Hazard Mitigation as an Economic Development Strategy

Linking Water Infrastructure to Community and Economic Development in Smaller Places October 29, 2014



About Us

- Sustainable Communities Capacity Building Program (EPA/HUD)
- Local Hazard Mitigation Plan Development (FEMA)
 Local, state, and university in accordance with DMA 2000
- Statewide Disaster Planning System Development (KyEM/EDA/HUD)
 Community Hazard Assessment & Mitigation Planning System (CHAMPS)
- G.I.S. Based Vulnerability Assessments
- Community Planning Guidance for Pandemic (DHS)

How we are organized...

- 3 FT staff
- Location: Department of Urban & Public Affairs, University of Louisville



- 1. An Overview of Hazard Mitigation Planning
- 2. CEDS Content Guidelines
- 3. Defining Economic Resilience
- Opportunities for Coordinating the CEDS and Hazard Mitigation Plans
- 5. Example Strategies

"Another way of looking at resilience is the ability not only to bounce back but also to 'bounce forward' – to recover and at the same time to enhance the capacities of the community or organization to better withstand future stresses."

> -After Sandy: Advancing Strategies for Long-Term Resilience & Adaptability, Urban Land Institute (ULI)

Hazard Mitigation Planning





Disaster Management Cycle



Why mitigation?



Mandates a Plan

Establishes a process

Communities must have an approved plan in order to be eligible for Post-Disaster HMGP funding (projects and planning).

What hazards affect our community? What can we do to reduce losses from events?

Enables multi-sector participation

Encourages stakeholder involvement at all levels from initial planning to implementation of hazard mitigation activities

Enables community representation

Encourages equitable planning processes by including stakeholder involvement of vulnerable populations.

Mitigation contributes to more resilient communities

	1. REGULATION CHECKLIST	Location in Plan		Not
	Regulation (44 CFR 201.6 Local Mitigation Plans)	(section and/or page number)	Met	Met
	ELEMENT A. PLANNING PROCESS			
	A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))			
The "wh	o, what, when, where, a	and why	"	
of plan of	mitigation activities, agencies that have the authority to regulate OPVETCOD on O most to be involved in the planning process? (Requirement §201.6(b)(2))			
	A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))			
	A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))			
	A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))			
	A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))			
	ELEMENT A: REQUIRED REVISIONS			
NUARTACE.				
FEMA				

Planning Process



Guiding Principle:

Process is as important as the plan itself.

Requirements ask for "what" rather than "how" it must be done.

Agency and Public Involvement



Steering Committee Meetings

- 1. Kick-off meeting
- 2. Introducing hazard vulnerability
- 3. Mitigation strategy
- 4. Draft plan review

Individual Stakeholder Meetings

- Data collection
- Mitigation/Plan Maintenance strategy development

Public presentations

Who's Involved?

- Local government departments/divisions
- Local and regional agencies involved in hazard mitigation; emergency management, economic development, public works, zoning, emergency management, local floodplain administrator, and GIS departments.
- Agencies that have the authority to regulate development; planning and community development departments, building officials, planning commissions, or other elected officials.
- Neighboring communities include adjacent counties and municipalities.
- Other interests; business, academic, and other private and non-profit interests.

Risk Assessment

Requirement:

The risk assessment shall include a description of the type, location, and extent of all hazards that can affect the jurisdiction.

Include previous and probability of future hazard events.



Assessing Vulnerability by Jurisdiction

Vulnerability Score = Exposure Score x Hazard Score

CHR's Vulnerability methodology was designed to be flexible and rely on GIS production.

CHR derived a methodology to achieve a "Vulnerability Score" which is the foundation in our vulnerability/risk assessment. This Vulnerability Score is built on multiple layers of data and provided the foundation for the Plan.

Definitions: Vulnerability Assessment

Hazard Identification: A hazard is considered to be anything which either threatens the residents of a community or the things that they value.

Exposure: Your communities assets: People, Property, Essential Facilities, Infrastructure and *economic centers* potentially exposed to a hazard.

Hazard: Equals your hazard probability times the hazard consequences and or your probability based on geographic hazard layers.

Vulnerability: Defines what part of your "exposure" is at "risk" to each "hazard"

Exposure (Exposure Score)

- A Hazard is a Hazard no matter where you are.
- Determining ones Exposure is a Critical component of completing a Vulnerability Assessment for Hazard Mitigation Planning.
- GIS plays a Critical role in mapping ones exposure and completing a Hazard Vulnerability Assessment.
- Exposure data is important for all types of planning.

Economic Data

Risk Data

Types of Data:

Hazard Exercise Points/Local Knowledge NCDC Sheldus DFIRM Severe Repetitive Loss Data Landslide Maps Floodplain Maps (DFIRM)

Geographic Information Systems (GIS)

- GIS architecture facilitates an inventory of assets.
- Ability to visualize on a map which buildings/businesses/land areas are more vulnerable.
- GIS architecture allows for a model to calculate building-bybuilding vulnerabilities via the digital database created for the vulnerability assessment.



Maps for Each Hazard

- Exposure Score shows what is at risk to a hazard (assets)
 - Identify areas where if an event happened the impact would be greatest due to increased assets
- Hazard Score shows where the risk to a hazard is
 - Use to help plan the future growth of your community, direct growth out of high hazard areas
- Vulnerability Score shows where the Exposure and Hazard intersect
 - Use to identify areas for mitigation, help prioritize and identify areas of mitigation interest: Emergency Management

Mapping Your Community's Hazard Vulnerability

Use assessment results to drive other planning initiatives.

Mitigation Strategy

	ELEMENT C. MITIGATION STRATEGY					
	C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))					
	C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))					
	C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))					
	C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new					
What are	our mitigation goals and a setions identified will be prioritized (including cost benefit review)	ctions?				
How will t	he Plan be integrated into	planning				
mechanis	C6. Does the Plan describe a process by which local governments will methane the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))					
	ELEMENT C: REQUIRED REVISIONS					

 To guide the selection of activities to mitigate and reduce potential losses based on the risk assessment.

• By **prioritization** of mitigation actions, this drives approval and funding for future projects for your jurisdiction.

GOAL 1 – Protect lives and reduce injuries from natural hazards.

GOAL 2 – Protect university property and research data.

GOAL 3 – Ensure consistent funding sources for prevention, maintenance, and mitigation of natural disasters.

GOAL 4 – Enhance existing, or design new, University policies and technical capabilities that will reduce damages effects of hazards.

GOAL 5- Build stronger partnerships between government, university agencies, business, and the general public.

GOAL 6-Increase public and university sector awareness of, and support for, disaster, loss education practices.

Mitigation Five-Year Plan

Action	Cost/	Timeframe	Hazards	Description Offices	Offices	Funding/Budget	2013
1.2.1 Educate	Benefit D I I	(Years) Annually	Addressed All-hazards	Conduct outreach to educate citizens on how to receive up-to-date evacuation instructions, shelter-in- place procedures, and information pertaining to hazardous material	Responsible EMA LEPC	Considerations	
1.2.2 Install	Medium	1-3 years	Flooding	exposure. Install flood marker signs that include both a "Road May Flood" sign, as well as signage indicating water depth.	EMA State Department of Highway Division of Water Quality	Internal	Future In Progres

CEDS Content Guidelines

Comprehensive Economic Development Strategy

- Cornerstone of Economic Development Administration's (EDA) programs.
- Serves as a means to engage community leaders
- Leverage involvement of private sector
- Establish blueprint for regional collaboration

CEDS Content Guidelines (Coming Soon)

- Linking the sections to improve the focus and impact of the CEDS.
 - Content builds upon each section resulting in coherent, targeted document (SWOT analysis is key).
- Emphasizing cohesive strategies rather than a standalone list of projects.
 - Strategic direction evolves from a defined vision resulting in a clear action plan with prioritized, measurable capacity building activities.
- Infusing economic resilience into the CEDS process.

Economic Resilience in the CEDS

- Integrating resilience into the CEDS can take multiple forms.
 - Analysis of regional vulnerabilities in SWOT assessment;
 - Inclusion of regional disaster preparedness and recovery efforts;
 - Strategies to diversify the economy and/or realign the workforce to support emerging industries;
 - Resilience objectives built off of statewide initiatives or related regional planning efforts;
 - Or, all of the above.

Definitions:

Economic Resilience

The ability of a region or community to anticipate, withstand, and bounce back from any shocks to its businesses and overall economy, including:

- Natural disasters or hazards (i.e. flooding)
- The closure of a large employer (i.e. a factory, power plant)
- The decline of an important industry (i.e. textiles)
- Changes in the workforce (i.e. youth outmigration, skill specialization)
- Climate change (i.e. increasing temperatures, decreasing water availability)

One Approach to Building Economic Resilience: Coordinating CEDS and Hazard Mitigation Plans

CEDS

Contributes to effective economic development through locally-based planning process.

Mitigation

Effort to reduce loss of life and property by lessening the impacts of hazards.

Opportunities for Coordinating the CEDS and Hazard Mitigation Plans

Benefits of Plan Coordination

- Supports business and economic development that is safe and resilient to known hazards.
- Builds capacity and relationships that can lead to a quicker, stronger recovery in the event of a disaster.
- Makes each plan more effective and likely to achieve its objectives.
- Promotes creative thinking about new funding sources for programs and projects.
- Allows leaders to market the region to businesses as safe and prepared for future disasters.

CEDS

Contributes to effective economic development through locally-based planning process.

Mitigation

Effort to reduce loss of life and property by lessening the impacts of hazards.

CEDS

Contributes to effective economic development through locally-based planning process.

- Summary Background
- SWOT Analysis
- Strategic Direction/Action Plan
- Evaluation Framework

Comparing Plan Components

- Planning Process
- Risk Assessment
- Mitigation Strategy
- Plan Maintenance

Mitigation

Effort to reduce loss of life and property by lessening the impacts of hazards.

Ideas for Incorporating Hazard Mitigation into CEDS

Summary Background

 How have disasters/hazards impacted the regional economy?

SWOT Analysis

- Consider the risk assessment and other potential economic threats and opportunities related to disasters/hazards.
 - Business location
 - Industry-specific vulnerabilities
 - Infrastructure

Strategic Direction/Action Plan

 Incorporate strategic direction and approaches that flow from SWOT and risk assessment results.

Evaluation Framework

 Align CEDS evaluation framework and mitigation plan maintenance procedures.

Ideas for Incorporating CEDS into Hazard Mitigation

Planning Process

 Include the CEDS planning committee, economic developers, local business.

Risk Assessment

 Incorporate Economic parameters within your Exposure Score. Identify business clusters and their vulnerabilities.

Mitigation Strategy

 Incorporate economic development needs within your hazard mitigation plan. Engage the sector and incense their participation.

Plan Maintenance

 Align CEDS evaluation framework and mitigation plan maintenance procedures. In order to maintain a continually planning process.

Example Strategies

INSTALL GENERATORS

UNDERGROUND UTILITIES

CONTOUR PLOWING

PURCHASE CROP INSURANCE

Designate riparian buffer zones

Storm Sewer Improvements

Flood Protection

Reservoirs and Dams

EXAMPLES:

- Business Continuity Plans
- Building Codes
- Promote gathering, archiving, and sharing of local hazard data
- Create training program for all hazards planning and mitigation.
- Conduct hazard mitigation seminars and workshops.

Josh Human Director Center for Hazards Research and Policy Development josh.human@Louisville.edu

Andrea Pompei Lacy Project Manager Center for Hazards Research and Policy Development andrea.pompei@louisville.edu