Building Community Resilience by Integrating Hazard Mitigation

Integrating Hazard Mitigation Into the Local Comprehensive Plan

Local comprehensive plans, also referred to as master plans or general plans, provide a framework for the physical design and development of a community over a long-term planning horizon. They address social, economic, and environmental issues by the manner in which they guide overall growth and development. The vision, goals, and policies of the comprehensive plan are routinely implemented through other local planning instruments such as zoning ordinances, subdivision regulations, and capital improvement programs. Integrating hazard mitigation into the local comprehensive plan thereby establishes resilience as an overarching value of a community and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

Land Use and Future Development

Strong land use policies are the foundation of successful comprehensive planning efforts—they establish the general pattern for the location, distribution, density, and type of future development throughout all areas of the community. The land use element of a comprehensive plan is based on an analysis of present and future conditions, including physical setting and natural surroundings. This creates opportunities to guide future growth and development away from areas with known hazards, or to ensure design standards for new or improved construction take potential hazards into account. Land use policies can build community resilience by taking information on the location, frequency, and severity of hazards into consideration and setting forth recommendations that influence development in a way that does not increase risks to life and property.

Transportation

Transportation and land use are intricately linked; therefore, the transportation element can reflect land use principles that reduce the community's vulnerability to hazards. Building community resilience through transportation planning can be accomplished by adopting policies that direct growth away from known hazard areas. Another opportunity to be seized is ensuring that transportation systems and other critical infrastructure are designed to withstand the effects of known hazards so that they still function in the event of an emergency or disaster.

"Hazard Mitigation works best as a policy objective of local planning when it is so completely integrated into the comprehensive plan that it becomes a normal assumption behind all daily planning activities."

American Planning Association, Planning for Post-Disaster Recovery and Reconstruction
http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&idx=1558
Housing

Housing policies focus on the provision of safe and sanitary housing to meet existing and future needs of the community. The housing element can help strengthen community resilience by ensuring that the location and design of new or improved housing complies not only with existing building codes, but with potential hazards in mind. Opportunities to strengthen or replace structures identified as vulnerable to hazards can be promoted through existing maintenance or rehabilitation programs, and particularly through policies regarding non-conforming, substantially damaged, or substantially improved properties.

Economic Development

The relationship between economic development and resilience is rooted in the shared objective to sustain and enhance community sustainability. Hazard mitigation can be integrated with economic development policies by promoting commercial or industrial expansion in areas that are not vulnerable to damage or disruption from hazards, and by making community resilience a key feature in attracting, expanding, and retaining businesses and industry.

Public Facilities and Infrastructure

Similar to the transportation element, a community’s facilities and infrastructure policies are directly linked to land use patterns and community development. These linkages provide opportunities to build community resilience by establishing policies that limit the extension of public facilities or services and the provision of other capital expenditures in areas that are vulnerable to hazards. Policies may be adopted to ensure critical facilities such as police and fire stations, as well as key infrastructure such as water and wastewater treatment plants, are protected from the effects of hazards. This element also provides opportunities to establish goals and policies in support of mitigation projects such as stormwater drainage improvements or the public acquisition of hazard areas for open space.

Natural Resource Protection

There are an abundance of opportunities to achieve multiple objectives when it comes to hazard mitigation and natural resource protection. Policies designed to preserve or enhance environmental areas of concern, such as wetlands, riparian corridors, and floodplains, often include the added benefit of avoiding or minimizing development in hazard areas. These policies build community resilience by not only protecting lives and property from hazards, but also maintaining natural and beneficial functions of systems that often act as buffers against those hazard effects.

Historic Properties and Cultural Resources

Policies designed to protect and preserve historic and cultural sites, buildings, and other resources may be linked with existing mitigation strategies to prevent damage or losses from hazards—particularly due to the fact that such resources are irreplaceable. The policies aimed at protecting these unique resources, by their very nature, can be tailored in a manner consistent with the location, design, or material to be preserved.
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The Role of Local Leadership

How Can Local Leaders Promote the Integration of Hazard Mitigation into Local Planning?

Local community leaders and decision makers play an important role in setting priorities, providing overarching policy direction, and bringing stakeholders together. Their visibility can be used to spearhead initiatives that promote the importance of integrating hazard mitigation to achieve overall community safety and resilience. In addition, they have the ability to communicate with a broad base of constituents and partners. These qualities are invaluable for the success of an integrated, interdepartmental, multi-jurisdictional hazard mitigation strategy. Here are some ways to promote integrated hazard mitigation solutions:

- **Frame the issue.** On its own, integrating hazard mitigation and safe growth policies can seem like an obscure topic to decision makers and the general public. Frame the issue in terms that resonate with the community, such as economic development, environmental protection, or providing essential public services. Use these issues to highlight the importance of hazard mitigation in supporting these community values.

- **Make safety and resilience a priority.** Ensure that public safety and community resilience are considered in all decisions. When deliberating or voting on an issue, providing policy direction, or setting budgets, ask how that decision affects safety and resilience, and ask which hazard mitigation practices may strengthen the decision.

- **Build partnerships.** Bring stakeholders to the planning table by fostering partnerships among local departments, between agencies, and between communities. Include representatives of interest groups such as environmental organizations, business associations, or professional associations. Make use of technical experts—this helps to provide a more robust knowledge pool for developing ways to integrate hazard mitigation. Invite civic organizations and the general public to participate and provide input.

- **Get the message out.** Use the visibility of a local leader as a platform to champion, or raise awareness on, the importance of hazard mitigation and community resilience. Quickly highlight successful actions and return on investment to promote other actions. Be repetitive and consistent with the message through multiple channels of communication.
Responsibility for promoting community safety and resilience does not lie with a single person or department. Hazards often cross jurisdictional boundaries, requiring communication and partnerships among neighboring communities and various organizations that can support integration efforts.

**What Community Tools Support Community Resilience?**

Building or enhancing community resilience does not need to mean expensive structural protection measures. Decisions that are made relating to land use, environmental protection, economic development, capital improvements, government operations, and budgets all have a role to play in mitigating hazard risks. The most effective way to promote resilience at the community level is to integrate the consideration of risk, and ways to reduce or eliminate risk, into all decisions.

Examples of integrated hazard mitigation solutions include:

- Establishing goals, policies, and objectives that are linked to risk reduction and resiliency in the comprehensive, general, or other community plans;
- Incorporating hazard mitigation standards in permit reviews;
- Using tax increment financing, transportation improvement financing, or other public funding mechanisms to help pay for hazard mitigation measures;
- Using capital improvement programs to fund hazard mitigation measures;
- Using infrastructure improvements to guide growth away from known hazard areas;
- Using zoning and other land use controls to prohibit or discourage hazardous development patterns;
- Preserving natural areas or open space as buffers against known hazards, such as wildfire breaks;
- Preserving or restoring natural functions that minimize hazard impacts, such as wetland restoration;
- Incorporating structural retrofits or relocation of existing buildings or infrastructure during the post-disaster redevelopment process; and
- Incorporating the awareness of hazard risks and hazard mitigation into public outreach practices.

**Why is Hazard Mitigation Important?**

Hazard mitigation has value on a number of levels. Mitigation creates safer communities by reducing loss of life and damage to property. Mitigation also enables individuals and communities to recover more quickly from disasters. And, mitigation lessens the financial impact of disasters on individuals and all levels of government.
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Social and Economic Benefits

What Makes a Community Resilient?

Resilience is the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption. Resilient communities proactively protect themselves against hazards, build self-sufficiency, and become more sustainable.

What Are the Benefits of Community Resilience?

Community resilience has multiple social and economic benefits, including:

- **Preventing loss of life and injury.** This is typically of paramount importance to most communities. The value of protecting buildings and infrastructure diminishes significantly if residents and property owners do not feel safe in their homes or places of business.

- **Reducing property damage to homes and businesses.** Minimizing physical damage to residential properties can help avoid expensive displacement costs, in addition to the cost of repairs. Any avoided damage to a business can help reduce loss of revenue and downtime for employees, in addition to the cost of repairs.

- **Reducing business interruption and revenue loss.** Businesses employ workers, provide for community needs and services, and generate revenue, allowing the community, both its members and government, to provide for itself. Reducing business interruption and revenue loss greatly aids in the speed and effectiveness of returning a community to self-sufficiency and vitality after a disaster.

- **Helping to lower emergency response and disaster recovery costs.** Emergency response costs can be lowered significantly when services such as fire safety, search and rescue, medical operations, disaster management, and other related services are needed less. Disaster recovery costs can also be lowered when prolonged activities such as long-term recovery planning, debris management, housing recovery, infrastructure recovery, natural resource recovery, and other related activities are needed less.

“On average, a dollar spent by FEMA on hazard mitigation provides the nation about $4 in future benefits.

In addition, FEMA grants to mitigate the effects of floods, hurricanes, tornadoes, and earthquakes between 1993 and 2003 are expected to save more than 220 lives and prevent almost 4,700 injuries over approximately 50 years.”

*Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities by the Multihazard Mitigation Council*  
- **Attracting new businesses and residents.** The ability to market a neighborhood or business district as “resilient” to hazards can help attract industry, commercial development, and a thriving population with positive impacts on a community’s tax base.

- **Protecting cultural and historical assets.** Seeking to preserve, protect, conserve, rehabilitate, recover, and restore cultural and historical resources can have a significant positive impact on a community’s overall health.

- **Reducing environmental damage.** Environmental assets and natural resources are important to community identity and quality of life and support the economy through agriculture, tourism and recreation, and a variety of other ecosystem services, such as clean air and water. The natural environment also provides protective functions that reduce hazard impacts and increase resiliency.

- **Building a sense of place and peace of mind.** A safe, resilient community results in residents and business owners feeling more confident and secure about their assets and investments, and can lead to a stronger sense of place and, ultimately, peace of mind.

**The Added Value of Integration**

Well-rounded community resilience as described above is often the result of integrating hazard mitigation with other local planning processes that help guide community development. Communities can build a stronger capacity for mitigation, preparedness, response, and recovery by building on the public, private, and non-profit institutions that enable day-to-day activities to run well. Integration can also lead to efficiencies and reduced costs as planning efforts and hazard mitigation activities are combined, productivity is optimized, and tasks and responsibilities are shared.
Building Community Resilience by Integrating Hazard Mitigation Planning for Post-Disaster Redevelopment

The purpose of a post-disaster redevelopment or recovery plan is to facilitate pre-disaster planning in a way that guides long-term recovery efforts (five years or more) following a disaster. There are a number of reasons to plan for long-term recovery before a disaster occurs, including:

* **Planning ahead.** Redevelopment is too complex an issue to address in the midst of a disaster response or during the immediate post-disaster recovery process. A community’s attention and resources will likely be committed to more pressing needs, and stakeholders will likely not have the time or ability to engage in a long-term planning effort. Planning in advance provides the opportunity to properly integrate hazard mitigation into redevelopment and recovery with sufficient time to explore, discuss, and address the issues.

* **Rebuilding resilient.** Rebuilding damaged structures or infrastructure in the same location and/or in the same way may leave the community at risk from similar disaster losses in the future. Hazard mitigation measures such as property protection and hazard avoidance should be considered when rebuilding or repairing damaged structures.

* **Focusing long-term.** Disasters can force business closures, displace residents and have lasting effects on the vitality of a community. Understanding and addressing these social and economic drivers, along with their existing dependencies and vulnerabilities, can support the community in its mitigation and post-disaster redevelopment efforts.

* **Implementing the vision.** Disasters may present opportunities to target investments that help achieve a long-term community vision.

“Without a comprehensive, long-term recovery plan, ad hoc efforts in the aftermath of a significant disaster will delay the return of community stability. Creating a process to make smart post-disaster decisions and prepare for long-term recovery requirements enables a community to do more than react...”

Florida Department of Community Affairs and Florida Division of Emergency Management, Post-Disaster Redevelopment Planning: A Guide for Florida Communities

www.fema.gov/multi-hazard-mitigation-planning
Integrating Hazard Mitigation into Redevelopment Plan Elements

The community’s post-disaster redevelopment plan can identify roles and responsibilities of key people, departments, and agencies; address the need for temporary regulations such as post-disaster building moratoria; address potential impacts to historic resources; address potential impacts to non-conforming uses; and address location and other provisions for temporary housing.

In addition, a recovery plan can seek to integrate long-term hazard mitigation, public safety, and resilience goals, including:

- **Profiling and mapping hazard risks.** This can help synchronize geospatial hazard analysis and mapping efforts, leading to better informed policy recommendations. This information can also be utilized by emergency operations and response personnel in order to better understand hazard impacts as events unfold.

- **Establishing a safety or hazards element in the comprehensive or general plan.** A separate public safety or hazards element can be added to the comprehensive plan, or a “checklist” or matrix might be considered for inclusion as an appendix to the plan to track where and how hazard mitigation is integrated throughout each element. This facilitates better coordination between land use and emergency planners, and ensures that hazard profiles and mapping information are integrated into the land use planning process.

- **Using land use, zoning, subdivision, and other development regulations.** These tools can be instrumental in guiding growth to safer areas while limiting development in known hazard areas. A community’s hazard profile should always be considered when making land use or development decisions.

- **Protecting or restoring natural areas.** This can maintain a buffer or other mitigating effects, such as flood storage, while directing growth to less environmentally sensitive and/or hazard prone areas.

- **Using capital improvement programs to fund safety measures.** This can also aid in guiding safe growth and establishing road improvements or other measures intended to facilitate continuity of passage, evacuation, and other essential community needs in the event of a disaster.
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Protecting Community Infrastructure

Investing the time and resources needed to develop a local hazard mitigation plan is critical to a community’s resilience to disasters. A key aspect of this is integrating hazard mitigation concepts into existing community infrastructure plans and projects. This typically requires long-term planning, coordination, community buy-in, and funding.

A range of hazard mitigation actions may be implemented to protect community infrastructure, including:

- Incorporating hazard mitigation into capital improvement programs;
- Flood protection measures for water or sewer facilities, road elevation, or drainage improvements;
- Increasing hazard resistance when repairing or replacing aging transportation infrastructure such as roads, bridges, and tunnels;
- Bolstering the protection of hospitals, fire stations, emergency operations centers, and other critical facilities through structural retrofits;
- Dam or levee maintenance;
- Underground power lines;
- Tree pruning/Canopy management;
- Utility system redundancies; and
- Lightning protection measures.

The integration of mitigation into planned infrastructure projects can provide tangible benefits to the community and its public works staff. These include the reduction or elimination of service outages, which can free up public works personnel to provide response and recovery support elsewhere, and reduced recovery costs.
Why is Coordination Important?

Public works officials may benefit from working closely with community planners and hazard mitigation specialists in a comprehensive planning process that addresses the needs of the whole community. Ideally, this coordination would occur in a pre-disaster environment. However, it is not too late to benefit from coordination if the first meeting between public works and other community planners occurs in the days following a disaster.

Some of these mutual benefits may include:

- Hazard mitigation plans may have already identified replacement values for structures or predicted where damages are likely to be greatest;
- Information in the hazard mitigation plan may assist public works officials with post-disaster damage assessments;
- Public works officials may have first-hand knowledge of what damage has occurred in the community and what needs to be done to mitigate it; and
- An opportunity to look at activities that will help the community in the short term, while reducing risk in the long term.

The Post-Disaster Window of Opportunity

If damaged community infrastructure is replaced in the same manner as it was originally constructed, without integrating hazard mitigation, it may remain vulnerable to future disasters.

Under the FEMA Public Assistance program for example, grant opportunities may fund hazard mitigation measures during the repair or replacement of public facilities damaged by a presidentially declared disaster event. This is often referred to as "Section 406 Mitigation." Examples can include relocation of facilities from hazardous locations, slope stabilization to protect facilities, and certain types of protection from high winds, floodproofing of buildings, flood protection of bridges and culverts, seismic protection, and utility protection. These activities are intended to enhance a facility’s or system’s resistance to similar events in the future.

It is important for community officials to coordinate with FEMA on the utilization of Section 406 Mitigation funding or other hazard mitigation assistance following a major disaster event to ensure that hazard mitigation is incorporated into the recovery and rebuilding process.