

SECTION 6 - RANGE OF ALTERNATIVE MITIGATION ACTIONS CONSIDERED

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For this hazard mitigation plan to be approved by FEMA, each participating jurisdiction was required to identify and analyze a comprehensive range of specific mitigation actions and projects being *considered* to reduce the effects of each hazard (as per Part 201.6(c)(3)(ii)). The plan must include a list of *potential* loss reduction actions (including a comprehensive range of specific mitigation actions for each profiled hazard), and document that each jurisdiction has *analyzed* these various actions to achieve the community's goals and objectives for reducing and/or avoiding the effects of the identified hazards. FEMA's guidance states that the plan *should* (though is not required to) describe the process by which the community decided on particular mitigation actions, and points out that some of the mitigation actions initially identified may ultimately be eliminated in the community's action plan after analysis. FEMA's guidance is clear that a comprehensive range of actions should be *considered* for each identified hazard (Part 201.6(c)(3)(ii)). FEMA Region 2 requires that actions addressing each identified hazard (regardless of the degree of risk) shall be included in local municipal mitigation strategy / action plan for each municipality requesting approval of the plan. (*For more information, see FEMA's Local Multi-Hazard Mitigation Planning Guidance, July 2008*).

The following table (Table 6-1) represents a range of types of mitigation actions that were considered by the Core Planning Group to address each of the hazards identified in this plan. This table served as a launching point for the discussion and development of specific mitigation actions for each municipality, in conjunction with a mitigation action items "Tip Sheet", which was also distributed to members of the Core Planning Group. In addition to listing examples of mitigation actions, the Tip Sheet also provided background information regarding the selection of mitigation actions and information regarding the eligibility of mitigation actions under the various FEMA grant programs.

At a working session of the Core Planning Group on November 30, 2010 participating jurisdictions considered this range of actions and developed a mitigation strategy (action plan) for their jurisdiction. Each jurisdiction has identified and analyzed a comprehensive range of mitigation actions and projects for each hazard, and address reducing the effects of hazards on both new and existing buildings and infrastructure.

Range of Actions and Projects That Were Considered

As required by FEMA, the Core Planning Group began by *identifying* a comprehensive range of potential loss reduction actions and projects for each hazard. The range of potential actions that was considered is listed and described in Table 6-1, and is organized according to the Mitigation Goal the action is intended to help achieve. In addition to these general types of mitigation actions, the Core Planning Group and JATs also considered a series of more specific mitigation actions that had been identified throughout the course of the planning process as specific problems and/or problem areas were brought to light in their community.

Note: After considering this range of actions, some of the actions initially considered were ultimately eliminated from community action plans based on existing local conditions. Others were carried over for detailed analysis and prioritization (see Table 6-2). The community and County action plans that were ultimately developed, together with action items spearheaded at the County level with local participation, include action items to address every hazard profiled in this mitigation plan (as further detailed in Sections 7, 8 and associated Appendices). Communities will consider widening the scope of their implementation strategies at each update to encompass a greater range of hazards, following progress or completion of the actions in their initial strategies.

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Table 6-1 Types of Actions Considered to Achieve Mitigation Goals			
Goals		Actions	
Goal Number	Description	Action Number	Description
1	Promote disaster-resistant development.	1.A	Join the National Flood Insurance Program (for non-participating or suspended communities).
		1.B	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy- review of draft plans by the County Emergency Management Agency.
		1.C	Explore the need for hazard zoning, high-risk hazard land use ordinances, subdivision regulations, and development density controls.
		1.D	Organize an annual event / fair for homeowners, builders and county and local jurisdictions that includes sale of NOAA weather radios, dissemination of information brochures about disasters and building retrofits, demonstration of “defensible-space” concept and fire resistant construction materials (for roofs/exterior finishes and inflammable coverings for openings like chimneys and attics) etc.
		1.E	Develop a stormwater management plan that includes subdivision regulations to control run-off; both for flood reduction and to minimize saturated soils on steep slopes that can cause landslides.
2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.	2.A	Expand and disseminate GIS and other hazard information on the internet.
		2.B	Develop a plan and seek funding for backup electric and telecommunications systems in local government-owned critical facilities.
		2.C	Support and fund Community Emergency Response Team (CERT) programs that also include a mitigation component.
		2.D	Create a Hazard Information Center – a virtual and physical library that contains all technical studies, particularly natural resources.
		2.E	Implement public awareness, education, and outreach programs for all or targeted hazards.
		2.F	Expanding upon the parcel data in the County’s GIS to include such information as building square footage, year built, type, foundation type, and condition, would allow for a more accurate assessment of vulnerability. Use information to update plan. Ensure information will be available to the public and to relevant communities and agencies.
		2.G	Implement public notification of imminent/ongoing disaster/hazard events via web-based reverse 911 technology and portable programmable message boards.
		2.H	Procure and implement web-based emergency management software to facilitate efficient and timely disaster response and management.
		2.I	Construct specific protected facility for storage and maintenance of hazard management assets.
		2.J	Provide training for inspection and enforcement of adopted codes and ordinances.
3	Reduce the possibility of damage and losses due to drought.	3.A	Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictors, and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.

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**Table 6-1
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Goals		Actions	
Goal Number	Description	Action Number	Description
		3.B	Modify rate structure to influence consumer water use including: increasing rates during summer months and imposing excess use charges during times of water shortage.
		3.C	Reduce water use for landscaping by imposing mandatory water-use restrictions during times of water shortage. Also, develop a demonstration garden to exhibit water conservation techniques.
		3.D	Publish and distribute pamphlets on water conservation techniques and drought management strategies.
		3.E	Develop and adopt an emergency water allocation strategy to be implemented during severe drought.
		3.F	Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.
		3.G	Encourage beneficial re-use of treated wastewater effluent through cooperative projects with dischargers, agriculture and other major water users to distribute or provide this alternative source of water.
4	Reduce the possibility of damage and losses due to flooding.	4.A	Join the National Flood Insurance Program (NFIP). As a participant, floodplains within the participating community will be identified and mapped. In return, the participating community will become eligible for flood insurance as long as the local governing body adopts and enforces a floodplain ordinance.
		4.B	Join the NFIP Community Rating System (CRS), under which communities implementing actions that go beyond the specified NFIP minimum are eligible for discounted flood insurance premiums.
		4.C	Obtain specialist training and certification (e.g. Certified Floodplain Manager) for local staff tasked with enforcement of relevant codes and flood-related ordinances.
		4.D	Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.
		4.E	Develop a Countywide gauging and warning system for flash and riverine flooding.
		4.F	Continue to implement best management practices for floodplain areas.
		4.G	Identify and document repetitively flooded properties. Explore mitigation opportunities for repetitively flooded properties, and if necessary, carry out acquisition, relocation, elevation, and flood-proofing measures to protect these properties.
		4.H	Identify locations/structures suitable for construction of floodwalls and other barriers such as raised roads.
		4.I	Conduct a routine stream maintenance program (for currently non-participating communities) and seek financial assistance to clean out stream segments with heavy sediment deposits.

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		4.J	Develop specific mitigation solutions for flood-prone roadways and intersections. This can include, but is not limited to, actions such as culvert upgrades, drainage improvements, road raisings, etc.) Develop a work plan for when sites will be surveyed and what role can the local government play in selection and implementation of mitigation activities (e.g. any monetary or contextual support through the local capital improvement plan).
		4.K	Implement wetlands development regulations and restoration programs.
		4.L	Implement identified stormwater recharge, rate or volume projects identified in Regional Stormwater Management Plans to decrease “flash” in streams during/after storm events.
		4.M	Implement and enforce open space preservation programs.
		4.N	Implement specific actions to enhance/improve participation in/compliance with National Flood Insurance Program (NFIP).
5	Reduce the possibility of damage and losses due to earthquakes.	5.A	Retrofit/Reconstruct old critical facilities.
		5.B	Acquire dilapidated vulnerable structures.
		5.C	Public awareness through video/brochures about simple steps homeowners can take to mitigate damage.
		5.D	Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.
		5.E	Implement hillside and steep slope development regulations.
6	Reduce the possibility of damage and losses due to landslides	6.A	Create comprehensive geological mapping to areas prone to landslides and rockslides.
		6.B	Locally identify and map specific areas of potential slope failure and limit future development in these areas.
		6.C	Develop a public outreach program that addresses the economic impacts of landslides on personal property.
		6.D	Consider adopting a steep slope ordinance, if one is not already in place, to regulate development on these higher risk areas.
		6.E	Develop a vegetation management plan. Proper vegetation can supply slope-stabilizing root strength, and facilitate in intercepting precipitation. Establishing and maintaining appropriate vegetation of areas above the bluff slope may be the single most important and cost-effective mitigation measure available.
7	Reduce the possibility of damage and losses due to lightning	7.A	Carry out inventory of compliance with existing local codes/standards, especially for critical facilities.
		7.B	Encourage adoption of building safety codes such as National Fire Protection Association (NFPA) -780 Standard for the Installation of Lightning Protection Systems (1997).

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Goals		Actions	
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	strikes	7.C	Public awareness/outreach regarding use of ground outlets and surge protectors in homes and businesses.
		7.D	Specific retrofit techniques to protect electrical power and communications equipment
8	Reduce the possibility of damage and losses due to ice jams	8.A	Implement monitoring and early warning measures at key locations
		8.B	Investment in ice-clearing/breaking equipment and appropriate training for county personnel.
		8.C	Construction of ice control structures such as booms, tension weirs and sloped-block barriers.
9	Reduce the possibility of damage and losses due to dam failures	9.A	Enforce participation in/compliance with National and NYSDEC / NYSEMO Dam Safety Programs.
		9.B	Investigate sources of funding to assist private dam owners to complete required repairs/maintenance. Investigate low interest loans to owners and/or jurisdiction acting as guarantor of private owners' loans.
		9.C	Notify owners of property in dam break inundation areas of risks, implement restrictions for new development in these areas.
10	Reduce the possibility of damage and losses due to wildfires	10.A	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas.
		10.B	Develop inventory of addresses for route alerting during wildfire emergencies that require public warning and information.
		10.C	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for possible wildfire components regarding Fire-Rescue, Alert Warning Communications, and Evacuation.
		10.D	Implement and enforce open space preservation programs.
		10.E	Prescribed burning for hazard reduction.
		10.F	Initiate a public outreach program for homeowners.
		10.G	Retrofit buildings with fire resistant materials, especially roofing.
		10.H	Relocate structures (in particular critical facilities) out of hazard areas.
		10.I	Community brush and debris removal and hazard fuels reduction.
		10.J	Firewise landscaping in higher risk areas.
		10.K	Mitigation for streets, highways, and roads that provide key fire access and fuel breaks.
10.L	Implement hillside and steep slope development regulations.		
11	Reduce the possibility of damage and losses due to winter storms	11.A	Promote (or purchase, for critical facilities) NOAA weather radios.
		11.B	Educate residents about driving in winter storms and handling winter-related health effects.
		11.C	Ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards.

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		11.D	Bury or otherwise protect utility lines to avoid power outage due to winter storms (if risk is very high then only this action might be cost-effective).
12	Reduce the possibility of damage and losses due to extreme temperatures.	12.A	Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems.
		12.B	Review existing emergency response plans for enhancement opportunities: work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.
13	Reduce the possibility of damage and losses due to tornadoes and high winds.	13.A	Adopt an ordinance to require safe rooms in mobile home parks.
		13.B	Provide low interest loans (or other form of financial assistance) for building safe rooms.
		13.C	Provide technical assistance for building safe rooms.
		13.D	Adopt an ordinance to require hurricane clips on new construction.
		13.E	Install hurricane clips and wind shutters on existing development- particularly emergency facilities and shelters built before existing codes were adopted to offer some degree of wind protection.
14	Reduce the possibility of damages to emergency and critical facilities from flooding, wildfires and extreme wind.	14.A	Conduct a study to determine the year-built and level of protection (flood, wind) for each emergency facility.
		14.B	On completion of 12.A, seek funding for mitigation projects for emergency facilities not currently designed for protection from flooding, high wind, or wildfire damage.

CPG members were asked to consider the following three sources of additional information on types of hazard mitigation actions that participating jurisdictions considered when developing their jurisdiction-specific mitigation strategies:

- Mitigation Action Items Tip Sheet
- Mitigation Job Aid (from FEMA’s How-To #3 Appendix D)
- Mitigation Glossary of Terms (from FEMA’s How-To #3 Appendix A)

Community Analysis of Possible Mitigation Actions

Core Planning Group members next *analyzed* the full range of possible actions identified in Table 6-1. Their analysis involved a three step process for deciding upon particular mitigation actions:

1. First, CPG members evaluated the actions in Table 6-1 against the hazards identified in their community (as presented in Section 3 Table 3-1). FEMA Region 2 requires that actions addressing each identified hazard (regardless of the degree of risk) shall be included in each local municipal mitigation strategy / action plan for each municipality. The Region has indicated that

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one way this requirement may be met is through County-led actions with specific involvement and participation by each of the individual jurisdictions.

2. Next, Core Planning Group Members conducted a **preliminary analysis** of each action item in Table 6-1, considering the action item in relation to the results of the risk assessment and unique local considerations to identify a subset of preferred action items that would be analyzed in more detail. The results of this preliminary analysis are presented in Table 6-2. (Note: FEMA requires that the plan identify and analyze a range of actions considered to reduce the effects of each hazard. Some actions initially identified in Table 6-1 were ultimately eliminated in local community action plans. FEMA's Guidance document is clear that the plan text can, though is not required, to explain the rationale behind why some of the actions considered were ultimately eliminated in the community's action plan after the analysis.
3. For the subset of preferred action items, Core Planning Group Members conducted a **detailed analysis** and prioritization using FEMA's STAPLEE approach as described in further detail in Section 7 of this plan. Implementation strategies ("action plans", addressing how the actions will be implemented and administered) for the subset of preferred action items are discussed in greater detail in Section 8 of this plan.

Appendix D of this plan includes jurisdictional Prioritization Worksheets for action items for every identified hazard. Appendix E of this plan includes jurisdictional Implementation Strategy Worksheets for action items for every identified hazard.

In addition to the range of initial actions listed in Table 6.1, each participating jurisdiction was required to identify, evaluate, and prioritize actions related to continued/enhanced compliance with the National Flood Insurance Program. These actions and the individual municipalities' analyses of them are included in Appendix F, which also includes recent supplementary guidance ("Hazard Mitigation – NFIP Requirements"); Region 2 recommends that this information should be consulted by the individual municipalities during future plan updates. The participating jurisdictions were urged to consider mitigation actions for Repetitive Loss Properties within their boundaries, and were advised as to how municipal governments may coordinate with owners of private property to work towards mitigation measures for RLPs (or any other hazard-vulnerable assets) which are not publicly-owned.

During the planning process, the question arose as to how individual municipalities were to proceed with their development of mitigation strategies and actions in situations if/where other agencies such as the U.S. Army Corps of Engineers are known to be considering the implementation of (possibly large-scale) mitigation measures in the same area.

The Planning Group was advised that the full implementation of such proposed projects is not guaranteed, and that even if such projects are approved and funded, it can be many years before they are initiated. With that in mind, the communities were advised to decide whether they would be willing to risk the chance of damage over that interim period between the completion of the current planning process and the assumed completion of studies and subsequent projects that are not guaranteed to be implemented.

However, if the community decides to defer mitigation actions pending studies by other agencies, it is recommended that the study be revisited at the five year update to ensure that sufficient progress is being made towards completion of a project, or to determine if another strategy is needed. It is also recommended that each community include at least one mitigation project regardless of hazard or any other plans or proposals, in order to receive credit from FEMA for having a mitigation plan which may be used to aid applications for grants to reduce risks from hazards not affected by the proposed plans.

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Insert “Table 6.2 - Each Jurisdiction’s Preliminary Analysis of Comprehensive Range of Actions for Each Identified Hazard” here following the Mitigation Strategy Working Session

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