Hazard Mitigation Strategies to Reduce Damages from Disasters

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Florida’s Hazards

- Flooding
- Coastal Zone
- Karst/Sinkholes
- Wildfires
- Other
Flooding Hazards

- Riverine flooding
- Coastal flooding
Coastal Zone Hazards

- Coastal processes
  - Erosion
  - Deposition of sand and sediment

- Coastal storm hazards
  - Coastal/upland flooding
  - Winds
  - Wave/tidal surge
  - Storm surge
  - Erosion
  - Bluff failure
  - Tornadoes
Hurricanes

Category 1 to 5
Hurricanes 1851-2005

www.csc.noaa.gov
Karst Topography (Sinkholes)

- Created by weathering of limestone
- Vulnerability to aquifer/groundwater
Wildfires

Florida Wildland Fire Risk Assessment

- Non-Burnable
- Level 1
- Level 2
- Level 3
- Level 4
- Level 5
- Level 6
- Level 7
- Level 8
- Level 9

Florida Department of Agriculture & Consumer Services, Division of Forestry
Hazard Mitigation Definitions

- **Hazard**
  - Inherent danger associated with a potential problem

- **Exposure**
  - Human population, ecological resources and property exposed to a hazard

- **Vulnerability**
  - The unprotected nature of the exposure
Risk

Probable degree of injury & damage likely to occur from exposure

Hazard

Exposure

Risk

Vulnerability
Hazard Mitigation

Actions taken to reduce or eliminate long-term effects of natural hazard events

Hierarchy of Mitigation Strategies:

- Avoid impact
- Lessen impact by modifying location
- Lessen impact by modifying design
- Offset impact
Hazard Mitigation Planning Process

- Identify objectives: avoid, prevent, and reduce impacts from natural hazard events
- Assess situation: hazard/risk assessment
- Develop mitigation alternatives
- Assess options/formulate mitigation plan
- Implement the plan
- Evaluate the plan
Hazard & Risk Assessment

- Identify potential hazards & critical facilities
- Assess the community’s exposure & vulnerability
- Risk analysis – estimate damage, injuries, costs, magnitude and probability
Kinds of Mitigation

**Structural**

- Alter the built environment to absorb the impacts of disaster events
- Incorporate proper mitigation techniques into building practices

**Non-structural**

- Policies to direct development to less hazardous areas
Hazard Mitigation Strategies

- Get Out of the Way
- Make the Environment Less Hazardous
- Make Structures More Resistant to Natural Hazard Forces
- Manage the Development & Redevelopment of Land in Hazardous Areas
- Collaborate, Coordinate, & Educate
GET OUT OF THE WAY!
Provide evacuation and sheltering services

- **Evacuation and Shelter Plans**
  - Growth outpacing ability to expand

- **Level of Service Standards**
  - Balances growth with ability to “get out of the way”
Providing Shelter & Evacuation Services

- Monroe County Hurricane Evacuation Standards
- Hillsborough County Emergency Shelter Exaction
- Lee County All-Hazards Protection District
- Sarasota County Special Assessment District
MAKE THE ENVIRONMENT LESS HAZARDOUS:

Protect & Enhance Natural Protective Features

- Drainage Ways
- Floodplains
- Freshwater Wetlands
- Coastal Wetlands
- Beaches
- Dunes
- Vegetation
Principles for Protecting & Maintaining Natural Features:

• Land Use Regulations that Prevent Disturbance
• Setbacks & Buffers
• Purchase of Property Rights
• Transfer of Development Rights (TDR)
• Exactions & Dedications
Principles for **Enhancing & Restoring Natural Features**:

- **Subdivision and Site Development Regulations**
  - require developers to restore degraded features

- **Capital programs**
  - to restore degraded/destroyed features
  - to construct & maintain “hard” structures
MAKE STRUCTURES MORE RESISTANT TO NATURAL HAZARD FORCES

• Adopt & Enforce Building Codes
• Promote Voluntary Measures
• Adopt Capital Expenditure Policies & Programs

Source: E. Jay Baker.
Building Construction for Reduced Wildfire Risks

A non-combustible screen with no larger than 1/8-inch mesh will prevent air currents from pulling burning embers into the structure.

Vent features of a house (not to scale)
Landscaping for Reduced Wildfire Risks

The wildfire mitigation landscaping zones around the house.

[Diagram showing different zones for landscaping to reduce wildfire risks]

Landscaping for Reduced Wildfire Risks

- **Low**
  - Photographs showing houses surrounded by cleared land and trees.

- **Medium**
  - Photographs showing houses with some cleared land and trees near the house.

- **High**
  - Photographs showing houses with little or no cleared land and trees directly around the house.

www.floridadisaster.org/bpr/EMTOOLS/wildfire/fwlistsz.pdf
MANAGE THE DEVELOPMENT & REDEVELOPMENT OF LAND IN HAZARDOUS AREAS

- Site analysis to identify flood prone areas
- Evaluate local government capital improvement programs
- Reduce exposure to coastal flooding
- Direct growth away from & limit public expenditures that subsidize growth in the Coastal High Hazard Area (CHHA)
Tools for Managing Growth in Hazardous Areas

- Zoning Regulations
- Overlay Districts
- Capital Expenditure Policies
- Setbacks
- Buffers
Tools for Managing Growth in Hazardous Areas

- Subdivision/Planned Unit Development Regulations & Clustering
- Site Design Regulations & Performance Standards
- Purchase of Development Rights (PDR)
- Transfer of Development Rights (TDR)
Flood Hazard Mitigation

**Structural**
- Relocation
- Elevation
- Construction of Barriers
- Floodproofing

**Non-Structural**
- Floodplain management
- National Flood Insurance Program (NFIP)
- Floodplain zoning
Mitigating Coastal Hazards

- Smart land development practices
- Siting – away from most vulnerable areas
- Design – elevation, materials
- Construction – bracing, fasteners, inspection
- Maintenance – inspection, repair, replacement
COLLABORATE, COORDINATE & EDUCATE

- Multi-disciplinary Approach – planners, emergency managers, public works, etc.
- State/Regional/Local Partnerships
- Public Education
- Public & Private Mitigation Efforts
Guidebooks

- Protecting Florida's Communities
- Disaster Planning for Florida's Historic Resources
- Protecting Florida's Springs
- Wildfire Mitigation in Florida

www.dca.state.fl.us/fdcp/dcp/publications/index.cfm#bp
Questions?

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