

# Integrating Hazard Mitigation into Local Planning

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# Background: U.S. Planning

- Land-use planning a function of state and local government, not federal
- 50 “state laboratories” mean 50 systems and statutory frameworks
- Federal role is limited to:
  - Planning land use on federal lands
  - Influencing state and local land use through policy initiatives on particular areas of federal concern

# Background: U.S. Planning

- How federal influence works:
  - Establish minimum standards
    - Environmental
    - Hazards management, e.g., floodplains
    - Other
  - Unless law specifies pre-emption, states can exceed those standards in own policies
  - Delegation of enforcement authority to state agencies in compliance
  - Tying eligibility for federal money to achievement of performance standards

# *Emergence of Modern Environmentalism*

- Parallel development in 1960s of modern environmental movement
  - Old focus: resource conservation
  - Added new focus: urban pollution
- Creation of U.S. EPA in 1970 and passage of NEPA, also in 1970
- Procession of federal laws follows:
  - Clean Air Act
  - Clean Water Act
  - RCRA, CERCLA, etc., dealing with hazardous waste and materials

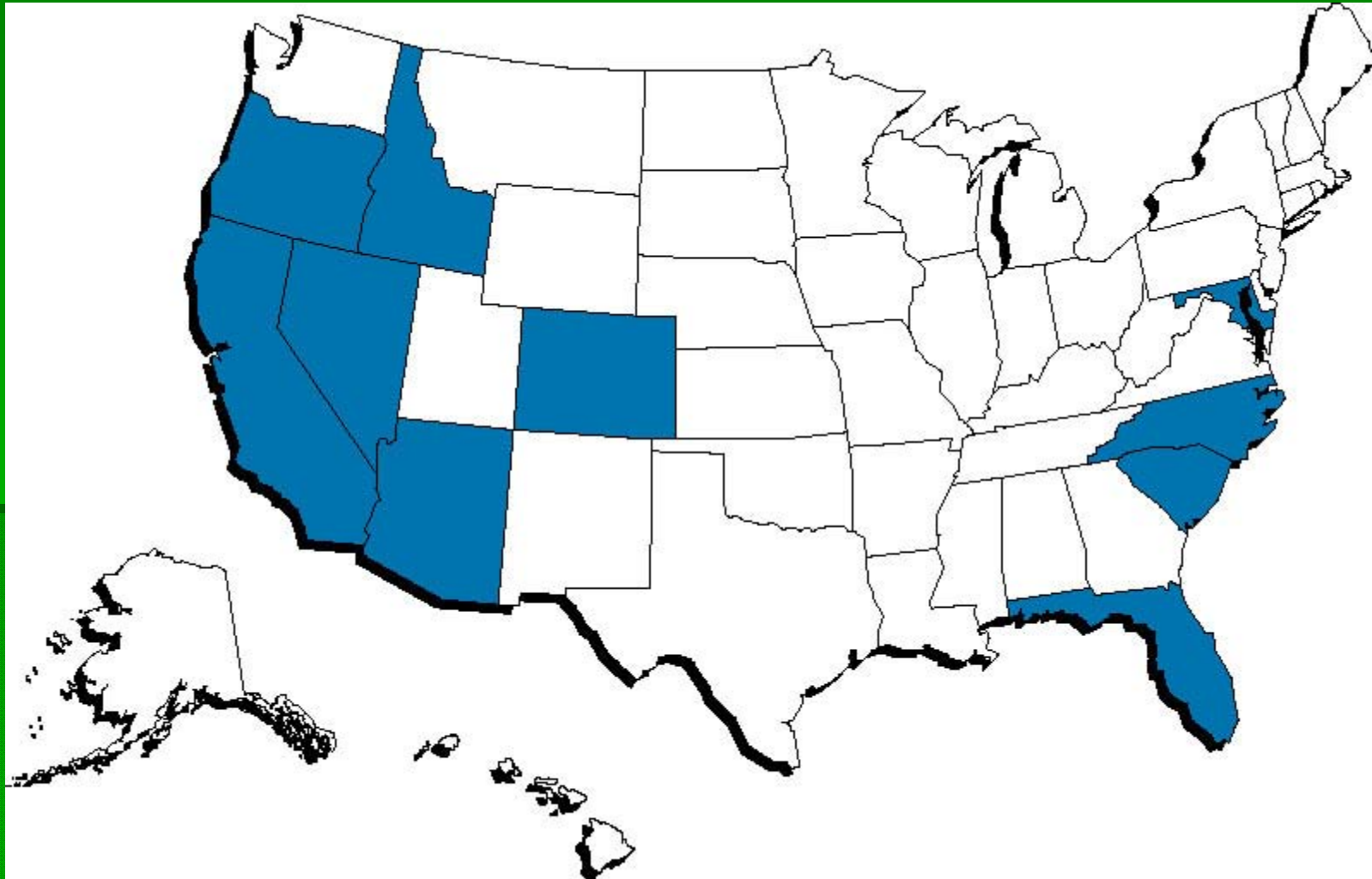
# State Planning: Shift to Growth Management

- Growth management becomes focus from 1970s forward in several states:
  - Florida, California, Oregon, Washington, Maryland, a few others
  - Planning becomes mandatory, not optional
- Hazards added as a required focus
  - Twelve states now require a hazards element in local comprehensive plans

# Focus on Hazards

- Safety element developed in California
  - Adapted later in Nevada and Arizona
  - Began with seismic safety focus
  - California has virtually gone all-hazards
- Florida, Carolinas with coastal focus
- Gradual shift to all-hazards focus
  - Oregon incorporates multiple hazards

# *Natural Hazards Element*



Require



Don't Require



# *The Role of Hazards in Comprehensive Planning*

- Do we need a hazards element in the comprehensive plan?
- Functions of hazards elements in comprehensive plans
  - Include public safety as part of overall vision of community development
  - Raise visibility of hazards issues in comprehensive planning
  - Integrate hazards concerns into that overall vision (overcome patchwork approach)
  - Provide effective linkages to other elements and plans
  - Identify needs for capital improvements and other resources to implement mitigation
- Problems of stand-alone hazards plans in communities
  - U.S.: Motivated only by money available from federal or state governments
  - No effective tie to implementation strategies
  - Bureaucratic isolation with emergency management in many cases

# Where to Learn More

- Go to <http://www.disastersafety.org>
- For background on growth management and “smart growth,” go to:  
<http://www.planning.org/growingsmart>

# Shift in Federal Focus

- National Flood Insurance Program created by Congress in 1968
- FEMA created in 1979 by President Carter
- Stafford Act (1988) establishes framework for federal disaster declarations and assistance
- Flood Insurance Reform Act (1995) reacts to recommended changes after 1993 Midwest Floods
- Disaster Mitigation Act (2000) requires preparation of local hazard mitigation plans to qualify for federal hazard mitigation grants

# Hazard Mitigation

- Definition in U.S. Context:
  - "Sustained action taken to reduce or eliminate the long-term risk to human life or property from natural hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery."

# DMA: What's so Radical?

- First federal effort to *make* states and local governments plan for mitigation *before* disasters
- Ties eligibility for federal grants to adoption of a FEMA-approved plan
- Sets the stage for gradually ratcheting up level of quality expected in future plan updates

# DMA: What's the Problem?

- Most plans are prepared by emergency managers with little planning input
- However, implementation generally implicates role for land-use planning
- Multijurisdictional (regional) plans often don't connect well with local plans or land-use regulations
- States control land-use planning, not federal government—introduces hazards planning to areas with minimal previous experience

# *New Zealand and the U.S.: A Simplified Comparison*

## ■ Differences

- U.S. federal structure creates widely varied land-use regime
- Recognition of hazard reduction goals in Resource Management Act
- Consolidation of environmental law in RMA; U.S. has multiple acts and authorities

## ■ Similarities

- Need to recognize relationship of environmental policy & hazard reduction
- Need for better communication between planners & emergency managers
- Parallel environmental & EM legislation

# Integrating Hazard Mitigation into Local Planning

- FEMA underwriting APA research project into best practices in integration
- Need to generate cooperation and discussion between planners and emergency managers
- Need to improve understanding of how communities can integrate hazards into local planning process—and why they should

# Integrating Hazard Mitigation into Local Planning



A Project of the APA Hazards Planning Research Center with support from FEMA

# Why this project; why now?

- Better linkage of planners, emergency managers, and other professionals to improve plan quality
- Help communities move beyond basic DMA requirements toward broader planning goals
- Mainstream hazard mitigation planning in order to improve implementation of hazard mitigation objectives
- Reduce losses of life and property by learning to think ahead about probable consequences of natural disasters



Scene from Hurricane Opal, Florida, 1995

# Where Should Integration Occur?

- Long-range community visioning and goals and objectives activities;
- Plan making of all types:
  - Comprehensive, master, or general plans
  - Sub-area plans
  - Functional plans
- Land-use management tools
- Review and approval of development projects
- Capital improvements programming

# Challenges to Better Integration

- Mitigation has tended to be event-oriented—first the disaster, then the money to mitigate
- Lack of planning expertise in hazard mitigation
- Need for longer-term perspective on risk reduction
- Mitigation as low priority among planning goals and objectives (including willingness to procrastinate)
- Perception that someone else will pay (federal aid, insurance)
- Property rights versus public safety

# Synergistic Impacts of Natural Hazards

- Hazard types are not always neatly separable
  - Some hazards can trigger others or make them more probable
  - Good hazard identification should identify these secondary probabilities
  - Some hazard types are combined in a single phenomenon
    - Example: hurricanes bring both high winds and flooding
    - Note the insurance issues in Katrina with wind versus flood damage; one is covered by typical property insurance, the other by flood insurance under NFIP

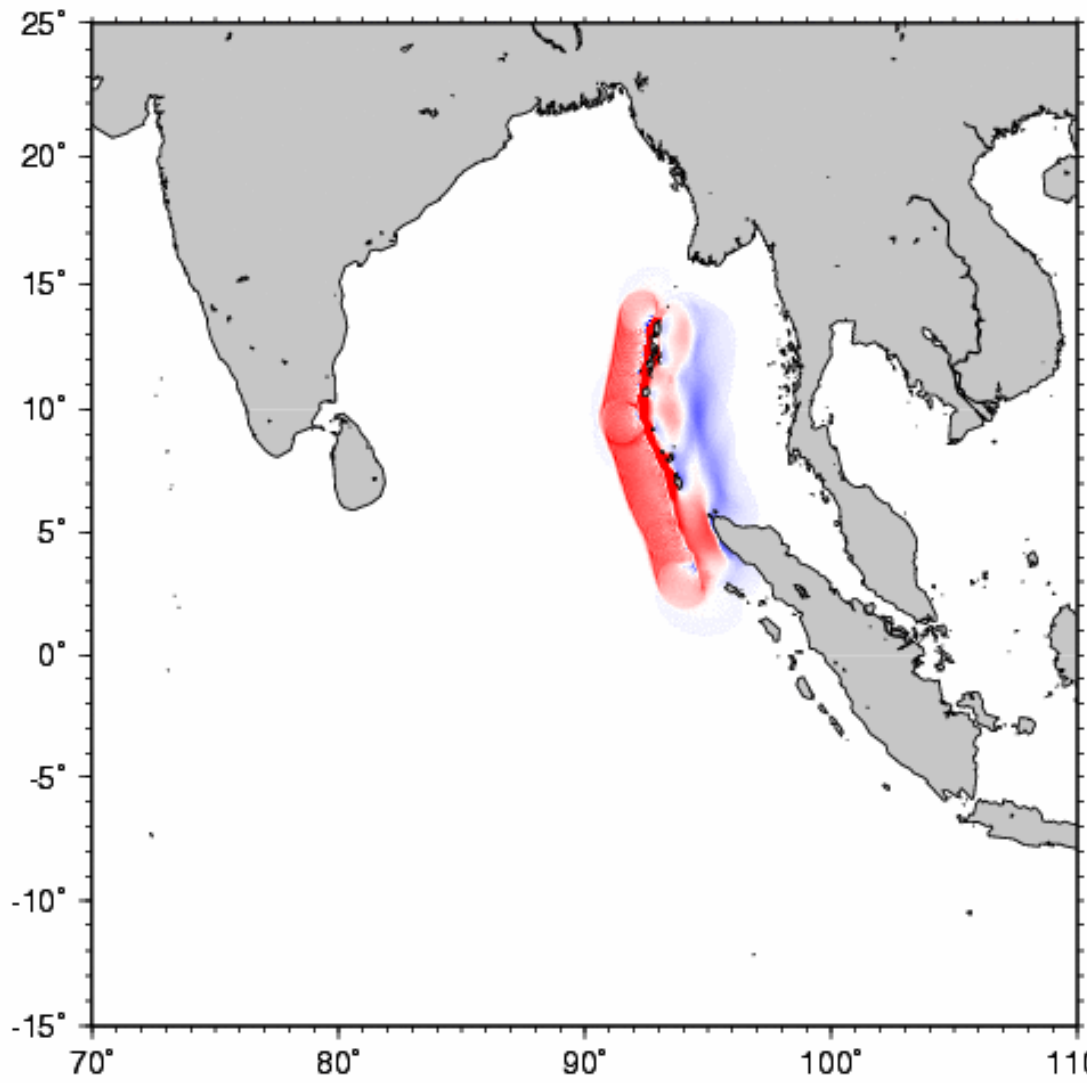
# Synergistic Impacts of Natural Hazards

- Flooding can cause secondary hazard impacts
  - Steep slopes and mountainous areas can erode as a result of excessive rainfall
  - Resulting landslides and mudslides can cause additional damage; landslides often are the byproduct of high rainfall because slopes cannot handle the extra weight of water
- Flooding can cause additional impacts as a result of technological and human hazards:
  - 1993 floods covered 95 Superfund sites throughout Upper Mississippi valley
  - Health impacts from prolonged flood coverage such as mold and mildew growth affecting respiratory disease rates and other health impacts

# Synergistic Impacts of Natural Hazards

- Earthquakes and seismic disturbances
  - Underwater quakes spawn tsunamis
  - Earthquake tremors can destabilize vulnerable steep slopes, triggering landslides

2004 Sumatra Earthquake 010 min



- Tsunami waves move at jet speed (500 mph)
- Estimated arrival time in Sri Lanka: 2 hours +
- Wrap-around time to western coast: 20 minutes
- No warning system exists yet in Indian Ocean
- Source: <http://staff.aist.go.jp/kenji.satake/animation.gif>

# Synergistic Impacts of Natural Hazards

- Fire issues
  - Drought is the typical precursor for severe wildfires
  - Wildfires can denude hills of vegetation
  - Denuded hills hit by heavy precipitation can lose soil because grasses and trees serve to hold the soil
  - Resulting denudation of hillsides followed by heavy water load triggers loss of stabilizing friction, leading to landslides
    - Santa Barbara case with Christmas flood

# Problematic Results?

- Unnecessary levels of loss
- Slow economic recovery
- Lack of community resilience



# Examples of Plan Element Linkages

## Transportation:

Mitigating hazards that could cripple vital routes through the community

Highway landslide



# *Examples of Plan Element Linkages*



**Historic  
preservation:**  
Shoring up  
vulnerable historic  
properties to  
preserve community  
heritage

Fats Domino residence,  
New Orleans

# Examples of Plan Element Linkages

## Economic development:

Preventing catastrophic loss of business activity from disaster

Small business in Chelsea, Iowa, 1993 Midwest floods



# Examples of Plan Element Linkages

Park in Tulsa floodplain

## Land use:

Preventing inappropriate or unsafe uses of land through regulations, easements, and acquisitions



# *Examples of Plan Element Linkages*

Colorado mountain stream

## **Environment:**

Coupling mitigation goals like floodplain management with goals for open space, recreation, and clean air and water



# Examples of Plan Element Linkages

## Housing:

What do we build, how safely, and where do we choose to build it?

What's in your subdivision code?

What's in your building code?

Iowa City homeowner,  
1993 Midwest floods



# Plan Element Linkages

A Starting Point:

Linking goals and objectives in a hazards element or hazard mitigation plan with related issues in other plan elements

How might this work?

# Principles for Integrating Hazard Mitigation into Local Planning

- Act before a disaster strikes
- Mitigation requires patience, monitoring, and reevaluation
- Be strategic and opportunistic
- Evaluate opportunities for density reallocation
- Emulate green building trend through existing or new programs
- Communicate risks for hazards in local areas
- Local implementation depends on political will
- Account for stakeholder values in light of hazard mitigation

# Best Practices Inventory

- Online questionnaire to guide participants
- Follow-up appeal to participants for specifics
- Broad-ranging appeal for plans, documents, and ordinances from communities with best practices
- Outreach to SHMOs and FEMA regions for recommendations on forward-looking communities
- Direct outreach to planners in recommended communities
- Analysis of materials collected and creation of best practices database for use in developing PAS Report

# Potential Best Practices (From APA Symposium, Nov. 2007)

- Make hazard mitigation and comprehensive plan complementary
- Routinely implement participatory planning
- Incorporate hazards into visioning
- Use the best tools to integrate hazard mitigation into planning
- Use tools and resources to advance integration into new arenas of planning

# *For Further Information*

Visit project web pages at:

[www.planning.org/hazardmitigation](http://www.planning.org/hazardmitigation)

E-mail: [hazardsplanning@planning.org](mailto:hazardsplanning@planning.org)

# *Further Considerations: Relocation*

- Evolving context in U.S. since late 1970s move of Soldiers Grove, Wisconsin
- All moves have been voluntary efforts to conserve entire communities
- Assistance packages have often been complex and somewhat ad hoc
- Related movement toward sustainable post-disaster redevelopment

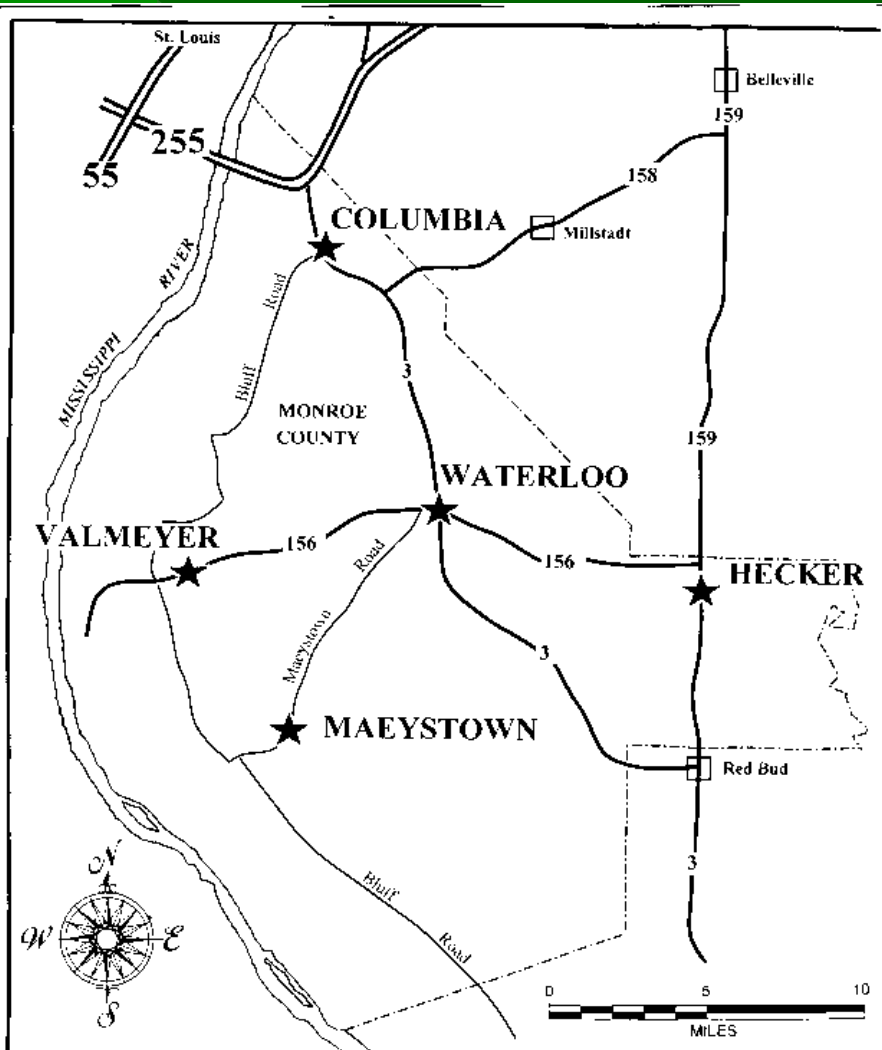
# *Soldiers Grove Relocation Funding: State/Local Sources*

- Regional Planning Commission (\$4,000)
- State Planning Office (\$2,700)
- Dept. Local Affairs & Dev. (\$13,200)
- Local businesses (\$3,300)
- General obligation borrowing (\$90,000)
- Dept. Natural Resources (\$42,000)
- Governor's discretionary (\$167,684)
- Village borrowing—TIF startup (\$235,000)
- Farmers Home Admin. (\$1,663,000)
  - Total: \$2,220,884

# *Soldiers Grove Relocation Funding: Federal Sources*

- Housing & Urban Development-CDBG (\$3,261,900)
- Community Services Admin. (\$40,000)
- Economic Development Admin. (\$500,000)
- Dept. of Interior-LAWCON [parks acquisition] (\$646,147)
  - Total: \$4,455,247

# *Valmeyer, Illinois Relocation Project*



# *Main Points*

- Disasters create opportunities as well as loss and destruction
- Few better opportunities exist to rethink a community's pattern of development
- Recovery from one disaster is preparation for the next disaster
- Goal: Create a new community that is safer and stronger than the old

# *Final Comment on Design*

- Two hotels in coastal Sri Lanka
  - One survived the tsunami
  - One did not
  - Why the difference?

