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
Agenda

1. An Overview of Hazard Mitigation Planning
2. CEDS Content Guidelines
3. Defining Economic Resilience
4. 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
How it all fits together…

Disaster Management Cycle

MITIGATE

PREPARE

RESILIENCE

RECOVER

RESPOND

DISASTER
Disaster Mitigation Act of 2000

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

Why mitigation?

Mandates a Plan

Establishes a process

Enables multi-sector participation

Enables community representation

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

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

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

Mitigation contributes to more resilient communities
The “who, what, when, where, and why” of plan development.
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-by-building 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

Source: Exposure- Division of State Risk and Insurance, ESRI, Kentucky Infrastructure Authority, Kentucky Office of Geographic Information, Kentucky Transportation Cabinet, KYEM, Public Service Commission, and the US Census Bureau. Hazard: Kentucky Geological Survey
Mapping Your Community’s Hazard Vulnerability

Use assessment results to drive other planning initiatives.

Identifying vulnerable areas

Target action areas
Mitigation Strategy

What are our mitigation goals and actions?

How will the Plan be integrated into planning mechanisms?
Mitigation Strategy

- **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.
Mitigation Goals

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

<table>
<thead>
<tr>
<th>Action</th>
<th>Cost/Benefit</th>
<th>Timeframe (Years)</th>
<th>Hazards Addressed</th>
<th>Description</th>
<th>Offices Responsible</th>
<th>Funding/Budget Considerations</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1</td>
<td>High</td>
<td>Annually</td>
<td>All-hazards</td>
<td>Conduct outreach to educate citizens on how to receive up-to-date evacuation instructions, shelter-in-place procedures, and information pertaining to hazardous material exposure.</td>
<td>EMA LEPC</td>
<td>Internal</td>
<td>Future</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Medium</td>
<td>1-3 years</td>
<td>Flooding</td>
<td>Install flood marker signs that include both a “Road May Flood” sign, as well as signage indicating water depth.</td>
<td>EMA State Department of Highway Division of Water Quality</td>
<td>Internal</td>
<td>In Progress</td>
</tr>
</tbody>
</table>
CEDS Content Guidelines
What is CEDS?

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 stand-alone 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.
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.

Economic Resilience
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.
Comparing Plan Components

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.

Economic Resilience
Comparing Plan Components

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.

**Economic Resilience**
Idea 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
Target Action Areas

INSTALL GENERATORS

UNDERGROUND UTILITIES
Target Action Areas

CONTOUR PLOWING

PURCHASE CROP INSURANCE
Target Action Areas

- Designate riparian buffer zones
- Incorporate economic development activity restrictions in high-risk areas

Source: USGS, Watauga County, NC

Designate riparian buffer zones
Target Action Areas

Storm Sewer Improvements

Flood Protection

Reservoirs and Dams
Target Action Areas

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.
## Contact

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