

## Chapter 9 - Mitigation Strategies and Priorities

The next step in the hazard mitigation planning process is to identify mitigation actions suitable to the community, evaluate the effect the action will have on the specified mitigation objective and prioritize actions to decide what sequence or order these actions should be pursued.

Mitigation actions can be grouped into six broad categories:

- 1. Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- 6. Structural Projects:** Actions that involve construction of structures to reduce the hazard impact. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

### Identification of Mitigation Actions

The public was invited to a meeting held in Otsego County on April 19, 2004 to discuss and identify hazards and possible mitigation actions. Communities, agencies, and general public were invited to attend the workshop that was held in conjunction with the Otsego County Local Emergency Planning Committee.

### Evaluation and Prioritization of Mitigation Actions

The Otsego LEPC met on September 21, and October 18, 2004, to evaluate and prioritize the list of mitigation actions. The committee also identified governmental level, agencies and organizations that could carry responsibility for completing the action and possible funding sources. Evaluation criteria included: social impacts, technically feasible, administrative capabilities, political impacts, legal issues, environmental, and benefits. Appendix C shows the projects and associated evaluated criteria.

The committee used a normative ranking process to rank the list of projects compiled at earlier sessions. The planning team chose to use an approach termed “multi-voting.” Actions were ranked by hazard type. Each team member was allocated one-half the total number of potential actions to use as individual votes. In other words, if there were 20 mitigation actions for wildfires, each member could vote for 10 of the actions. The total number of votes was tabulated for each action, and based on that score, actions were ranked. The rankings derived from the project prioritization process are reflected under the “Priority” column in the following tables. Those items that did not qualify as “priority projects” are included at the end of the list for each hazard type. Therefore, all actions that were considered by the committee are included somewhere on the list. Next, the committee identified possible responsible governments, agencies and/or organizations that might provide general funding for the respective projects. The general location where each prioritized project was applicable is also defined in the following tables. An anticipated timeframe for completing the actions was also estimated.

<b>Mitigation Actions</b> <b>A. Multi-Hazard Actions. #1</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Encourage continuation of house numbering program	1	A,B,C	Federal- F104	County-wide	Ongoing
Communities will acquire and maintain an adequate level of emergency power generators to supply emergency water needs, wastewater processing, emergency communications, emergency health care, and shelters.	2y	C	State- S8, S11 Local- General Fund Federal- F12, F13, F14, F16, F19, F83, F85	County-wide	Mid-term
Review and develop site emergency plans for schools, factories, office buildings, shopping malls, hospitals, correctional facilities, etc .to cover all potential hazards.	3	A, C,D,	Federal- F87, F104	County-wide	Short-term
Ensure key gasoline stations have the capacity to pump gasoline during power outages.	3	C, K,M	Federal- F15, F87, F102, F108	County-wide	Mid-term
Organize outreach program to vulnerable populations during and after hazard events, including wildfires, extreme winter and summer weather events, periods of extreme temperatures, public health emergencies, and other hazards that can impact the community.	3	A,C,D,H,I,N	Local- General Fund Federal- F9, F70, F97, F98, F100, F104 American Red Cross	County-wide	Short-term
Continue to develop Emergency Response Team program to help prepare for all hazard events in the county.	3	A,D,H	Local- LEPC State- Health Department Federal- F38, F104	County-wide	Mid-term
Develop and implement a public education program for all natural hazards that threaten the community.	3	A,C,D,H,I,N	Local- General Fund Federal- F54, F39, F54, F104	County-wide	Ongoing
Provide trained, equipped, and prepared search and rescue teams.	4	A,B,D,N,W	Local- LEPC State- Health Department Federal- F38, F104	County-wide	Mid-term

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<b>Mitigation Actions</b> <b>A. Multi-Hazard Actions, #2</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Identify adequate water supplies for emergency fire fighting, areas lacking adequate water supplies and develop strategy to construct dry hydrants.	4	C,D,	State- S19, Federal- F12, F104	County-wide	Short-term
Review current status and provide back-up generators to maintain community infrastructure at acceptable operating levels during extended power failures.	4	A,C	Local- General Fund Federal- F12, F13, F14, F16, F19, F83, F85	County-wide	Mid-term
Ensure that the County and individual communities have adequate equipment, staff, and training to respond to transportation-related accidents specific to their needs.	4	A,B	Local- General Fund Federal- F62, F63, F64, F65, F68, F104	County-wide	Mid-term
To address multiple hazards in the county improve tree trimming and maintenance efforts to prevent limb breakage and safeguard nearby utility lines. The end goal is to create and maintain a disaster-resistant landscape in public rights-of-way.	4	P	Federal- F102	County-wide	Long-term
Promote need and implement study re-installation of siren system across county	5	A, C,D,	Federal- F104	County-wide	Short-term
Encourage residents to develop a Family Disaster Plan that includes the preparation of a Disaster Supplies Kit.	5	A, NI	Federal- F104	County-wide	Long-term
Promote and implement solutions for keeping roads and driveways accessible to vehicles and fire equipment.	5	C, D,E	Federal- F102	County-wide	Mid-term
Increase usage of NOAA Weather Radio by subsidizing purchase and distribution of radios to county residents, organizations and businesses. Use NOAA radios as a community emergency alert system to information on hazard events.	5	A, D,O	Federal- F104	County-wide	Mid-term

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<b>Mitigation Actions</b> <b>A. Multi-Hazard Actions, #3</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Build the capabilities of the county GIS program to function as a tool to address multiple hazards. This effort would require the creation/updating of datasets such as parcels/ownership, location of all structures, driveways with ingress/egress conditions, roads, forest types, ownership types, floodplains, utilities (power lines, gas lines and water lines), wetlands, water features, bridges and culverts, (SARA III sites)	5	B, C, F	Local- General Fund State- MDIT Federal- F76, F77, F79, F104, F106 Homeland Security	County-wide	Ongoing
Produce and distribute family emergency preparedness information relating to all natural hazards affecting the County.	5	A, B, H	Local- General Fund State- Health Department Federal- F54, F104	County-wide	Short-term
Develop plans to identify and inform persons of "Safe Areas" during festivals/events. (Include signs and directions to shelters)	6	C,D, W	Federal- F54, F104	Gaylord	Short-term
Develop an all hazards education and awareness program in schools, which includes classroom presentations and incorporating wildfire and weather hazard preparedness into school curriculums.		R			Long-term
Identify feasible sites for public early warning systems and networks and seek funding to install.		A,C, D,			Mid-term
Conduct workshops at community gatherings to encourage residents to develop a Family Disaster Plan, which includes the preparation of a Disaster Supplies Kit.		A,C,D,H,I			Long-term
Enforce a balanced system of ordinances that protect the community as-a-whole while respecting the rights of individuals.		C			Long-term

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<b>Mitigation Actions</b> <b>A. Multi-Hazard Actions, #4</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Identify & expand community awareness of evacuation plans, and emergency snow routes.		A, C,D			Mid-term
Explore and implement plan for distribution of NOAA radios throughout community		A O			Mid-term
Review and improve program to provide regular maintenance and equipment checks of all critical equipment.		C			Ongoing
Where feasible and cost effective (more densely populated areas) bury and protect power and utility lines.		P			Long-term
Acquire portable/changeable message signs to direct crowds and provide information.		E			Mid-term
Review and improve strategy for providing public with emergency telephone numbers		P			Long-term
Study and implement development of public information to cover hazards effecting county.		A			Ongoing
Explore methods to provide NOAA radios at cost or as reward for completing "Family disaster Plan"		A			Long-term
Identify optimal staffing levels for County and community needs – seek funding to meet optimal levels		B			Long-term
Individual communities should prepare future land use plans and capital improvement programs to plan for their future hazard mitigation needs.		C			Long-term
Study and promote installation of automatic NOAA radio systems in new residential construction.		C,O			Long-term

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<b>Mitigation Actions</b> <b>B. Winter Weather Hazards</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Establish heating centers/shelters for vulnerable populations	1	C, I, N, V	Local- General Fund State- Health Department Federal- F14, F92, F102, F104, F108	County-wide	Short-term
Compile a listing of homes and facilities with vulnerable residents such as elderly, infirmed and disabled individuals; and establish outreach procedures for assisting residents after severe winter storm events	1	A, C	Local- EMD State- Health Department Federal- F92, F98, F104	County-wide	Short-term
Prearrange for shelters for stranded motorists/travelers and others	2	I, N, V,	Local- General Fund State- Health Department Federal- F14, F92, F102, F104, F108	County-wide	Mid-term
Complete and inventory problem sections of roads. Place snow fences or "living snow fences" (rows of trees or vegetation) to limit blowing and drifting of snow over critical roadway segments	2	C, E, N,	Local- County Road Commission State- S1 Federal- F104	County-wide	Mid-term
Study and employ available NOAA data to predict location and warn motorists of potential white-out road hazards.		E, O, Q,	Local, State, Ins		Short-term
Acquire portable signs to inform motorists of high wind area, lake effect snow area and road glazing area on major highways.		E, Q,	Local, State, Ins		Mid-term

<b>Mitigation Actions</b> <b>C. Extreme Temperatures.</b>	Priority	Responsible Agency	Funding Sources	Application	Timeframe
Identify location and organize outreach to vulnerable populations during periods of extreme temperatures...	1	A,C,H,I	Federal- F104	County-wide	Short-term
Study and improve location and design and maintenance of water and sewer systems (to include insulation of critical components to prevent damage from ground freeze)	1	B,C,	State- S8 Federal- F12, F13, F17, F102, F108	Gaylord	Mid-term
Improve and/or enact landlord/tenant ordinances.	1	B	State- Legislature Federal- F104	County-wide	Mid-term
Develop housing/landlord codes to enforce heating requirements.		B	Local		Mid-term

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<b>Mitigation Actions D. Wildfire, #1</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Conduct annual wildfire planning with all fire departments and MDNR.	1	C, D,J	Local- Local Fire Department State- MDNR Federal- F87, F104, F105, F107	County-wide	Short-term
Develop a program to instruct residents on proper procedures for wildfire evacuation, ...	2	C,D, J	Local- General Fund, Local Fire Department State- MDNR Federal- F54, F104, F105, USFS	Charlton Twp. Charlton Twp Corwith Twp	Short-term
Review and strict enforcement of open burning regulations.	2	C,J	Local- Local Fire Department State- MDNR Federal- F102, F105, F107	County-wide	Short-term
Conduct multi-agency, inter-county emergency management response exercises for fire suppression	3	A,B,C,D.	Federal- F87, F104, F105	County-wide	Mid-term
Coordinate countywide wildfire education program: distribution of materials via direct mailings, school presentations.; Incorporate Firewise demonstration projects.	4	A,D,J R,	Local- General Fund State-MDNR Federal-F54, F104, F105	County-wide	Mid-term
Work with insurance companies to provide wildfire safety information to area residents, and consider reduction of insurance premiums if homes meet "Firewise" criteria.	5	C,D,K,J,U	State- Legislature Federal- F104	Charlton Twp. Charlton Twp Corwith Twp	Mid-term
Promote creation of defensible space around structures in fire-prone wildland areas.	5	D,J	Federal- F54, F102, F104, F105, F107	Charlton Twp. Charlton Twp Corwith Twp	Mid-term

<b>Mitigation Actions</b> <b>D. Wildfire, #2</b>	Priority	Responsible Agency	Funding Sources	Application	Time Frame
Distribute wildfire education materials to homeowners and businesses through tax bill receipts.	6	B C	Local- Local Fire Department State- MDNR Federal- F54, F104, F105, USFS	Charlton Twp. Charlton Twp Corwith Twp	Short-term
Develop program to inspect campsites in public forest areas to insure safe open fires, where allowed.		C,J	Local, State		Mid-term
Promote media broadcasts of fire weather and fire warnings		D	Local, State, Business		Mid-term
Identify communities or neighborhoods to develop "Firewise" demonstration projects.		A,C,J,N	Local, State, Org		Short-term
Develop and implement strategy to introduce "Firewise" program in risk communities.		A,C,D,, J	Local, State, Org		Mid-term
Develop program to form Wildfire Safety Coalition to develop neighborhood watch program to instruct others about escape routes, sprinkler systems, power lines, etc...		C,D,N,U	Local, State, Org		Mic term

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<b>Mitigation Actions</b> <b>E. Transportation Accident, #1</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Provide training, planning, and preparedness for mass-casualty incidents involving all modes of public transportation.	1	A,E,Q,S	Federal- F66, F104	County-wide	Ongoing, short-term
Encourage long-term planning that provides more connector roads for reduced congestion of arterial roads.	2	B,E, Q,	State- MDOT Federal- F69, F104	County-wide	Ongoing
Review and/or develop Regional EMS response plan to assist county's mass casualty plan.	2	A,B,Q,R,S	Federal- F66, F104	County-wide	Short-term
Provide for exercise gasoline or propane accidents.	2	D,M	Federal- F62, F68, F104	County-wide	Mid-term
Provide more training for fireman, police and first responders to school bus and commercial bus accidents.	3	A, D,W	Federal- F66, F104	County-wide	Mid-term
Provide more training for airfield emergencies involving all county fire departments.	4	A D	Federal- F60, F104	County-wide	Mid-term
Inventory current heavy equipment, wreckers and jaws units within 30 minutes of county locations.	5	D	Federal- F104	County-wide	Short-term
Arrange and conduct meeting with all local bus providers and review their emergency plans.	5	A	Federal- F104	County-wide	Short-term
Exercise a 60 person accident involving a bus and logging truck.	5	A,D,S,W	Federal- F104	County-wide	Mid-term
Research and develop medical airlift plan for plane accidents.	5	A, D, S	Federal- F60, F104	County-wide	Mid-term

<b>Mitigation Actions</b> <b>E. Transportation Accident, #2</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Review procedures for railroad inspections and improved designs at problem railway/roadway intersections.		E,Q			Mid-term
Encourage strict highway speed enforcement during school transport times.		Q,W			Ongoing
Meet with local industries from surrounding counties to determine type of products transported over county highways, and provide local HAZ/MAT team and fire agencies with this information.		A			Mid-term
Program load type into CAMEO and develop pre-evacuation plans by material type.		A			Mid-term
Hold annual meeting with trucking industry and local fire and law enforcement agencies.		B			Mid-term

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<b>Mitigation Actions</b> <b>F. Severe Winds</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Review current and propose improvements to wind engineering measures and construction techniques to strengthen public and private structures against severe wind damage	1	B	Federal- F19, F102, F108	County-wide	Short-term
Review regulations and implement necessary changes to insure proper anchoring of manufactured homes and exterior structures...		B			Mid-term
Encourage securing loose materials, yard and patio items indoors or where winds cannot blow them about.		N			Mid-term

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<b>Mitigation Actions</b> <b>G Gas and Oil Production Related</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Increase public awareness of pipeline location and appropriate emergency procedures in case of pipeline problem.	1	A	Federal- F67, F68, F104	County-wide	Mid-term
Research and develop contingency plans for worker and public protection, including inclusion of rescue and evacuation procedures for well hazard areas in emergency plans.	2	J P	Federal- F67, F68, F104	County-wide	Mid-term
Enforce community and operator compliance with Oil/gas industry safety regulations and standards	3	B,C,Q	Federal- F67, F68, F104	County-wide	Mid-term
Develop and implement strategy to improve and enforce well site signing, to include larger signs and moving signs to gate site.		D J			Short-term
Review pipeline design and enforce proper pipeline construction, maintenance and inspection.		B, P,Q			Mid-term
Explorer enlisting aid of insurance companies to provide evacuation information for oil & gas related incidents..		K			Mid-term

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<b>Mitigation Actions</b> <b>H. Structural Fire</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Develop public education and school programs related to the use of stoves, heaters, fireworks, matches/lighters, etc.	1	D R	Local- Fire Department Federal- F104, F105	County-wide	Mid-term
Develop program to encourage landlords and families to install and maintain smoke detectors and fire extinguishers. Train residents in use a fire extinguisher.	1	D	State- S19 Federal- F104, F105	County-wide	Ongoing, Short-term
Identify adequate water supplies for emergency fire fighting, areas lacking adequate water supplies and develop strategy to construct dry hydrants.	2	B D	State- S19 Federal- F12, F104	County-wide	Short-term
Develop information and programs about safe and responsible use of electric and "space" heaters.	2	B D	Local- Fire Department Federal- F104, F105	County-wide	Ongoing Short-term
Promote safe use and maintenance/cleaning of fireplaces and chimneys...	3	D	Federal- F104, F105	County-wide	Ongoing Short-term
Develop strategy to standardize equipment so that all firefighters in County system can operate any piece of equipment.		B C D			Mid-term
Increase volunteer recruitment, and study offering paid training.		D			Long-term
Develop integrated water supply system using multi-tankers to well located water supplies, with easy year around access.		D			Long-term
Review and develop programs to raise community awareness on proper installation and maintenance of heating systems.		B D			Ongoing, Mid-term

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<b>Mitigation Actions</b> <b>I. Public Health Emergencies</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Provide back-up generators for water and wastewater treatment facilities to maintain acceptable operating levels during power failures	1	B C	State- S8, S11, Health Dept. Federal- F14, F80, F102	County-wide	Mid-term
Inform public and support pollution control, enforcement and cleanup; proper disposal of chemicals and scrap materials	2	B H	State- Health Department Federal- F80, F104	County-wide	Ongoing
Demolish and clear vacant condemned structures in populated areas to prevent rodent infestations	3	B C	State- Health Department Federal- F80, F102	County-wide	Mid-term
Encourage residents to receive immunizations against communicable diseases		H			Ongoing
Maintain a community public health system with sufficient disease monitoring and surveillance capabilities to adequately protect the population from large-scale outbreaks		H			Ongoing
Increase public awareness of the causes, symptoms, and protective actions for disease outbreaks and other potential public health emergencies		H			Ongoing
Seek support and funding to clean up sites of environmental contamination		C			Short-term
Expand community support of free or reduced-expense clinics and school health services		B C H			Mid-term
Coordinate with health department and local communities to assure proper location, installation, cleaning, monitoring, and maintenance of septic tanks		B			Ongoing

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<b>Mitigation Actions</b> <b>J. Fixed Site Hazmat, #1</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Develop and/or improve public warning systems and networks for hazardous material releases.	1	A	Federal- F14,, F35, F67, F104	County-wide	Short-term
Review and/or implement strategy to train, equip, and prepare site and local hazardous material emergency response teams.	2	A	Federal- F68, F79, F81, F104	County-wide	Short-term
Inform public and support pollution control, enforcement and cleanup; proper disposal of chemicals and scrap materials.	3	A, C	State- Health Department Federal- F77, F104	County-wide	Mid-term
Provide annual training to County Fire Departments related to on site products, and how they are handled.	4	M	Federal- F68, F79, F81, F104	County-wide	Short-term
Provide training in and compliance with all safety procedures and systems related to the manufacture, storage, transport, use, and disposal of hazardous materials.	5	D	State- S3 Federal- F68, F104	County-wide	Mid-term
Educate public and implement steps to encourage "shelter in place" response to Hazmat incidents.	5	A, D	Federal- F77, F104	County-wide	Short-term
Continue emphasis on policies and training stressing importance of safety above other considerations.	6	D	Federal- F77, F104	County-wide	Ongoing, Short-term

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<b>Mitigation Actions</b> <b>J. Fixed Site Hazmat, #2</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Research and develop contingency plans for worker and public protection, including inclusion of rescue and evacuation procedures for well hazard areas in emergency plans.		A D H			Mid-term
Provide public education to help identify and eliminate clandestine neighborhood drug labs in the County.		W			Mid-term
Reinforce planning emphasis on proper separation and buffering between industrial areas and other land uses.		B F			Mid-term
Emphasize locating industrial areas away from schools, nursing homes, hospitals, in future planning.		B F			Long-term
Protect public contact with contaminated sites or waters (including flood waters)		H W			Mid-term
Continue brownfield cleanup activities.		S			Ongoing
Identification of radioactive soils and high-radon areas.		H			Long-term

A. County Emergency Management Office| B. County| C. Local Units of Gov.| D. Local Fire Dept.| E. County Road Commission| F. NEMCOG| G. MSU Extension| H. District Health Dept.| I. American Red Cross| J. USFS & MDNR| K. Insurance Companies| L. Real Estate Companies| M. Local Businesses| N. Civic Groups and Churches| O. National Weather Service|, P. Utility Co.| Q. State Gov., R. Schools|, S. Hospitals & Health facilities|, T. Fed. Gov.| U. Landowners,; V. Salvation Army; W. Police.

<b>Mitigation Actions</b> <b>K. Infrastructure Failure</b>	Priority	Responsible Agencies	Funding Sources	Application	Time Frame
Review and improve mutual aid assistance for failures in utility and communications system.	1	A B C	Federal- F104	County-wide	Mid-term
Review and develop strategies to identify and employ generators for backup power at critical facilities.	2	A P	Local- General Fund Federal- F14, F19, F87, F102, F108	County-wide	Mid-term
Review and develop strategies to insure redundancies in utility and communications systems, especially “lifeline” systems.	3	A P	Local- Private Federal- F35, F104	County-wide	Mid-term
Identify electrical systems that will fail due to overload and develop “Rolling blackout” strategy		P			Long-term
Identify sites and obtain support to improve critical road/stream crossings.		E			Mid-term

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