American Planning Association Growing Smart[sm] Model Statute for a Natural Hazards Element of a Comprehensive Plan

Commentary

Planning for the reduction of losses from natural hazards has been largely driven by concerns for public safety. California, for example, uses the term "safety element" to describe a required local comprehensive plan element that involves the assessment of a variety of natural hazards."[225] Other issues that justify such planning—including fiscal and economic instability—are derived mostly from the consequences of failing to adequately exercise the police power to ensure public safety in the face of natural disasters. This remains true even with planning for long-term recovery and post-disaster reconstruction: the aftermath of one natural disaster is simply the prelude to the next one.

States and communities across the country are slowly, but increasingly, realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect, is no longer an adequate role for government. Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community's vulnerability, and designs appropriate land-use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards." Attending to natural hazard mitigation can also provide benefits in other local policy areas. Minimizing or eliminating development in floodplain corridors, for example, provides environmental benefits as well as potential new recreational opportunities. Communities can often profit from undertaking post-disaster reconstruction actions that at other times might be too controversial or cumbersome—the notion of striking while the iron is hot. Where a disaster has destroyed a marginal business district, for example, planners can seize the opportunity to use redevelopment to effect a rebirth that might not otherwise be possible.

Building public consensus behind even the most solid plans can be a challenging task, especially in jurisdictions exposed to multiple hazards. To meet this challenge, it is recommended that the development of a natural hazards element, including plans for post-disaster recovery and reconstruction, come from an interdisciplinary, interagency team with broadly based citizen participation, to ensure both a range of input and effective public support. Community experience in dealing with natural hazards plans, whether for mitigation or post-disaster recovery, or both, has consistently demonstrated that this topic demands a wide range of input and expertise.

[225]Calif. Govt. Code Section 65302 (g) requires a safety element "for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards identified pursuant to Chapter

7.8 (commencing with Section 2690) of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wild land and urban fires." In addition to the mapping of seismic and geologic hazards, the element is to address "evacuation routes, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards."

2-26See generally Roger A. Nazwadzky, "Lawyering Your Municipality Through a Natural Disaster or Emergency," *Urban Lawyer* 27, No. 1 (Winter 1995): 9-27.

The following model incorporates the best practices found in state statutes[227] plus other best practices drawn from exemplary local planning for natural hazards and long-term post-disaster recovery. These latter best practices are identified in the commentary to the model natural hazards element below.

7-210 Natural Hazards Element [Opt-Out Provision Applies]

(1) A natural hazards element shall be included in the local comprehensive plan, except as provided in Section [7-202(5)] above.

(2) The purposes of the natural hazards element are to:

(a) document the physical characteristics, magnitude, severity, frequency, causative factors, and geographic extent of all natural hazards, from whatever cause, within or potentially affecting the community, including, but not limited to, flooding, [seismicity, wildfires, wind-related hazards such as tornadoes, coastal storms, winter storms, and hurricanes, and landslides or subsidence resulting from the instability of geological features];

- Obviously, the presence and prevalence of specific natural hazards varies widely not only among states, but even within states at both regional and local levels. This section lists all major categories while allowing states to use only those that apply, although it is clearly better to list in the statute any hazards that may

apply *somewhere* in the state. Flooding, however, is a universally applicable concern. It should be noted that "natural" hazards include hazards caused or exacerbated by human action, such as forest fires sparked by campfires and ground subsidence caused by old mines.

(b) identify those elements of the built and natural environment and, as a result, human lives, that are at risk from the identified natural hazards, as well as the extent of existing and future vulnerability that may result from current zoning and development policies;

(c) determine the adequacy of existing transportation facilities and public buildings to accommodate disaster response and early recovery needs such as evacuation and emergency shelter;

(d) develop technically feasible and cost-effective measures for mitigation of the identified hazards based on the public determination of the level of acceptable risk;

(e) identify approaches and tools for post-disaster recovery and reconstruction that incorporate future risk reduction; and

(f) identify the resources needed for effective ongoing hazard mitigation and for implementing the plan for post-disaster recovery and reconstruction.

(3) The natural hazards element shall be in both map and textual form. Maps shall be at a suitable scale consistent with the existing land-use map or map series described in Section 7-204 (6)(a) above.

(4) In preparing the natural hazards element, the local planning agency shall undertake supporting studies that are relevant to the topical areas included in the element. In undertaking these studies, the local planning agency may

[w]The following state statutes provide for natural hazards planning: Arizona (Ariz.Rev.Stat. Section 11-806B), California

(Cal.Gov't.Code Section 65302(e)(7) & (g)), Colorado (Colo.Rev. Stat. Section Section 30-28-106, 31-23-206), Florida (Fla.Stat.Ann. Section Section 163.3177(6)(g), 7(h), 163.3178), Georgia (Ga. Code Ann. Section 12-2-8), Idaho (Idaho Code Section 67-6508(g)), Indiana (Ind.Code Section 36-7-4-503), Iowa (Iowa Code Section 281.4), Kentucky (Ky.Rev.Stat.Ann. Section 100.187(5)), Louisiana (La.Rev.Stat.Ann. Section 33:107), Maine (Me.Rev.Stat.Ann. tit. 30A Section 4326A(1)(d)), Maryland (Md. Code Ann. tit. 66B Section 3.05(a)(1)(viii)), Michigan (Mich.Comp.Laws Section 125.36), Montana (Mont. Code Ann. Section 76-1-601(2)(h)), Nevada (Nev.Rev.Stat. Section 278.160.1 (k) & (1)), North Carolina (N.C.Gen.Stat. Section 113A-110ff), Oregon (Or.Rev.Stat. Section 197.175), Pennsylvania (53 Pa.Stat.Ann. Section 10301(2)), Rhode Island (R.I.Gen.Laws Section 45-22.2-6(E)), South Carolina (S.C. Code Ann. Section 6-7-510), Utah (Utah Code Ann. Section 10-9-302(2)(c)), Vermont (Vt.Stat.Ann. tit. 24, Section 4382(a)(2)), Virginia (Va. Code Ann. Section 15.1-446.1.1), Washington (Wash.Rev. Code Section 36.70.330(1)), West Virginia (W.Va. Code Section 8-24-17(a)(9)).

use studies conducted by others. The supporting studies may concern, but shall not be limited to, the following:

(a) maps of all natural hazard areas, accompanied by an account of past disaster events, including descriptions of the events, damage estimates, probabilities of occurrence, causes of damage, and subsequent rebuilding efforts;

- With regard to flooding and coastal storm surge zones, the local jurisdiction may simply incorporate the existing National Flood Insurance Program (NFIP) maps and U.S. Army Corps of Engineers/National Weather Service storm surge maps. State and U.S. Geological Survey maps should provide at least a starting point for areas with seismic hazards. Portland Metro, in cooperation with the Oregon Department of Geology and Mineral Industries (DOGAMI), has

undertaken an effort funded by Federal Emergency Management Agency (FEMA) to complete seismic hazard mapping of the entire Portland region using geographic information systems (GIS).[228] The department is also mapping tsunami hazard areas along the Oregon coast as a FEMA-funded sequel to the first such project, completed in early 1995 in Eureka, California.'" In states with volcanoes, the mapping should include lava, pyroclastic, and debris flows and projected patterns of ash fallout in the surrounding region, including the potential for flooding from the blockage of rivers. Other sources for potential problems include the National Weather Service for storm and wind patterns and some innovative new GIS techniques in Colorado for mapping wildfire hazards.'"

> (b) an assessment of those elements of the built and natural environments (including buildings and infrastructure) that are at risk within the natural hazard areas identified in subparagraph (a) above as well as the extent of future vulnerability that may result from current land development regulations and practices within the local government's jurisdiction;

- The study in subparagraph (4)(b) is also known among disaster officials and experts as a "vulnerability assessment" and serves two purposes: (1) to identify vulnerable structures and; (2) to determine the cause and extent of their vulnerability. For example, the California Governor's Office of Emergency Services has outlined procedures used by various communities for inventorying seismic hazards.'" The subparagraph emphasizes the importance of including the impact of natural hazards in a buildout analysis in order to assess the potential consequences of current laws and policies, including those pertaining to the extension of public infrastructure in hazard-prone areas.

  This requirement can be tailored to the actual hazards a state may be dealing with, as California and Nevada have done with seismic safety. One striking example is a 1979 Los Angeles ordinance that mandated both an inventory and a retrofitting program that over time has upgraded the seismic stability of the city's housing stock. The format for this with regard to flood hazard

areas is already reasonably clear as a result of NFIP regulations, which include requirements for elevating substantially damaged or improved buildings above the base flood elevation.

[228]See *Using Earthquake Hazard Maps for Land Use Planning and Building Permit Administration,* Report of the Metro Advisory Committee for Mitigating Earthquake Damage (Portland, Ore.: Portland Metro, May 1996) and *Metro Area Disaster Geographic Information System:* Volume One (Portland, Ore.: Portland Metro, June 1996).

[229]National Oceanic and Atmospheric Administration (NOAA), Pacific Marine Environmental Laboratory. *Tsunami Hazard Mitigation: A Report to the Senate Appropriations Committee* (Seattle, Wash.: NOAA, The Laboratory, March 31, 1995).

[23°]Colorado has been increasing its attention to both the wildfire issue and hazards generally. See *Land Use Guidelines for Natural and Technological Hazards Planning* (Denver: Colorado Department of Local Affairs, Office of Emergency Management, March 1994). An interesting source on the mapping of wildfire hazards is Boulder County's World Wide Web site at http:boco.co.gov/gislu/ whims.html. [This is a dead link. Not sure how to format this since the entire appendix is an excerpt, but the new site appears to be www.co.boulder.co.us/lu/wildfire/whims.htm.l

[23']*Earthquake Recovery: A Survival Manual for Local Government* (Sacramento: California Governor's Office of Emergency Services, September 1993), Chs. 9-10.

Analysis of wind-related problems is more likely to result in building code changes to strengthen wind resistance, as in southern Florida.

(c) state or other local mitigation strategies which identify activities to reduce the effects of natural hazards;

(d) an inventory of emergency public shelters, an

assessment of their functional and locational adequacy, and an identification of the remedial action needed to overcome any deficiencies in the functions and locations of the shelters;

(e) an identification of all evacuation routes and systems felt the populations of hazard-prone areas that might reasonably be expected to be evacuated in the event of an emergency and an analysis of their traffic capacity and accessibility;

- This study is a good place to marry the expertise of planners (including transportation planners) and emergency managers. While the latter can identify the resources and the needs in this area, the former can help integrate that knowledge into routine planning for hazard-prone areas. Lee County, Florida, has used such studies to evaluate its shelter availability for disaster purposes. Because of limited access to its offshore location, Sanibel, Florida, has gone even further in using evacuation and shelter capacity as the basis for growth caps.

  An interesting example of a natural hazards element component dealing with these issues appears in Florida Stats. §163.3178 (2)(d), which requires a "component which outlines principles for hazard mitigation and protection of human life against the effects of natural disaster, including population evacuation, which take into consideration the capability to safely evacuate the density of coastal population proposed in the future land use plan element in the event of an impending natural disaster."

  (f) analyses of the location of special populations that need assistance in evacuation and in obtaining shelter;

(g) an inventory of the technical, administrative, legal, and financial resources available or potentially available to assist both ongoing mitigation efforts as well as post-disaster recovery and reconstruction;232 and

- Jurisdictions across the country have experimented with a number of means of facilitating and empowering efforts to reduce their vulnerability to natural hazards. Some of these involve the use of performance and design standards that give planners and planning commissions greater authority to insist that new development meet strict standards of hazard mitigation. For example, Wake County, North Carolina, requires that, in drainage areas of 100 acres or more, the applicant must show that any rise in water level resulting from building on the property can be contained on that property, with the applicant's only alternative being to secure easements from neighboring property owners to allow for that rise. Portola Valley, California, is a good example of seismic and hillside hazard mitigation in its use of cluster zoning for new subdivisions in certain areas.233 Jurisdictions also have experimented with means of financing such efforts. A clear starting point is to center somewhere in local government a periodically updated repository of information about outside funding sources both from government and the private sector, including voluntary resources from nonprofit organizations. The advantage is that the community can then, in the event of a disaster, tap these resources expeditiously, preferably with the added advantage of an already developed plan for reconstruction. In addition, this study will serve to highlight funding mechanisms through local government, such as the All Hazards Protection

"'For a discussion of approaches to drafting floodplain

management ordinances, see Jim Schwab, "Zoning for Flood Hazards," *Zoning News* (Chicago: American Planning Association, October 1997). See also Marya Morris, *Subdivision Design in Flood Hazard Areas*, Planning Advisory Service Report No. 473 (Chicago: American Planning Association, September 1997).

"'William Spangle and Associates, Inc., *Geology and Planning: The Portola Valley Experience* (Portola Valley, Cal.: William Spangle and Associates, 1988).

District and Fund created by Lee County, Florida, in 1990 to support local hazard mitigation programs.[234] That fund depends on a property tax levy; in 1993, Lee County also considered, but did not pass, a proposal for an impact fee targeted at hazard-prone areas to fund emergency public shelters.

(h) a study of the most feasible and effective alternatives for organizing, in advance of potential natural disasters, the management of the process of post-disaster long-term recovery and reconstruction.

- Numerous studies have examined at some length the potentials and pitfalls of various structural arrangements for organizing interagency, interdisciplinary task forces to oversee the process of long-term recovery and reconstruction following a disaster. A forthcoming (1998) APA Planning Advisory Service Report, *Planning for Post-Disaster Recovery and Reconstruction*, sponsored by the Federal Emergency Management Agency, deals with this issue and provides an extensive bibliography. Such plans have also been developed in Los Angeles[235]; Nags Head, North Carolina; and Hilton Head Island, South Carolina, among other jurisdictions, and are mandated for coastal communities in Florida and North Carolina. Two overriding principles seem to emerge from such efforts to date: (1) that successful implementation depends heavily on support from top local officials,

whether that be the mayor or city manager; and (2) that a recovery task force should include representatives of all major agencies potentially involved in the reconstruction effort, specifically including but not limited to safety and emergency management forces, planning, building inspectors, public works, and transportation. It is vitally important in the aftermath of a disaster that all these agencies know not only what the others are doing, but who should report to whom for what purposes.

(5) The natural hazards element shall consist of:

(a) a statement, with supporting analysis, of the goals, policies, and guidelines of the local government to address natural hazards and to take action to mitigate their effects. The statement shall describe the physical characteristics, magnitude, severity, probability, frequency, causative factors, and geographic extent of all natural hazards affecting the local government as well as the elements of the built and natural environment within the local government's jurisdiction that are at risk;

(b) a determination of linkages between any natural hazards areas identified pursuant to subparagraph (a) above and any other elements of the local comprehensive plan;

(c) a determination of any conflicts between any natural hazards areas and any future land-use pattern or public improvement or capital project proposed in any element of the local comprehensive plan;

(d) priorities of actions for eliminating or minimizing inappropriate and unsafe development in identified natural hazard zones when opportunities arise, including the identification and prioritization of properties deemed appropriate for acquisition, or structures and buildings deemed suitable for elevation, retrofitting, or relocation;

- This language is drawn from Florida Stats. §163.3178 (2), which outlines the components of the coastal management element required of all communities

within coastal counties, and (8). Subdivision (2)(f) states that a redevelopment component "shall be used to eliminate inappropriate and unsafe development in the *coastal* areas when opportunities arise" (emphasis added). Paragraph (8) requires that each

[134]Lee County, Fla., Resolution No. 90-12-19.

[235]The Northridge earthquake in February 1994, which occurred shortly after the adoption of the Los Angeles plan, afforded the rare opportunity for the National Science Foundation to underwrite two independent analyses of the plan's utility and effectiveness in the aftermath of that disaster. Spangle Associates with Robert Olson Associates, Inc., prepared *The Recovery and Reconstruction Plan of the City of Los Angeles: Evaluation of its Use after the Northridge Earthquake* (NSF Grant No. CMS-9416416), August 1997. The other study is *The Northridge Earthquake: Land Use Planning for Hazard Mitigation* (CMS-9416458), December 1996, by Steven P. French, Arthur C. Nelson, S. Muthukumar, and Maureen M. Holland, all of the City Planning Program at the Georgia Institute of Technology.

county "establish a county-based process for identifying and prioritizing coastal properties so they maybe acquired as part of the state's land acquisition programs." The language has been combined and adapted here in part because it is also possible for the community itself to use state and federal funds to acquire, for example, substantially damaged floodplain properties and to relocate their residents. Tulsa, Oklahoma, and Arnold, Missouri, provide excellent examples of this strategy, in large part because they developed *ongoing* acquisition programs that were already in place before in the predisaster period. (A case study appears in the forthcoming (1998) PAS Report, *Planning for Post-Disaster Recovery and Reconstruction.)* This is, in effect, an "issues and opportunities" component of the natural hazards element.

(e) multiyear financing plan for implementing identified mitigation measures to reduce the vulnerability of buildings, infrastructure, and people to natural hazards that may be incorporated into the local governments operating or capital budget and capital improvement program; and

(f) a plan for managing post-disaster recovery and reconstruction. Such a plan shall provide descriptions that include, but are not limited to, lines of authority, interagency and intergovernmental coordination measures, processes for expedited review, permitting, and inspection of repair and reconstruction of buildings and structures damaged by natural disasters. Reconstruction policies in this plan shall be congruent with mitigation policies in this element and in other elements of the local comprehensive plan as well as the legal, procedural, administrative, and operational components of post-disaster recovery and reconstruction.

(6) The natural hazards element shall contain actions to be incorporated into the long-range program of implementation as required by Section [7-211] below. These actions may include, but shall not be limited to:

(a) amendments or modifications to building codes and land development regulations and floodplain management and/or other special hazard ordinances, including but not limited to natural hazard area overlay districts pursuant to Section [9-101], and development of incentives, in order to reduce or eliminate vulnerability of new and existing buildings, structures, and uses to natural hazards;

(b) implementation of any related mitigation policies and actions that are identified in other elements of the local comprehensive plan;

(c) other capital projects that are intended to reduce or eliminate the risk to the public of natural hazards;

(d) implementation of provisions to carry out policies affecting post-disaster recovery and reconstruction as described in subparagraph (5)(f) above, such as procedures for the inspection of buildings and structures damaged by a natural disaster to determine their habitability as well as procedures for the demolition of buildings and structures posing an imminent danger to public health and safety; and

(e) implementation of provisions to ensure that policies contained in other portions of the local comprehensive plan do not compromise the ability to provide essential emergency response and recovery facilities as described in the local emergency operations program, such as:

1. adequate evacuation transportation facilities;
2. emergency shelter facilities; and
3. provisions for continued operations of public utilities and telecommunications services.

Source: Stuart Meck, Gen. Editor, *Growing Smart*[sm] Legislative Guidebook: Model Statutes for Planning and the Management of Change, 2002 Edition (Chicago, Ill. American Planning Association, 2002).

Note: Bracketed numbers are references to other sections of the *Guidebook*. Footnote references are from the original text.