guide. The Structural Specialty Code is based on the 1997 edition of the Uniform Building Code published by the International Conference of Building Officials and amended by the state of Oregon. The Uniform Building Code contains specific regulations for development within seismic zones. Within these standards are six levels of design and engineering specifications that are applied to areas according to the expected degree of ground motion and site conditions that a given area could experience during an earthquake (ORS 455.447).

The Structural Code requires a site-specific seismic hazard report for projects including essential facilities such as hospitals, fire and police stations, emergency response facilities, and special occupancy structures, such as large schools and prisons. The seismic hazard report required by the Structural Code for essential facilities and special occupancy structures must take into consideration factors such as the seismic zone, soil characteristics including amplification and liquefaction potential, any known faults, and potential landslides. The findings of the seismic hazard report must be considered in the design of the building. The Dwelling Code simply incorporates prescriptive requirements for foundation reinforcement and framing connections based on the applicable seismic zone for the area. The cost of these requirements is rarely more than a small percentage of the overall cost for a new building.

The requirements for existing buildings vary depending on the type and size of the alteration and whether there is a change in the use of the building to house a more hazardous use. Oregon State Building Codes recognize the difficulty of meeting new construction standards in existing buildings and allow some exception to the general seismic standards. Upgrading existing buildings to resist earthquake forces is more expensive than meeting code requirements for new construction. State code only requires seismic up-grades when there is significant structural alteration to the building or where there is a change in use that puts building occupants and the community at a greater risk. Your local building official is responsible for enforcing these codes. Although there is no statewide

building code for substandard structures, local communities have the option of adopting one to mitigate hazards in existing buildings. The state has adopted regulations to abate buildings damaged by an earthquake in Oregon Administrative Rules (OAR) 918-470. Oregon Revised Statutes (ORS) 455.020 and 455.390-400 also allow municipalities to create local programs to require seismic retrofitting of existing buildings within their communities. The building codes do not regulate public utilities and facilities constructed in public right-of-ways, such as bridges that are regulated by the Department of Transportation.

For more information on state building codes contact the Oregon Department of Consumer and Business Services – Building Codes Division. The Building Codes Division of Oregon’s Department of Consumer and Business Services is responsible for administering statewide building codes. Its responsibilities include adoption of statewide construction standards that help create disaster-resistant buildings, particularly for flood, wildfire, wind, foundation stability, and seismic hazards. Information about wildfire-related building codes is found through this department.

**(OR-6) Oregon Revised Statutes 401.337 Oregon Seismic Safety Policy Advisory Commission:**

OSSPAC is a state advisory commission created in February 1990 through an executive order from Governor Neil Goldschmidt and established in statute by the 1991 Oregon Legislature (ORS 401.337). It is made up of 18 members with interests in earthquake safety: Building Codes Division, Oregon Emergency Management, Department of Geology and Mineral Industries, Department of Land Conservation and Development, Oregon Department of Transportation, two representatives from the Oregon Legislature, one local government representative, one member from education, three from the general public and six members from affected industries, such as homebuilders and banking industries. The purpose of the work of OSSPAC is to reduce exposure to Oregon’s earthquake hazards by: developing and influencing policy at the federal, state, and local government levels; facilitating improved public understanding and encouraging identification of earthquake risk; and supporting research and special studies, appropriate mitigation and response and recovery.

**(OR-7) Oregon Senate Bill 96 (1991) Seismic Hazard Investigation-**Requires site-specific seismic hazard investigations before the construction of essential facilities, hazardous facilities, major structures, and special-occupancy structures (e.g., hospitals, schools, utilities and public works, police and fire stations). These requirements are adopted into the *State Building Code*. The law also provides for the installation of strong-motion sensors in selected major buildings and mandates that school officials in all public schools lead students and staff in earthquake drills (ORS 455.447 and 336.071).

**(OR-8) Senate Bill 1057 (1995)-**Created a task force to evaluate the risks impacting existing buildings and make recommendations to the 1997 Oregon Legislative Assembly.

**(OR-9) Oregon House Bill 3144 (1999)-**Created a new category of engineering license in Oregon, structural engineer for the design of significant structures. The legislation specifically required engineering for buildings housing hazardous occupancies, special occupancy structures as defined in ORS 455.447, essential facilities greater than 4000 square feet and 20 feet in height, and irregular structures as defined by the *State Building Code*, to be performed by a structural engineer. The legislation did not amend the architects’ law allowing them to continue to design these structures.

**(OR-10) Oregon Senate Bill 13 (2001) Seismic Event Preparation:** Requires state and local agencies to hold annual drills instructing employees on earthquake emergency procedures. Requires employers with 250 or more full time employees to hold annual drills instructing employees on

earthquake emergency procedures. Requires Oregon Emergency Management to adopt rules governing required earthquake emergency drills. Implement mandatory earthquake drills for state agencies. "Drop, cover, and hold" or other protective action is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. Voluntary drills will never be enough. State agencies are setting an example by conducting a drill annually. Requires state and local agencies, and private sector employers with 250 or more employees to hold annual drills instructing employees on earthquake emergency procedures.

**(OR-11) Oregon Senate Bill 14 (2001) Seismic Surveys for School Buildings:** Requires that the State Board of Education examine buildings used for both instructional and non-instructional activities, including libraries, auditoriums, and dining facilities, and that DOGAMI use the surveys to make an initial evaluation of each building in order to determine which buildings are in most need of additional analysis. Following the identification of high-risk buildings and additional analysis, high-risk buildings must be rehabilitated by January 1, 2032, subject to available funding. Senate Joint Resolutions 21 and 22 are bond measures (November 2002 election) which would provide funding to implement this proposed action. Subject to the provision of funding, the Oregon Department of Education and Oregon University System are to conduct seismic surveys of buildings that have a capacity of 250 or more and are routinely used for student activities. Requires the surveys to be completed by January 1, 2007, and provides that the surveys be conducted in accordance with FEMA publication, *Rapid Visual Screening of Buildings for Potential Seismic Hazards* (FEMA-154). Requires State Board of Education to examine buildings used for both instructional and non-instructional activities, including libraries, auditoriums, and dining facilities. It requires DOGAMI to use the surveys to make an initial evaluation of each building in order to determine which buildings are in most need of additional analysis. Following the identification of high-risk buildings and additional analysis, high-risk buildings must be rehabilitated by January 1, 2032, subject to available funding pursuant to Senate Joint Resolutions 21 and 22.

**(OR-12) Oregon Senate Bill 15 (2001) Seismic Surveys for Hospital Buildings:** Requires Oregon Health Division, subject to provision of funding from gifts, grants, and donations, to provide for seismic safety surveys of certain hospital buildings. Subject to available funding from gifts, grants, and donations, requires seismic safety surveys of fire stations and law enforcement facilities. Requires fire departments or districts, law enforcement agencies, and certain hospital facilities, after consultation with DOGAMI, to conduct additional seismic safety evaluations if fire department, fire districts, law enforcement agency or hospital facility considers further evaluations to be necessary. Requires entity using building to develop plan for seismic rehabilitation or other actions to reduce seismic risk for evaluated buildings that are found to pose undue risk. Requires rehabilitation or other actions to be completed by January 1, 2022. Provides that evaluations, plans and completion of rehabilitation or other actions to reduce seismic risk are required only if Legislative Assembly provides funding pursuant to Senate Joint Resolutions 21 and 22. Develop a plan to rehabilitate to operational readiness in the event of an earthquake essential hospital buildings, fire, and police stations that pose a threat to occupant safety. Senate Bill 15 of the 2001 Legislative Session requires that the Oregon Health Division, subject to provision of funding from gifts, grants and donations develop a plan for the seismic rehabilitation or other actions to reduce seismic risk for hospitals. Fire and police stations, which pose undue risk, will be identified through the efforts of one or more other agencies. It further requires that rehabilitation or other actions to be completed by January 1,

2022. SJR 21 and 22 are bond measures (November 2002 election) which would provide funding to implement this proposed action.

**(OR-13) Oregon Senate Bill 2 (2005) Statewide seismic needs assessment for schools and emergency facilities:** Directed Department of Geology and Mineral Industries (DOGAMI), in consultation with project partners, to develop a Statewide seismic needs assessment that included seismic safety surveys of K-12 public school buildings, community college buildings with a capacity of 250 or more persons, hospital buildings with acute inpatient care facilities, fire stations, police stations, sheriffs' offices and other law enforcement agency buildings. The Statewide needs assessment consisted of rapid visual screenings (RVS) of these buildings; results from the assessment can be viewed on DOGAMI's website at [www.oregongeology.com](http://www.oregongeology.com), and within each of the State's eight Regional Profiles and Natural Hazard Risk Assessments.

**(OR-14) Senate Bill 3 (2005) Seismic earthquake rehabilitation grant program:** Develop a grant program for seismic rehabilitation of eligible buildings as determined by Seismic Needs Program administrators.

**(OR-15) 2005 Senate Bill 4&5 State bond authorization:** Allows the State Treasury to sell Government Obligation Bonds to fund the Seismic Earthquake Rehabilitation Grant Program (Senate Bill 3-2005)

**(OR-16) The Oregon Land Use Planning Act (ORS 197):** Requires all of Oregon's cities and counties to have comprehensive land use programs. Those local land use programs must be in compliance with state standards known as the Statewide Planning Goals (OAR 660-015). Land use decisions are then made at the local level in conformance with the local comprehensive land use programs approved by the state as meeting the Goals.

**(OR-17) Oregon Administrative Rule 345-022-0020-Energy Facility Siting Council:** The Energy Facility Siting Council reviews proposed energy facilities for seismic vulnerability through its structural standard, Oregon Administrative Rule (OAR) 345-022-0020. This standard is a safety standard rather than a reliability standard. It ensures that structural failure at an energy facility will not endanger workers or the public. It does not require that energy facilities be proven to remain operable in a seismic event because the Council assumes that key safety facilities such as hospitals will have backup electricity. The standard requires that: The applicant, through appropriate site-specific study, has adequately characterized the site as to appropriate seismic design category and expected ground motion and ground failure, taking into account amplification during the maximum credible and maximum probable seismic events; The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable seismic events (as used in the rule, "seismic hazard" includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence); The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and the applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified. The Council reviews proposed energy facilities such as power plants, major electric transmission lines, major gas pipelines (greater than 16 inch diameter) for compliance with this standard. They do so in consultation with Oregon Department of Geology and Mineral Industries under an interagency

agreement. In response to an electricity shortage, the 2001 Oregon Legislature created an expedited review process for certain qualifying power plants. These power plants are generally not required to meet the structural standard; however, the Oregon Office of Energy, in consultation with Oregon Department of Geology and Mineral Industries, can still impose conditions on these plants related to the structural standard.

**(OR-18) Executive Order 08-20:** Establishes the Governor’s Emergency Recovery Framework. The Order established a Recovery Planning Cell to direct emergency recovery in Oregon during times of significant crisis. The Order also established the Governor’s Recovery Cabinet to coordinate the next phase of on-going recovery efforts, after the initial response phase is complete.

#### State Programs

**(OR-19) Western States Seismic Policy Council (WSSPC)-Oregon Member State.** The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

**(OR-20) Cascadia Region Earthquake Workshop (CREW):** Washington Member state. A coalition of private and public representatives working together to improve the ability of Cascadia Region communities to reduce the effects of earthquakes. Among the goals of the organization is fostering productive linkages between scientists, critical infrastructure providers, businesses and governmental agencies to improve the viability of communities after an earthquake.

## Pennsylvania

### State Policies

**(PA-1) Pennsylvania’s Emergency Management Service Code, Title 35:** Covers PEMA’s overall legal responsibilities for emergency management. PA CS Title 35 Section 7102 defines emergency management as “the judicious planning, assignment and coordination of all available resources in an integrated program of prevention, mitigation, preparedness, response and recovery for emergencies of any kind, whether from attack, manmade or natural sources”. Section 7311 establishes that PEMA was created “to assure prompt, proper and effective discharge of basic Commonwealth responsibilities relating to civil defense and disaster preparedness, operations and recovery. Title 35 addresses PEMA’s responsibilities before, during and after disaster.

**(PA-2) The Pennsylvania Municipalities Planning Code Act of 1968, P.L. 805, No. 247 (Act 247):** Grants authority to boroughs, townships, and counties to individually or jointly prepare zoning, subdivision and land development ordinances, other ordinances, and official zoning maps. Zoning ordinances allow for local communities to regulate the use of land in order to protect the interest and safety of the general public. Zoning ordinances can be designed to address unique conditions or concerns within a given community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development and/or require land development to consider specific hazard vulnerabilities. Subdivision and land development ordinances are intended to regulate the development of housing, commercial, industrial or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Within

these ordinances, guidelines on how land will be divided, the placement and size of roads and the location of infrastructure can reduce exposure of development to hazard events Act 247 also requires counties to create and adopt a comprehensive plan and encourages municipalities to adopt municipal or joint municipal comprehensive plans generally consistent with the county comprehensive plan. Comprehensive Plans promote sound land use and regional cooperation among local governments to address planning issues. These plans serve as the official policy guide for influencing the location, type and extent of future development by establishing the basis for decision-making and review processes on zoning matters, subdivision and land development, land uses, public facilities and housing needs over time.

**(PA-3) The Pennsylvania Construction Code Act (Act 45 of 1999):** Established the basic requirements for the Uniform Construction Code. Vulnerability to various natural and human-made hazard events is reduced through these requirements. Uniform Construction Code (UCC), a comprehensive building code that establishes minimum regulations for most new construction, including additions and renovations to existing structures. Municipalities are required to adhere to the UCC and enforce building code regulations for all building permits. The 2006 International Codes issued by the International Code Council are currently in use under the UCC.

**(PA-4) Executive Order 1999-1-**provides the basis for integrating hazard mitigation into comprehensive and land use planning. Comprehensive Land Use Plans define how and where a community, region, or area should be developed. Land use plans also often include an assessment and associated mapping of the respective area's vulnerability to location-specific hazards. PEMA's participation in this process assists in the integration of mitigation strategies into the goals and objectives of the land use planning process.

## Rhode Island

### State Policies

**(RI-1) Rhode Island General Laws § 30-15-5 Emergency management preparedness agency created** - There is hereby created within the executive department, the Rhode Island emergency management agency (hereinafter in this chapter called the "agency"), to be headed by the adjutant general of the Rhode Island national guard who shall be appointed by and serve at the pleasure of, the governor, and who shall be in the unclassified service. The adjutant general may employ such technical, clerical, stenographic, and other personnel, all of whom shall be in the classified service, and may make such expenditures within the appropriation therefor, or from other funds made available for the purposes of this chapter, as may be necessary to carry out the purposes of this chapter, consistent with other applicable provisions of law. The agency may provide itself with appropriate office space, furniture, equipment, supplies, stationery, and printing. The adjutant general, subject to the direction and control of the governor, shall be the executive head of the agency, and shall be responsible to the governor for carrying out the program for disaster preparedness of this state. The adjutant general shall coordinate the activities of all organizations for disasters within the state, and shall maintain liaison with and cooperate with disaster agencies and organizations of other states and of the federal government. The adjutant general shall have such additional authority, duties, and responsibilities authorized by this chapter as may be prescribed by the governor.

**(RI-2) DOA Comprehensive Planning and Land Use Act (R.I.G.L. 45-22.2)**-This act requires local governments to adopt and maintain local comprehensive plans. The plans can be used to direct community land use decisions and capital improvement funding strategies. Under the Act, local plans must be reviewed for consistency with the State Guide Plan and the goals and policies of State agencies. Future updates of local comprehensive plans will be expected to address hazard mitigation in order to be consistent with this State Guide Plan Element. The State Guide Plan and all policies relating to hazard mitigation have proven to be very effective in helping communities implement local hazard mitigation policies, programs and projects through their local community comprehensive plans as mandated by the State Guide Plan. Provides another mechanism to integrate State Hazard Mitigation Plan with local plans, and also more opportunities to enforce mitigation actions through the comprehensive local plans.

**(RI-3) State Building Commission, Building Code (R.I.G.L. 23-27.3, 1976)**-RI. Building Code is implemented statewide and enforced through the building official in each city and town. The Code consists of uniform regulations to control construction, reconstruction, repair, removal, demolition, and inspection of all buildings. Section 1313.0 contains most of the NFIP construction requirements. The NFIP standards, wind and snow loads are all an integral part of the State building code ensuring that all new construction and substantial improvements meet national flood resistant standards. Communities have enacted stricter standards under their local floodplain ordinances. **Seismic design standards are advisory.**

The effective date of the original implementation of the Rhode Island State Building Code was July 1, 1977, following adoption of the concept of uniform regulations to control construction, reconstruction, repair, removal, demolition, and inspection of all buildings in the state. (GL, 23-27.3) The Rhode Island building code incorporates provisions of BOCA (Building Officials and Code Administrators International, Inc.) the basic national Building Code with changes and additions as adopted by the State of Rhode Island Building Code Standards Committee. BOCA consists of model building regulations for the protection of public health, safety and welfare. The chief executive of each city and town is required to appoint a Building Official to administer the Building code; two or more communities may join in the appointment of a building official. The Code stipulates that the building official review all permits for construction in flood hazard areas to ascertain that all required federal, state, and local permits have been obtained. BOCA provisions for earthquake loads are contained in the State Building Code "for reference only." **The State Building Code Standards Committee reserves the right to require the earthquake design provisions for any structure. Structures which shall require earthquake design are as follows: fire stations, hospitals, police stations, high hazardous structures, and elevated structures over 6 stories or 75 feet in height.**

**(RI-4) Rhode Island Executive Order 98-13**-On December 18, 1998, Governor Lincoln Almond signed an Executive Order designating Rhode Island as the first Showcase State for Natural Disaster Resistance and Resilience in the country. The Governor's Showcase State Executive Order provides a comprehensive framework for public and private stakeholder collaboration on natural disaster protection. The Rhode Island Emergency Management Agency (RIEMA), the Institute for Business & Home Safety (IBHS), the Region I Office of the Federal Emergency Management Agency (FEMA), public and private partners have all been collaborating to prevent injuries and deaths, protect public and private property and create a disaster-ready statewide economy. The goal is to make natural hazards loss reduction an integral part of everyday planning and decision-making in Rhode Island at the state and local government levels.

The first of 14 Showcase elements charges the state, under the leadership of RIEMA, to "identify state agencies and private sector entities responsible for implementing actions in each of the areas" and to develop a strategic plan. As a result, a Showcase State Steering Committee, led by RIEMA and comprised of a variety of state agencies and private sector representatives, was formed and met three times in 1999 to develop a strategic plan. Steering committee members represent agencies or organizations that have a mission, authority and accountability that encompass one or more of the 14 elements of the Showcase State Executive Order. Each Showcase element adds a critical piece to the collective, comprehensive effort - an endeavor which will create its own momentum to raise public awareness, concern and activity to make Rhode Island a safer place in which to live, work and play.

## South Carolina

### State Policies

**(SC-1) Executive Order 99-11**-This executive order established the Interagency Coordinating Committee (ICC) and mandated it be responsible for developing and maintaining the State Hazard Mitigation Plan.

**(SC-2) Regulation 58 Division of Public Safety Programs, SC Code of Regulations**- Describes the requirements for state and local jurisdictions regarding establishment of Emergency Preparedness organizations.

**(SC-3) South Carolina Local Government Comprehensive Planning Enabling Act of 1994 (Title 6, Chapter 9 of the South Carolina Code of Laws)** - gave local governments the authority to adopt and update comprehensive plans. These plans contain the planning process that examines an inventory of existing conditions, a statement of needs and goals, and implementation strategies with time frames. To accomplish this, the plan contains population, economic development, natural resources, cultural resources, community facilities, housing, and land use elements. Thus, comprehensive plans provide an important vehicle to address hazards. Adoption of comprehensive plans gives a community the authority to enact zoning and land use ordinances. An important addition to the plan includes the inclusion of mitigation-related activities into comprehensive plans. In addition, the plans state that counties and municipalities should try to identify innovative ways to use existing planning requirements to reduce future disaster losses.

**(SC-4) Building Codes**-Building codes are regulations developed by recognized agencies establishing minimum building requirements for safety such as structural requirements for wind, earthquake, flood, and fire protection. Building codes address acceptable design standards. The South Carolina Building Code Council reviews and adopts acceptable building codes. In February 2007, the Building Code Council updated the mandatory and permissive building codes to reflect the new International Code series. The Building Codes Council registers all code enforcement officials in the state to verify the credentials of those performing these duties.

**(SC-5) South Carolina Code of Laws Title 10, Chapter 7:** Provides authority for the South Carolina State Budget and Control Board to operate and manage the Insurance Reserve Fund. The Fund provides insurance to governmental entities. Because South Carolina has significant hurricane and earthquake exposures, all Insurance Reserve Fund property insurance policies include coverage for



wind, flood, and earthquake. All Insurance Reserve Fund liability policies are designed to meet the needs of governmental entities and to comply with applicable statutes.

## South Dakota

### State Policies

**(SD-1) County Planning and Zoning-**Within South Dakota's Codified Laws Title 11 Chapter 2 allows counties to develop comprehensive plans and adopt zoning ordinances. The purpose of a comprehensive plan is for "protecting and guiding the physical, social, economic, and environmental development of the county..". Similarly, the purpose of a zoning ordinance is "promoting health, safety, or the general welfare of the county". While these are not required, through this statute the State has empowered local governments to implement regulations consistent with hazard mitigation priorities. The statute may be viewed in detail at <http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=11-2>.

**(SD-2) Executive Order 2007-07-**On April 4, 2007, Governor M. Michael Rounds signed Executive Order 2007-07 directing the establishment of the South Dakota Hazard Mitigation Team and authorizing this team to function in compliance with the responsibilities specified in the order. The core leadership of the State Hazard Mitigation Team consists of one representative from each of the departments and offices listed in the executive order and in Table 2-1. The planning process involved several meetings of the State Hazard Mitigation Team, a series of regional stakeholder meetings, many conference calls among team members and the contracted consulting staff, as well as, communication via e-mail and digital data sharing. A summary of the meetings and collaboration is presented in Table 2-2: Summary of Planning Process. Based on the collaboration among SDOEM, the SHMT, and the contracted consultants, Dewberry was able to draft a complete updated 2007 State of South Dakota Multi-Hazard Mitigation Plan for review and edit by the project team, SHMT, and regional stakeholders. Each section of the plan was reviewed, analyzed and thoroughly updated.

**(SD-3) Building Codes and Regulations (South Dakota Codified Laws Title 11 Chapter 10)** -The State does not regulate local building. This is regulated by the local jurisdictions through building permits. The State of South Dakota has approved the International Building Code and the International Fire Code for local adoption. Several jurisdictions have adopted International Codes since the year 2000. The International Code Council tracks code adoption for the State, as well as jurisdictions in South Dakota: <http://www.iccsafe.org/government/adoption.html>. As of the 2007 State of South Dakota Multi-Hazard Mitigation Plan update, the following jurisdictions have adopted the International Building Code and the International Residential Code among other International Codes: Aberdeen, Fort Pierre, Hot Springs, Hughes County, Huron, Lead, Mitchell, Pierre, Rapid City, Sioux, Sioux Falls, Spearfish, Whitewood, and Winner.

**(SD-4) Emergency Management (South Dakota Codified Laws Title 33 Chapter 15)** - In order to ensure that preparation of this state will be adequate to deal with an emergency or disaster, and to provide for the common defense and to protect the public peace, health, and safety and to preserve the lives and property of the people of the state, it is hereby found and declared to be necessary to create a Division of Emergency Management, and to authorize the creation of local organizations for emergency management in the political subdivisions of the state; to confer upon the Governor, the secretary and upon the executive heads or governing bodies of the political subdivision of the state

the emergency powers provided by this chapter; to provide for the rendering of mutual aid among the political subdivisions of the state and with other states and to cooperate with the federal government for the carrying out of emergency management functions; and to cooperate with each association, authority, board, commission, committee, council, department, division, office officer, task force, or other agent of the state vested with the authority to exercise any portion of the state's sovereignty.

## Texas

### State Policies

#### **(TX-1) Texas Disaster Act of 1975-TEXAS GOVERNMENT CODE CHAPTER 418-Sections 102-104 -**

These sections discuss county, municipal, and inter-jurisdictional emergency management programs. One of the requirements articulated is that a county "shall maintain an emergency management program or participate in a local or inter-jurisdictional emergency management program that, except as otherwise provided by this chapter, has jurisdiction over and serves the entire county or inter-jurisdictional area." In addition, Section 106 states: "Each county shall prepare and keep current an emergency management plan for its area providing for disaster mitigation, preparedness, response, and recovery." GDEM requires that jurisdictions achieve and maintain the Advanced Standards (planning, training and exercises) outlined in the *DEM 100 – Preparedness Standards* to receive Emergency Management Performance Grant (EMPG) funding. One of the requirements is to have an Annex P – Hazard Mitigation that describes how they will do the function of hazard mitigation in their community. This at least requires the EMPG jurisdictions to address mitigation issues.

Note: Texas law does not give authority to counties for certain actions or enforcement activities such as zoning or to adopt and enforce building codes because there is no enabling legislation. Until authority and enabling legislation is granted to county government by the State legislature, county government can take no action to reduce risk to life and property (unless they are a participant in the National Flood Insurance Program and the property to be developed is located in the 100-year - floodplain). This means that counties cannot enact building and land management standards or use of zoning as a means to regulate development. A consequence of this is that minimal building standards are observed in rural areas while municipalities exercise complete authority to set higher standards for the protection of life and property. Frequent legislative attempts to modify enabling legislation to give county governments the authority to regulate zoning and to adopt building codes have never been successful. Many rural legislators are opposed to strong county governments and believe these measures should be retained at the State and municipality levels of government. That way they will have the authority to regulate development in hazard areas and have equal authority to reduce risks for rural and unincorporated communities.

## Utah

### State Policies

**(UT-1) Civil Defense Act of 1950-**Authorizes the creation of the Utah Civil Defense Agency (the predecessor to Utah HLS) and the development of a statewide civil defense program. Give Utah HLS statewide authority to coordinate emergency management activities statewide.

**(UT-2) Disaster Response Recovery Act, Utah Code 63-5A-** Assist state and local government to effectively provide emergency disaster response and recovery assistance.

**(UT-3) Utah Code Annotated Chapter 73 Geological and Mineral Survey-Section 68-73-6-**Objectives of Survey (1) Determine and investigate areas of geologic and topographic hazards that could affect the safety of, or cause economic loss to, the citizens of this state; (f) assist local and state government agencies in their planning, zoning, and building regulations functions by publishing maps, delineating appropriately wide special earthquake risk areas, and, at the request of state agencies, review the citing of critical facilities:

**(UT-4) Utah State Office of Education (USOE) Rule R277-455 Standards and Procedures for building plan review R277-455-4 Criteria for Approval;** to receive approval of a proposed building site, the local school district must certify that: Staff of the Utah Geologic Survey have reviewed and recommended approval of the geologic hazards report provided by the school districts geo-technical consultant.

**(UT-5) Emergency Management Act of 1981, Utah Code 53-2, 63-5.-**Establishes an emergency/disaster management system. Establishes Utah HLS. In Utah Code 53-2-104, it is stated that the Utah Division of Homeland Security shall prepare, implement, and maintain programs and plans to provide for: Prevention and minimization of injury and damage caused by disasters; Identification of areas particularly vulnerable to disasters; Coordination of hazard mitigation and other preventive and preparedness measures designed to eliminate or reduce disasters; Assistance to local officials in designing local emergency action plans; Coordination of federal, state, and local emergency activities; Coordination of emergency operations plans with emergency plans of the federal government; and Other measures necessary, incidental, or appropriate to this chapter.

**(UT-6) Utah Seismic Safety Commission Act-**The 13-member Utah Seismic Safety Commission (USSC) was established with the passage of **House Bill 358**, during the 1994 legislative session. In the 2000 legislative session, the **USSC Act was amended by HB200**. This amendment revised the membership of the Commission and added two additional seats. The USSC advises federal, state and local agencies and jurisdictions along with the private sector on earthquake-related policy and loss-reduction strategies. The objective of USSC is to: Review earthquake-related hazards and risk in Utah; Prioritize recommendations to identify and mitigate these hazards and risks; Prioritize recommendations for adoption as policy or loss reduction strategies; Act as a source of information for earthquake safety and promote loss reduction measures; Prepare a strategic seismic safety planning document, and Update the strategic-planning document and other supporting studies or reports. The USSC has compiled a report outlining a long-term plan to improve earthquake safety in the state of Utah entitled “A Strategic Plan for Earthquake Safety in Utah.”

**(UT-7) Utah Administrative Code Rule R156-56 Utah Uniform Building Standard Act Rule-** The State of Utah adopted the International Building Code IBC. By law, each jurisdiction in Utah must also adopt the IBC. This process has occurred in the majority of both urban and rural jurisdictions Utah. These higher design codes especially with regards to seismic design will greatly reduce damage to new buildings.

## State Programs

**(UT-8) Western States Seismic Policy Council (WSSPC)** - Utah Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## Vermont

### State Policies

**(VT-1) Vermont Statute V.S.A. Title 20-** Tasks Vermont Emergency Management with several responsibilities: 1. Create a state emergency management agency, and authorize the creation of local organizations for emergency management in towns and cities of the state; 2. Confer upon the governor and upon the executive heads or legislative branches of the towns and cities of the state the emergency powers herein; 3. Provide for the rendering of mutual aid among the towns and cities of the state, and with other states, and with the Federal government with respect to carrying out an emergency management functions; and 4. Authorize the establishment of such organizations and the taking of such steps as are necessary and appropriate to carry out the provisions of this chapter.

V.S.A. Title 20 created the division of Emergency Management within the Department of Public Safety and imparted the following responsibilities: 1. Prepare and maintain a Radiological Emergency Response Plan (RERP) in cooperation with other state and local agencies. The plan shall be designed to protect the lives and property of persons residing within this state who might be threatened as a result of the proximity to any operating nuclear reactor. The plan shall be formulated in accordance with procedures approved by the Federal Nuclear Regulatory cogency; 2. Assist the state emergency response commission, the local emergency planning committees and the municipally established local organizations...in developing, implementing, and coordinating emergency response plans; 3. Provide administrative support to the state emergency response commission.

**(VT-2) Title 24 V.S.A. Chapter 117: Vermont Municipal and Regional Planning and Development Act Chapter 117-§4302:** The overall purpose of this chapter is to encourage the appropriate development of all lands in Vermont. Appropriate development should include the promotion of safety against fire, floods, explosions, and other dangers. Specific goals furthered by this chapter include safe and energy efficient transportation systems, protection and preservation of important natural and historic features, sound forest and agricultural practices, wise and efficient use of energy and other natural resources, availability of safe housing, and an efficient system of public facilities and services. All plans and regulations should be based upon surveys of existing conditions and future trends with consideration for topography and suitability for particular use in relationship to surrounding areas.

**(VT-3) §4382: The Plan for a Municipality-**Municipal plans should include objectives to protect the environmental and objectives for future growth and development of the land, public services, and facilities. A land use plan should indicate areas proposed for various uses and open space reserved for flood plain, wetland protection, and other conservation purposes.

**(VT-4) §4405: Zoning; Zoning Districts-**Zoning can include classification for the regulation, restriction or prohibition of uses of structures at or near major thoroughfares, bodies of water, places of steep slope or grade, public buildings, floodplain areas, and other places having a special character or use affecting and affected by their surroundings.

**(VT-5) Vermont Fire Prevention & Building Code:** The Vermont Fire Prevention & Building Code (hereinafter the *code*) are the rules adopted under 21 VSA chapter 3, subchapters 7 & 8, to protect the public from harm arising from fire or dangerous structural conditions. The *code* is in effect statewide. Numerous nationally recognized codes & standards are adopted or referenced in the *code* to provide consistent regulations for both general and specific application. The *code* is updated approximately every six years.

**(VT-6) Municipal Code Adoption:** A municipality may adopt a fire or building code (see 24 V.S.A. chapter 83). Any building code adopted by a municipality must be consistent with the Vermont Fire Prevention & Building Code. A municipal building code may apply to owner occupied single-family dwellings in addition to public buildings & multifamily or rental dwellings. There are currently seven municipalities (Barre, Bellows Falls, Bennington, Brattleboro, Burlington, Hartford and Winooski) that have a co-operative inspection agreement to enforce portions of the *code*. Seismic Design Requirements: Structural design for seismic loads on new public buildings are regulated under section 1610 of the 1996 Building Code, as referenced under the *code*, and as determined by the building designer based on the nature of the occupancy, the type of construction, etc. Certification is required from the building designer indicating the building is designed to prevent normally anticipated unstable or dangerous conditions.

## Virginia

### State Policies

**(VA-1) The Code of Virginia § 44-146.17** allows the Governor to appoint an Emergency Coordinator to carry out all provisions of the Code of Virginia relating to emergency preparedness, response and recovery.

**(VA-2) The Code of Virginia § 44-146.22 Development of measures to prevent or reduce harmful consequences of disasters; disclosure of information-**specifically authorizes the Governor to consider hazard mitigation measures to prevent or reduce the harmful consequences of disasters. The Governor is expected to make recommendations to the General Assembly, local governments, and appropriate public and private entities. This Plan supersedes the hazard mitigation plan developed in 2001 and revised and approved in 2004 and March 14, 2007. It constitutes Volume 2, Support Annex 3 of the multi-volume *Commonwealth of Virginia Emergency Operations Plan*. In addition to disaster prevention measures included in state, local and inter-jurisdictional emergency operations plans the Governor shall consider on a continuing basis, hazard mitigation or other measures that could be taken to prevent or reduce the consequences of disasters. At his direction, and pursuant to any other authority, state agencies, including but not limited to, those charged with responsibilities in connection with floodplain management, stream encroachment and flow regulation, weather modification, fire prevention and control, air quality, public works, critical infrastructure protection, land use and land use planning, and construction standards, shall make studies of disaster prevention. The governor, from time to time, shall make recommendations to the

General Assembly, local governments, and other appropriate public and private entities as may facilitate measures for prevention or reduction of the harmful consequences of disasters. The Governor or agencies acting on his behalf may receive information, voluntarily submitted from both public and nonpublic entities, related to the protection of the nation's critical infrastructure sectors and components that area located in Virginia or affect the health, safety and welfare of the citizens of Virginia. Information submitted by any public or nonpublic entity in accordance with the procedures set forth in subdivision 4 of §2.2-3705.2 shall not be disclosed unless: It is requested by law-enforcement authorities in furtherance of an official investigation of a criminal act; The agency holding the record is served with proper judicial order; or The agency holding the record has obtained the written consent to release the information from the entity voluntarily submitting it. (1973, c. 260; 1974, c. 4; 1975, c. 11; 2000, c. 309; 2003, c. 848; 2004, c.690.)

**(VA-3) 2005 Uniform Statewide Building Code** includes provisions related to wind hazards, snow loads, seismic risk flood hazards, and structural fire hazards. The Uniform Statewide Building Code, in partnership with the International Code Commission, incorporated the 2003 International Building Code into its November, 2005 adoption which supersedes previous building codes and regulations (**§36-98, Code of Virginia**). The code has been cross-walked with the National Flood Insurance Program regulations and is consistent with local floodplain ordinances. The State Building Code Official provides technical assistance and interpretation of regulations to local governments. Periodic revision of the statewide building code usually includes adoption of the current International Building Code along with other state-specific regulations. This most recent adoption, provided wind strengthening measures that will reduce damages from severe storms and hurricanes. Although there is some variation on predicted earthquake severity, Virginia building codes do not specifically address earthquake because of the low probability for structure-damaging earthquakes in Virginia. The minimum typical design standards in Virginia provide adequate protection from infrequent earthquakes in the state. **Uniform Statewide Building Code – 201.5(b)(3)(iv)**-Title 36, Chapter 6 of the Commonwealth *Code of Virginia* was created in 1972 to address regulation of construction. The current building code required for use by all Virginia cities has an effective date of November 16, 2005. The Virginia Uniform Statewide Building Code is a state regulation promulgated by the Virginia Board of Housing and Community Development to establish minimum regulations to govern construction and maintenance of buildings and structures. The provisions of the code are based on nationally recognized International Code Commission standards. The November 16, 005USBC updates the Virginia Uniform Statewide Building Code to the 2003 International Building Code with state amendments. The staff of the Department of Housing and Community Development promulgated the code through notification in *The Virginia Register of Regulations*. Virginia cities, counties and towns are required by the *Code of Virginia* to adopt and enforce the Uniform Statewide Building Code.

**(VA-4) Virginia Certification Standards (VCS 13 VAC 5 – 21)** -The Training and Certification Office (TCO) within DHCD's Division of Building and Fire Regulation works to ensure safe buildings and homes throughout the commonwealth by providing its clients with four major services: Training; Certification; Accreditation; and *Code Connection* Newsletter. Training is provided as mandated by Virginia Certification Standards (VCS 13 VAC 5 – 21) through DHCD's Virginia Building Code Academy (VBCA). VBCA offers training in the following modules to help ensure safe buildings and homes: Core, Advanced Official, Property Maintenance, Plan Review, Mechanical Inspection, Electrical Inspection, Plumbing Inspection, Building Inspection, and Amusement Device Inspection. The focus of VBCA training programs is on the populations that enforce the USBC, SFPC, and VADR.

Specifically, VBCA programs are designed for individuals employed by local jurisdictions in Virginia in the occupations of building code official, fire code official, maintenance code official, and their technical assistants/inspectors in the disciplines of mechanical, electrical, plumbing, building, property maintenance, elevator, and amusement device inspection.

**(VA-5) Comprehensive Plans** are prepared by local government planning commissions and address the physical development of land within a jurisdiction's boundaries. The comprehensive plan *shall be made with the purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the territory which will, in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare of the inhabitants (§15.2-2223, Code of Virginia)*. Most plans evaluate and provide guidance for land use and the environment. Residential, business, industrial, agricultural, parks and open space, public land, floodplains, transportation corridors, community facilities, historical districts and areas targeted for redevelopment are addressed within the plan. Also included are demographic trends such as population densities and age and quality of housing stock. Comprehensive plans are revised on a five-year planning cycle by local governments; VDEM mitigation planners will work with local and regional mitigation planning steering committees and local government contacts to ensure that appropriate hazard mitigation local HIRA data and mitigation strategies are incorporated into local comprehensive plans as appropriate.

**(VA-6) Zoning Ordinances** are for the general purpose of promoting health, safety or general welfare of the public. Comprehensive plans and ordinances for zoning and subdivisions must explicitly address flood hazards and geologic information (§15.2.223 et seq. *Code of Virginia*). Cities and counties in coastal zones also must address coastal management issues such as beach erosion and federally protected dune areas. Hazards not specifically required for plans to address include: non-building aspects of severe winter storms, landslides, wildfire at the urban/forest interface, and dam-break hazards. However, these natural hazards are usually addressed in local comprehensive plans and in some cases, such as dams, delineation of downstream inundation zones are required in dam emergency operation plans. In addition, local emergency operations plans address natural hazards. Some consideration to the following is given within each zoning district, where applicable: adequate light, air, convenience of access, and safety from fire, flood, crime and other dangers; provision of adequate police and fire protection, disaster evacuation, water, sewerage, flood protection, and other public requirements; and Protection against loss of life, health, or property from fire, flood, panic or other dangers (§15.2-2283, *Code of Virginia*).

**(VA-7) Land Subdivision and Development Ordinances** are prescribed by statute and provide restrictions for plats, utilities, streets, flood control, drainage, and other regulations that control the density and use of the land. (§15.2-2241, *Code of Virginia*). These ordinances are generally only in place in rapidly developing or redeveloping jurisdictions. As with local comprehensive plans, revision of land subdivision and development ordinances should now be informed by jurisdiction HIRA information as well as relevant mitigation strategies outlined in local or regional mitigation plans.

**(VA-8) Executive Order 7 (2002)** declares that all executive branch agencies prepare, within 120 days, emergency response plans or updates to existing plans that address continuity of their operations and services, and the security of their customers and employees, in the event of natural or man-made disasters or emergencies, including terrorist attacks. These agency plans shall be presented to the Office of the Governor and shall be made available to the Panel as part of its work in preparing a statewide emergency preparedness, response, and recovery plan.

**(VA-9) Executive Order 69 (2004)** declares that all executive branch agency heads certify by June 1, 2004 that they have completed updates and/or development of plans that address continuity of their operations and services, and the security of their customers and employees, in the event of natural or man-made disasters or emergencies, including terrorist attacks. It further directs that all executive branch agencies exercise and test these plans on or before September 1, 2005.

## Washington

### State Policies

**(WA-1) Growth Management Act** – This state law (**RCW 36.70A**) requires all cities, towns and counties in the state to identify critical areas, and to establish regulations to protect and limit development in those areas. Among the critical areas defined by state law are frequently flooded areas (floodplains, and areas potentially impacted by tsunamis and high tides driven by strong winds) and geologically hazardous areas (those areas susceptible to erosion, landslide, seismic activity, or other geological events such as coalmine hazards, volcanic hazard, mass wasting, debris flows, rock falls, and differential settlement).

Guidance provided to local government states that critical areas protection programs should address a number of issues, including: Protecting members of the public, public resources and facilities from injury, loss of life, or property damage due to landslides and slope failures, erosion, seismic events, volcanic eruptions, or flooding; Maintaining healthy, functioning ecosystems through the protection of unique, fragile, and valuable elements of the environment; Directing activities not dependent on critical areas resources to less ecologically sensitive sites, and mitigating unavoidable impacts to critical areas by regulating alterations in and adjacent to those areas; and Preventing cumulative adverse environmental impacts to frequently flooded areas.

Since 1995, local governments must consider best available science in their identification and protection of critical areas; a catalog of sources of best available science has been prepared for their use. (Note: Initial critical area regulations, developed in the early 1990s, were not prepared to the best available science standard.) Legislation passed in 2003 requires cities, towns and counties to review and revise as necessary their critical areas policies every seven years. All jurisdictions are required to have updated critical areas regulations by the end of 2008.

The GMA also allows those cities, towns and counties required or voluntarily choosing to develop comprehensive plans to add an optional natural hazard reduction element to those plans. To facilitate the development of natural hazard reduction elements, the Department of Community Trade and Economic Development – Growth Management Services used an HMGP grant to develop and publish a guidebook on how to incorporate natural hazard reduction into local land-use plans.

**(WA-2) Earthquake Construction Standards (RCW 70.86)**-Approved in 1955. Requires newly constructed schools, hospitals, and places of public assembly to withstand a lateral force of 5 percent of the building weight. Law did not keep up with changes in code criteria; outdated by time 1973 building codes adopted. Remains on the books.

**(WA-3) State Building Code Act (RCW 19.27)**-Adoption of building codes initially was the discretion of individual cities and counties. Passage of the State Building Code Act in 1974 mandated the use of



1973 UBC building codes throughout the state. Since this time, local jurisdictions can make amendments to the code but changes cannot diminish code requirements.

The State Building Code Council now adopts building, fire and mechanical codes for the state of Washington. These codes set minimum performance standards for buildings. The council amends the codes to meet state needs, but only if changes improve upon the original codes. The council adopted and amended the 2003 editions of the International Code Council building, residential, mechanical and fire codes published by the International Code Council, and the 2003 edition of the Uniform Plumbing Code published by the International Association of Plumbing and Mechanical Officials. The council also amended the state energy code. Adoption of 2003 building, mechanical, fire, and plumbing codes brings Washington State's building codes to the highest level nationwide and they address the state's seismic hazard.

The Legislature approved in 2003 the use of a new suite of international building, mechanical and fire codes that address natural hazards as a basis for design and construction in Washington, including the design and construction of state-sponsored mitigation projects. The State Building Code Council (SBCC) adopted these new codes, which then took effect statewide in July 2004. In November 2006 the Council voted to adopt amendments to the codes which took effect July 1, 2007. These amendments included the 2006 International Codes, including building, residential, mechanical, fire and uniform plumbing codes and included provisions for structural design including earthquake loads and flood hazards. Local amendments to the code adopted by the SBCC must meet or exceed the minimum performance set by the state code and when affecting 1- to 4-unit residential buildings, must be approved by the SBCC. The code applies to all building permits in the state of Washington. The building codes are driven in part by soils and liquefaction maps prepared by the DNR (paid for in part by HMGP funds provided following the Nisqually Earthquake disaster in 2001).

Before adoption of a statewide building code in 1974, there was a wide variation of minimum standards, as well as variation in use of requirements to address hazards including earthquake and winter storm. The state building code is updated regularly to account for new knowledge of hazards and changes in construction methods and materials, and to incorporate new designs and technologies. Despite 30 years of uniform building codes, consistent enforcement remains a problem. Local building departments are responsible for enforcing federal, state and local codes related to building construction projects. A study of structural failures following the December 1996 – January 1997 winter storms recommended more education and better communication for all parties involved in construction of buildings, including construction plans examiners and local building inspectors.

State amendments to the 2003 building codes drafted in 2006 took effect July 1, 2007. All structures built after that date must comply with the new building codes, which includes provisions for the state's seismic hazard.

**(WA-4) RCW 38.52.040 Emergency Management Council**-There is hereby created the emergency management council (hereinafter called the council), to consist of not more than seventeen members who shall be appointed by the governor. The membership of the council shall include, but not be limited to, representatives of city and county governments, sheriffs and police chiefs, the Washington state patrol, the military department, the department of ecology, state and local fire chiefs, seismic safety experts, state and local emergency management directors, search and rescue

volunteers, medical professions who have expertise in emergency medical care, building officials, and private industry. The representatives of private industry shall include persons knowledgeable in emergency and hazardous materials management. The council members shall elect a chairman from within the council membership. The members of the council shall serve without compensation, but may be reimbursed for their travel expenses incurred in the performance of their duties in accordance with RCW [43.03.050](#) and [43.03.060](#) as now existing or hereafter amended.

The emergency management council shall advise the governor and the director on all matters pertaining to state and local emergency management. The council may appoint such ad hoc committees, subcommittees, and working groups as are required to develop specific recommendations for the improvement of emergency management practices, standards, policies, or procedures. The council shall ensure that the governor receives an annual assessment of statewide emergency preparedness including, but not limited to, specific progress on hazard mitigation and reduction efforts, implementation of seismic safety improvements, reduction of flood hazards, and coordination of hazardous materials planning and response activities. The council or a subcommittee thereof shall periodically convene in special session and serve during those sessions as the state emergency response commission required by P.L. 99-499, the emergency planning and community right-to-know act. When sitting in session as the state emergency response commission, the council shall confine its deliberations to those items specified in federal statutes and state administrative rules governing the coordination of hazardous materials policy. The council shall review administrative rules governing state and local emergency management practices and recommend necessary revisions to the director.

**(WA-5) The Transportation Partnership Act of 2005**-Bridges and roads all over Washington pose a public safety risk if not fixed. The Alaskan Way Viaduct and the 520 floating bridge are a tremor away from shutdown or collapse. Should either of these structures fail, the loss of life and disruption to our economy would be devastating. Across the state, 139 bridges have load restrictions because they're old and damaged, and need to be replaced. Another 800 bridges need "seismic retrofits": they need to be shored up so their columns and foundations don't crumble in an earthquake. Other work is needed to preserve many of our bridges, rather than replace them later at a higher cost. The Nickel Package funded seismic retrofits for a number of the state's most vulnerable bridges, whose columns need to be encased in steel to keep them from collapsing in an earthquake. But nearly 800 more bridges remain on the retrofit list. This package provides \$87 million to speed up work on 157 of the most vulnerable bridges in earthquake zones.

**(WA-6) RCW 43.92.025 – Geologic Survey Seismic, landslide and tsunami hazards** - In addition to the objectives stated in RCW [43.92.020](#), the geological survey must conduct and maintain an assessment of seismic, landslide, and tsunami hazards in Washington. This assessment must include the identification and mapping of volcanic, seismic, landslide, and tsunami hazards, an estimation of potential consequences, and the likelihood of occurrence. The maintenance of this assessment must include technical assistance to state and local government agencies on the proper interpretation and application of the results of this assessment

**(WA-7) WAC 365-190-120 Critical Areas-Geologically Hazardous Areas**-Geologically hazardous areas include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard. Some geological hazards can be reduced or mitigated by engineering, design, or modified construction or mining practices so that risks to public

health and safety are minimized. When technology cannot reduce risks to acceptable levels, building in geologically hazardous areas must be avoided. The distinction between avoidance and compensatory mitigation should be considered by counties and cities that do not currently classify geological hazards, as they develop their classification scheme.

Seismic hazard areas must include areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement or subsidence, soil liquefaction, surface faulting, or tsunamis. Settlement and soil liquefaction conditions occur in areas underlain by cohesionless soils of low density, typically in association with a shallow ground water table. One indicator of potential for future earthquake damage is a record of earthquake damage in the past. Ground shaking is the primary cause of earthquake damage in Washington, and ground settlement may occur with shaking. The strength of ground shaking is primarily affected by: The magnitude of an earthquake; The distance from the source of an earthquake; The type or thickness of geologic materials at the surface; and The type of subsurface geologic structure.

## State Programs

**(WA-8) Earthquake Program**-Provides coordination and oversight of seismic safety programs, supports public education and mitigation planning, and provides tools to support seismic hazard reduction.

**(WA-9) Cascadia Region Earthquake Workshop (CREW):** Washington Member state. A coalition of private and public representatives working together to improve the ability of Cascadia Region communities to reduce the effects of earthquakes. Among the goals of the organization is fostering productive linkages between scientists, critical infrastructure providers, businesses and governmental agencies to improve the viability of communities after an earthquake.

**(WA-10) Western States Seismic Policy Council (WSSPC)**-Washington Member State. The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

## West Virginia

### State Policies

**(WV-1) WV Code §§ 15-5**-Under WV Code § 15-5-1, the West Virginia legislature has declared that in order to ensure the state's preparedness for disasters, it is necessary to establish and implement a comprehensive emergency service plan. This Hazard Mitigation Plan meets this requirement and furthers the policy of WV Code § 15-5, that "all emergency services functions of this state be coordinated to the maximum extent with the comparable functions of the federal government including its various departments and agencies, of other states and localities and of private agencies of every type, so that the most effective preparation and use may be made of the nation's manpower, resources and facilities for dealing with any disaster that may occur" (WV Code § 15-5-1).

The West Virginia legislature created and empowered the Office of Emergency Services, now the WVDHSEM, through enactment of WV Code § 15-5-3. Under this section, the director of WVDHSEM, subject to the direction and control of the governor, is responsible to the governor for carrying out the program for emergency services in West Virginia. The director is required to coordinate the activities of all organizations for emergency services within the state and maintain liaison with and cooperate with emergency service and civil defense agencies and organizations of other states and of the federal government. Further, the governor may grant the director additional authority, duties, and responsibilities authorized by WV Code § 15-5 (WV Code § 15-5-3). WV Code § 15-5-4 establishes the Disaster Recovery Board. This entity was created to advise the governor and the director (of WVDHSEM) on all matters pertaining to emergency services; to disburse funds from the disaster relief recovery trust fund created pursuant to WV Code § 15-5-24 to any person, political subdivision, or local organization for emergency services; and to take such other actions necessary or appropriate in order to provide assistance to any person, political subdivision or local organization for emergency services responding to or recovering from the disaster, or otherwise involved in disaster recovery activities (WV Code §§ 15-5-4 & -5).

Further, under WV Code § 15-5-5(2), the Governor is empowered to prepare and implement a comprehensive plan and program for the provision of emergency services in West Virginia, such as this Hazard Mitigation Plan, and to integrate this plan into and to coordinate the plan with comparable plans of the federal government and of other states to the fullest possible extent (WV Code § 15-5- 5(2)). Under WV Code § 15-5-5(3), in accordance with a comprehensive plan such as this Hazard Mitigation Plan, the Governor is authorized to procure supplies and equipment, to institute training and public information programs, to take all other preparatory steps in advance of actual disaster (WV Code § 15-5-5(3)). Under WV Code § 15-5-5(4), the Governor is empowered to make such studies and surveys of industries, resources and facilities in this state as may be necessary to ascertain the capabilities of the state for providing emergency services and to plan for the most efficient emergency use thereof (WV Code § 15-5-5(4)). The studies contained in this Hazard Mitigation Plan have been undertaken pursuant to this authority and pursuant to Executive Order 18-03.

Finally, under WV Code § 15-5-20(a), “the governor shall consider on a continuing basis, steps that could be taken to prevent or reduce the harmful consequences of disasters. At his direction, and pursuant to any other authority and competence they have, state agencies, including, but not limited to, those charged with responsibilities in connection with flood plain management, stream encroachment and flow regulation, weather modification, fire prevention and control, air quality, public works, land use and landuse planning and construction standards, shall make studies of disaster prevention-related matters. The governor, from time to time, shall make such recommendation to the Legislature, political subdivisions and other appropriate public and private entities as may facilitate measures for prevention or reduction of the harmful consequences of disasters.” (WV Code § 15-5-20(a)) Many of the recommendations contained in this plan are made pursuant to WV Code § 15-5-20(a).

**(WV-2) Executive Order No. 18-03**-On August 18, 2003, former Governor Bob Wise signed Executive Order No. 18-03. This Order recognizes that the State of West Virginia is vulnerable to natural and technological disasters and that compliance with the DMA 2000 will position the State of West Virginia to receive pre-disaster and post-disaster mitigation funding which can help reduce the impact of future disaster events. Executive Order No. 18-03 created the “Hazard Mitigation Council”

which is empowered to implement a statewide initiative to improve disaster resistance through all-hazards mitigation planning. Under Executive Order No. 18-03, the Council is required to “demonstrate the benefits of taking specific, creative steps to help West Virginia communities reduce deaths, injuries and illnesses, property losses, economic losses, and human suffering caused by natural and technological disasters.”

In addition, under Executive Order No. 18-03, the WVDHSEM is responsible for: 1. Assisting in the creation of the Hazard Mitigation Council; 2. Completing and periodically updating a statewide risk and vulnerability assessment of the state’s natural and technological hazards; 3. Developing and maintaining a statewide all-hazards mitigation plan that takes into account the state’s mitigation priorities; 4. Assisting the Hazard Mitigation Council with developing partnerships resulting in a coordinated approach to all-hazards mitigation; 5. Encouraging communities to participate in the NFIP; 6. Developing and supporting existing and future programs to increase the public’s awareness of natural and technological hazards, including ways to reduce or prevent damage through a coordinated effort led by the Hazard Mitigation Council; 7. Encouraging the participation of industry, professional organizations, service organizations, voluntary agencies, the media, and the general public in this effort; and 8. Identifying existing incentives and disincentives for hazard reduction planning, and developing new incentives to further this effort.

**(WV-3) WV Code §29-3-5b. Promulgation of rules and statewide building code.**-As of September 2007, 60 cities and towns and five county governments have adopted the State Building Code to help ensure the safety of future buildings constructed in the jurisdiction. Some of the more rapidly growing areas (e.g. Berkeley County, Jefferson County, and the City of Hurricane in Putnam County) are among the jurisdictions that have adopted the State Building Code.

## Wisconsin

### State Policies

**(WI-1) Chapter 166, Emergency Management-** Authorizes and establishes the organization for state and local emergency management programs, which are charged with the responsibility to the state and its subdivisions to cope with natural and technological disasters. Includes authorization for Wisconsin Emergency Management to require satisfactory completion of an annual plan of work from local county emergency management directors in return for receiving partial funding from the state for local emergency management positions.

**(WI-2) Wisconsin State Statute 66.1001, Comprehensive Planning Law:** After January 1, 2010, communities are required to have a comprehensive plan if they want to make land use decisions. All community programs and actions that affect land use must be guided by, and consistent with, the community’s comprehensive plan.

**(WI-3) The Home Safety Act-**covered the entire state by January 1, 2005. This legislation requires the state’s Uniform Dwelling Code be enforced throughout the state. This includes the necessity to have all new construction inspected for compliance with the UDC. This law will improve the construction of homes, by requiring implementation of safety standards. The effect will be a reduction in loss of property and injury from all types of natural hazards.

Requires the state's Uniform Dwelling Code be enforced in all municipalities. This includes the necessity to have new construction inspected for compliance with the UDC, the statewide building code for one and two-family dwellings built since June 1, 1980. Previous to the new legislation, municipalities with a population of 2500 or less could choose by resolution to decline UDC enforcement. Municipalities of over 2500 have been required to enforce the UDC. The change was effective December 18, 2003. However, it will take three to six months to get the enforcement system into place. On April 20, Governor Doyle signed legislation, AB 925 that will delay Uniform Dwelling Code (UDC) enforcement for some Wisconsin municipalities. The delay will be in effect May 5, after legal publication. Providing for adequate inspection and consultation is limited due to funding.

**(WI-4) Wisconsin Administrative Code Comm. 61-65 (Wisconsin Commercial Building Code)**-The Wisconsin Enrolled Commercial Building Code includes Comm. 61 to 65 and the adopted provisions of the International Code Council codes: *International Building Code, International Energy Conservation Code, International Mechanical Code, and International Fuel Gas Code*. The purpose of the Commercial Building Code is to protect the health, safety, and welfare of the public and employees by establishing minimum standards for the design, construction, maintenance and inspection of public buildings, including multifamily dwellings, and places of employment. It is a statutory provision under subch. I of ch. 101, Stats. Ongoing code review and development is based on supportive funding.

**(WI-5) Wisconsin State Statute 101.12 Delegated Municipalities**-Cities, villages, towns and counties may examine building plans and inspect buildings under s. 101.12, Stats. Prior to assuming these responsibilities, the municipality or county must comply with specific administrative rules that ensures there is uniformity in the building code application and the specific building code standards are being met. Safety & Buildings provides opportunities for partnering with other governmental agencies to extend the effectiveness of division programs and administering funds relating to its programs.

## Wyoming

### State Policies

**(WY-1) The Wyoming Homeland Security Act, Wyoming Statute § 19-13-101 et seq.** Each political subdivision through the homeland security program will cause to be prepared a local homeland security plan which will include actions essential to the recovery and restoration of the economy by supply and re-supply of resources to meet urgent survival and military needs and to provide for the ongoing management of resources available to meet continuing survival and recovery needs. Local jurisdictions may include development restrictions and mitigation planning in their local homeland security plans, but the state does not specifically require this. Federal grants and requirements lead to the development of local hazard mitigation plans.

**(WY-2) Wyoming Statutes § 35-9-101 et seq Fire Protection**-The State of Wyoming has adopted the International Building Code. Not all jurisdictions in Wyoming have adopted building codes, much

less the most current code. Buildings in those jurisdictions may not have the same disaster resistance as buildings in jurisdictions with adopted building codes.

## State Programs

**(WY-3) Western States Seismic Policy Council (WSSPC)-Wyoming Member State.** The mission of the Western States Seismic Policy Council is to provide a forum to advance earthquake hazard reduction programs throughout the Western States Region and to develop and recommend seismic policies and programs for the region through information exchange, research and education.

**Note:** In summary, no Wyoming statutes restrict development in hazard prone areas. Any such restrictions, including floodplain development and development in areas prone to wildfire, would be generated at the local level.

The state does not directly fund any pre-disaster mitigation programs for natural hazards. It relies primarily on federal funding to assist local jurisdictions in carrying out mitigation activities. Local jurisdictions must provide their own match for federal grants, which is usually 25%.

Being a Home Rule state, planning and zoning are generally the responsibility of local governments. The State of Wyoming has no overall authority for planning and zoning with the exception of state lands. These factors place limitations on the state's ability to initiate, implement, or administer mitigation programs, particularly those that would address development in hazard prone areas.