

Chapter 8: Hazard Mitigation Goals and Objectives

The third major step in the FEMA Hazard Mitigation Planning Process is the development of the mitigation strategy for each jurisdiction, which begins with the development of mitigation goals and objectives.

The Marion County Hazard Mitigation Planning Team at its fifth meeting reviewed the assessment and other planning documents drafted to date. The intent of the review of the data was to develop goals and objectives that would be fiscally feasible and yet highly beneficial. During the fifth meeting, the goals and objectives were created and initially evaluated.

The hazard goals are based on a four-pronged approach to emergency response, recognizing that mitigation actions affect all elements:

- ☛ **Preparedness** activities ensure the community and its residents are ready for a disaster and that they respond effectively. Preparedness involves determining what the community will do if essential services break down, developing a plan for contingencies, and practicing the plan.
- ☛ **Response** activities begin as soon as the disaster threatens. Response includes access control, search and rescue, mass care, medical services, and restoring essential services.
- ☛ **Recovery** activities help the community to return to pre-disaster condition. They include rebuilding services, infrastructure (utilities, communications, and transportation systems), facilities, operations, and the lives affected by the disaster.
- ☛ **Mitigation** activities are sustained actions that reduce the long-term risk of disasters. They reduce threats to the public health and safety, reduce or eliminate damages caused by disaster, and reduce the burden placed on local, state, and federal preparedness, response and recovery activities.

8.1: Benefits and Process of Mitigation Planning

Hazard mitigation planning is a tool communities use to:

- ☛ Reduce future risks of death, injury and property losses.
- ☛ Identify specific problems and appropriate solutions.
- ☛ Achieve multiple objectives in a sustainable and efficient manner.
- ☛ Prioritize post-disaster projects.
- ☛ Enhance funding opportunities through Federal, State, and local programs.
- ☛ Promote public participation and ownership of solutions.

The following points summarize the mitigation strategy portion of the document:

- ☛ Mitigation Issue Statements (*Chapter 8*)
- ☛ Mitigation Goals and Objectives (*Chapter 8*)
- ☛ Capability Assessment (*Chapter 3*)
- ☛ Alternative Measures (*Chapter 9*)
- ☛ Alternative Measures Evaluation (*Chapter 9*)
- ☛ List of Approved Actions by Goal and Objective (*Chapter 10*)
- ☛ Multi-jurisdictional Implementation Strategy (*Chapters 10, 11*)

8.2: Mitigation Issue Statements

The following is a list of issue statements related to each of the Priority I hazards, as summarized from the HARA in *Chapters 5* through *7*. Generally these are listed in overall priority order.

8.2.1: Windstorm Issue Statements

1. Ranked among the top three hazards in the HARA process for all jurisdictions, this hazard is a Priority I hazard in all participating jurisdictions.
2. At over \$5 million in projected annual losses in the county along with possible deaths, windstorms are considered the second most damaging in the county.

3. Damaging and dangerous winds can occur when people are unprepared because it can be a sunny day or clear night.
4. Windstorms occur one or more times per year 75% of years in each jurisdiction and cause damage to homes, businesses, and public facilities. Each year, dozens of structures, mostly accessory uses, are damaged by high winds during any season. Winds make travel difficult and can be very dangerous in winter cold.
5. Farms and older homes in each jurisdiction are most vulnerable because they are subjected to higher winds or cannot withstand winds due to deterioration. Over 50% of homes, farms, and commercial properties in Marion County are at least 50 years old.
6. Lack of human resources (staff or volunteers) in event of major windstorm that causes extensive power and communications line damage throughout the county.

8.2.2: Thunderstorm and Lightning Issue Statements

1. Ranked among the top three hazards in the HARA process for all jurisdictions, this hazard is a Priority I hazard in all participating jurisdictions.
2. At over \$3 million in annual losses along with up to two deaths per year, thunderstorms and lightning ranks fifth of all assessed hazards.
3. Thunderstorms and lightning occur more often than any other natural hazard assessed.
4. Structural damage and death are possible, and the cascading events can be numerous, including tornadoes, flash and river flooding, hailstorms, and windstorms.
5. Severe thunderstorms and lightning occur annually in each jurisdiction and cause energy failure lasting more than one day in some occasions. Critical population areas, such as retirement housing, nursing homes, and schools, and critical assets, such as water treatment facilities, cannot operate and thus endanger lives. Lightning puts out power to all but the very few critical assets that have reliable fixed back-up power. High thunderstorm winds also cause power failure regularly.
6. The county and each jurisdiction lack the human resources to make repairs quickly in the event of a storm-related power outage. It is possible that a widespread thunderstorm event could cut power in rural areas for days.
7. Communications equipment can and has failed due to lightning and heavy rain events. The county lacks secondary or redundant equipment or systems that can take over during emergency situations.
8. The lack of alert systems in the rural part of the county, namely in rural subdivisions and campgrounds puts people at risk of injury and death due to thunderstorms. The county lacks funding to supply all homes and businesses with weather radio.

8.2.3: Severe Winter Storm Issue Statements

1. This hazard is a high-ranking Priority I hazard in all participating jurisdictions.
2. Ice, heavy snow, and severe wind chills from severe winter storms cause loss of life and damages averaging over \$6 million per year in Marion County, the highest of all hazards. Older homes, which are numerous in all parts of the county, are very susceptible to damage due to the ice and heavy snow.
3. Humans are very susceptible to severe winter weather, especially frail individuals who live in homes that lose power or that go outside when it is slippery, or those that travel on slick highways. Locally, one or more persons die annually due to the direct impact of severe winter weather, including auto accidents and exposure.
4. Marion County has many homes built before insulation was used. These homes can be very cold and can pose a hazard to infants, elderly, and sick persons. Weatherization programs are available but cannot possibly meet all the need with funding limitations.
5. Ice and snow cause many highway transportation incidents in the county each year, some of them fatal.
6. Smaller towns and remote rural areas are affected more because of the lack of alternative power sources and emergency services. Emergency services have difficulty traveling and working in severe winter weather.
7. Early and late season storms can cause extensive economic losses due to crops.
8. School and work cancellations cause economic and functional use losses each year.
9. Lots of shelter locations exist in the county, but few are ready for use on a wider scale, they lack backup power, and many are structurally poor.

8.2.4: Energy Failure Issue Statements

1. This hazard is a high-ranking Priority I hazard in all participating jurisdictions.
2. Energy failure affects every facet of our modern life because we rely upon so much technology today to live, work, and play. There are few, if any, redundant energy systems in the county and most power supplies are exposed to weather.
3. Even a few minutes of energy failure can cause casualties in populations of elderly, sick, or others in special care. Approximately 20% of the population meets this description.
4. Severe thunderstorms, windstorms, and winter storms take out power lines all over the county almost every year.
5. Due to the lack of fixed generators at a most critical facilities, such as water and sewer plants and sewer lift stations, people could be out of water and could have sewer back-flowing issues for hours or even a day or two. This would cause enormous economic and potential health loss.
6. There is a lack of human resources (staff or volunteers) in event of major event that causes extensive power line damage throughout the county. This is only partially offset by employee sharing among utility providers.
7. The county has very limited local power generation compared to needs of county facilities.

8.2.5: Extreme Heat Issue Statements

1. This hazard is a Priority I hazard in all participating jurisdictions.
2. Extreme heat is responsible for a high level of losses, just over \$2 million, per year. The effects of extreme heat include loss of life, up to 2 per year, illness, and significant economic losses. Heat indices can reach 110 degrees F with very high humidity for several days at a time.
3. Energy failure is very common due to extreme heat, both because of line failures and because the demand regionally or nationally exceeds the supply. People in buildings without proper ventilation, the elderly, or the ill can suffer quickly if cooling systems are lost due to energy failure. Healthcare facilities, nursing homes, assisted living housing, apartments, and individual homes are affected.
4. There is not enough back-up generation capacity for critical facilities or for extended outages caused by long periods of extreme heat.
5. Extreme heat damages rural highways, asphalt roads, and city streets, causing thousands of dollars in damages throughout the county.
6. Extreme heat has caused excessive attrition among emergency response workers, especially firefighters in their heavy protective equipment.
7. Not all areas are served by a designated cooling shelter and not all people know where they can go even when available. Those playing and working outside may not notice they are being overcome with heat.
8. Extreme heat can contribute to fires, droughts, and deaths of farm animals.

8.2.6: Hailstorm Issue Statements

1. This hazard is a Priority I hazard in all participating jurisdictions.
2. Hailstorms are responsible for over \$3 million in damages each year, the fourth highest among “man-made” hazards. No deaths are attributed to hail in the loss estimation but they are possible.
3. Hailstorms in southern Iowa have caused the destruction of hundreds of shingled roofs in the past few years.
4. While crop and homeowners insurance cover most hail events, they can be very damaging to uninsured property and can cause injuries and death. Large amounts of crop losses can impact local or even international economic impacts in crop markets.
5. Hailstorms are often signs of impending tornadoes, which hinder emergency response.

8.2.7: Communications Failure Issue Statements

1. This hazard is a Priority I hazard in all participating jurisdictions.
2. The hilly rural areas and remote areas of the county present difficulties communicating via wireless and are subject to excessive communications failure. Law enforcement, EMS, and fire vehicles in particular lack necessary mobile equipment that keeps up with modern interoperability standards and that can communicate in remote locations.

3. Being a rural county, resources for communications equipment and towers are limited and volunteers trained in the latest technologies are difficult to secure.
4. Communications failures result from many hazards and can directly relate to failures to properly respond, thereby exacerbating the impacts of disasters on the public.

8.2.8: Tornado Issue Statements

1. This hazard is a Priority I hazard in all participating jurisdictions.
2. At over \$2.5 million in projected annual losses in the county along with up to two deaths per year, tornadoes are considered very damaging. An extreme, though rare, event could be very catastrophic.
3. Tornado-force winds and flying projectiles could destroy or severely damage any structure in the county, as none are designed to withstand 250 MPH winds.
4. The lack of alert systems in the rural part of the county, namely in rural subdivisions and campgrounds puts people at risk of injury and death due to tornadoes. The county lacks funding to supply all homes and businesses with weather radio. Some towns have too few or very old warning sirens.
5. Codes lack adequate provision for safe rooms (that can withstand 250 MPH winds) in mobile home parks;
6. Large gatherings of people and population centers are at risk, as well as highway travelers. There is not enough mass casualty medical assistance and equipment available in the county. The planning team raised concern about the ability to respond to a tornado event such as in Joplin, Missouri, in 2011. At that scale, people will have no place to live or work and there are not enough resources to temporarily handle the influx of aid workers and help those who are displaced. Food storage would be very difficult.
7. Many older homes lack basements or lack accessible basements for handicapped or frail persons.

8.2.9: Drought Issue Statements

1. This hazard is a Priority I hazard in eight of the jurisdictions and a Priority II hazard in the remaining.
2. The annual loss estimate for drought is over \$1 million, not including the full value of crops lost. Economic losses, such as loss of crops, loss of recreation (due to lowered lake and river levels), and loss of livestock would be traumatic for a rural county heavily dependent on agriculture.
3. The State of Iowa Mitigation Plan's drought loss estimate for Marion County is significantly higher. It may consider these economic impacts more fully.
4. Marion County relies upon surface water sources for much of its potable water. Red Rock is a large water source, but any drought affecting Marion County would affect the surrounding counties where fewer water sources are found. A few active water plants are in the county but there are no reserve plants can be started.
5. The effects of the loss of water supply include loss of safe drinking water to nearly 25,000 residents, loss of production water to approximately 20 major industries, loss of water for crops and animals on farms, and diminished water for firefighting needs. In past drought events, since rural water systems have been built, rationing has had to occur but doing so has hurt the local economy without entirely mitigating the risks.
6. Drought conditions affect the high-clay soils in the county, thereby causing damage to water, sewer, and gas pipelines. While incidents have been minor in the past, the threat of major losses exists.
7. Marion County is largely covered by cropland, CRP ground that is idled and often covered with dense grasses, and forests, including nearly 10,000 acres of public and private forestlands. Droughts create conditions for rapidly progressing fires.

8.2.10: Flash Flood Issue Statements

1. This hazard is a Priority I hazard in eight jurisdictions and is a Priority II hazard in all other jurisdictions.
2. At just under \$4 million in projected annual losses in the county along with up to two deaths per year, flash floods are rated as the third most damaging annual hazard, particularly to developed areas and transportation routes.
3. Flash flooding causes extensive inflow and infiltration in the sewer systems of all towns in the county that have sewers. These problems result in extensive damages to local cities each year.
4. Sewer backflow devices are not available in some systems. When a heavy rainfall occurs, wastewater can back up onto homes, causing thousands of dollars in damage each to hundreds of buildings with basements.
5. Underground systems are often poorly maintained and older than their designed lifespan. Storm water systems

are inadequate in larger populated areas and almost nonexistent in smaller towns. Water is not controlled and quickly overruns yards, parking areas, and culverts. Many culverts have been washed out in the rural areas because too much water flows too quickly through them.

6. There are no maps or technological monitors in the storm water systems to inform officials when systems are damaged, clogged, or nearing capacity.
7. Local officials have no inventory of locations where reoccurring flash flood event are located. Therefore, warnings to the public and mitigation projects cannot be properly targeted.
8. Flash flooding causes the most damage to rural roads of any hazard type.

8.2.11: Various Forms of Terrorism Issue Statements

1. Conventional terrorism is a Priority I hazard in nine jurisdictions. Bioterrorism is a Priority I hazard in schools. Radiological terrorism is a Priority I hazard in hospitals.
2. Schools as a whole are the most susceptible jurisdictions, but local government and larger business facilities are also more likely targets within larger jurisdictions.
3. Incidents in Marion County are likely to be limited to relatively simple or small domestic terrorism incidents, such as bomb threats, suspicious powders, and pipe bombs in mailboxes, but the fear and economic problems created could be significant.

8.2.12: Pipeline Transportation Incident

1. This hazard is a Priority I hazard in some jurisdictions and is a Priority II hazard in any other jurisdiction where pipelines are found, except rural areas, where it is a Priority III hazard.
2. In larger towns and others with primary use of natural gas, pipeline events are seen as a unique concern. These cities have border stations located where vandals can access them. Larger towns have larger retail and manufacturing facilities that rely upon natural gas for heating and manufacturing processes.
3. Rural areas through the central part of the county have underground pipes with surface valve systems. These areas are vulnerable to human impact and natural hazards.
4. Natural gas heats homes in most of the cities of the county in the winter.

8.2.13: Human Disease Incident Issue Statements

1. This hazard is a Priority I hazard in six jurisdictions and is a Priority II hazard in any other jurisdiction.
2. Human diseases can quickly overwhelm the limited supply of volunteers and responders in the county.
3. Marion County has two hospitals with emergency room with acute care resources, but they alone would have much difficulty accommodate a mass casualty incident.
4. The costs of responding to human disease incidents, including treatments, drugs, quarantine areas, and staffing is excessive for any rural county.
5. Schools are at the greatest risk, where vulnerable populations come together daily and students are exposed to diseases outside of school and bring them to school.

8.2.14: Structural Fire Issue Statements

1. This hazard is a Priority I hazard in three jurisdictions and is a high Priority II hazard in all other jurisdictions.
2. Structural fires consume much of the county's mitigation resources on an annual basis in Marion County, including the bulk of firefighter training and department operating costs.
3. Structural fires affect dozens of properties each year. Fire departments report dozens of house fires each year along with dozens of fires in outbuildings, businesses, offices, vehicles, and farm buildings. The direct loss of human life and property due to structural fires is likely more than any other hazard in the average year in Marion County, except perhaps highway transportation incidents.
4. There is poor or unreliable water supply and pressure in some rural areas and small towns that are served by rural water agencies. There are dry hydrants in the county, but there are insufficient for a very large fire because they may be located miles from the fire.
5. All fire departments struggle financially to make upgrades and meet new mandates; equipment and vehicles are aging, and all departments need volunteers, increased training, and equipment. Budget shortfalls exist due to the current economy and rapid fuel cost increases.

6. Some fire departments lack adequate room for storage of modern vehicles and for modern training.
7. Some local fire stations do not have backup fixed generators. Without these, power equipment could be rendered useless, communications may not function, and bay doors may not open.
8. Bussey's main water tower leaks during the winter.

8.2.15: Grass and Wildland Fire

1. This hazard is a Priority I hazard in three jurisdictions, a Priority II hazard in several other jurisdictions, and a Priority III hazard in some jurisdictions.
2. An estimated \$508,000 in annual losses and up to 1 fatality is anticipated in Marion County. The losses can be higher if a conflagration results that traps firefighters. Changes in weather, such as sudden high winds, can cause such instances.
3. In the rural area, notable losses are sustained every year due to grass and wildland fires. Because of the topography, mixture of vegetation, and the large tracts of unmanaged forestlands in many areas, many wildfires can occur in one day. This has occurred in Marion and surrounding counties in the past ten years.
4. There is a poor or unreliable water supply and pressure in some rural areas and small towns. There are dry hydrants in the county, but they are scattered in a few locations.
5. All fire departments struggle financially to make upgrades and meet new mandates; responding to rural wildland fires with proper clothing for the weather in adequate numbers is very difficult. Budget shortfalls exist due to the current economy and rapid fuel cost increases.
6. Many departments have old protective clothing that is very heavy and difficult to wear on hot days or during rain events.
7. Some fire stations do not have backup generators. Without these, power equipment could be rendered useless, communications may not function, and bay doors may not open.

8.2.16: River Flood Issue Statements

1. This hazard is a Priority I hazard in three jurisdictions, a Priority II hazard in several other jurisdictions, and a Priority III hazard in some jurisdictions.
2. River flooding can and does cause significant damage that can take months to clean up, due to the larger size and number of rivers. An estimated \$1.3 million in damages occurs annually due to river floods. The State of Iowa Mitigation Plan indicates much higher loss levels. It is likely that wear to bridges and roads may be understated in this plan.
3. Most losses are in rural areas, including roads, bridges, crops, farmland, culverts, and even some outbuildings. Homes can be damaged in some locations.
4. Water and sewer plants are downstream from dams that can fail due to flooding or are in flood plains.
5. Mapping is current in Marion County but that does not mean people are not in the hazard area. Many need to be educated on the benefits of flood insurance. Much of the county's recreation is in the flood plain areas, and people may take unnecessary risks to "have fun" in these areas when water levels are too high.
6. Swan and its immediate area suffer from flooding resulting in backed up water into the town, crossing roads and damaging culverts. Some culverts have been plugged and are difficult to clean out in time for the next major rain event. FEMA has funded street repairs in the city after flooding but permanent mitigation is needed.
7. Small streams through the middle of Melcher-Dallas, Pella, and Knoxville impact residential properties and streets.

8.2.17: Fixed HAZMAT

1. Fixed HAZMAT is a Priority I hazard in Knoxville and Pella. These are high Priority II hazards in other jurisdictions.
2. Some departments do not have adequate foam and hazardous substance firefighting capabilities, despite the existence of hazardous materials in the county and ethanol plants in neighboring areas.
3. Pella and Knoxville have industries that handle large volumes of chemicals.
4. The several four-lane highways handle hazardous materials from all other the state and Midwest. Local responders are not prepared for some incidents that may occur.
5. No communities are ready for ruptured anhydrous tank failures.

8.2.18: Dam Failure

1. Dam Failure is a Priority I hazard in Clay Twp and Harvey. These are high Priority II hazards in other jurisdictions where dams are located or their failure can be felt.
2. Annual losses are very limited due to the small probability of an incident in a given year.
3. Dam failure studies need to be updated.
4. Much of Harvey would be impacted almost immediately from a sudden failure.
5. Many recreational areas would be immediately impacted, including those just below Red Rock Dam. People could be swept away in seconds or minutes.
6. Dam failure may be a more significant issue due to proposed plans for hydroelectric power facilities at the dam.

Certainly, there are risks and problems related to other hazards on the identified hazard list, and some of them are profound. They should not be ignored but rather should be addressed as necessary outside of or incidental to the implementation of this plan. Thankfully, most of the issues caused by other hazards are addressed by other existing plans and mitigation efforts.

8.3: Mitigation Goals and Objectives

The planning team, with assistance from the public, the consultant, current local plans, elected officials, and FEMA/IHSEMD guidance, established the following goals, generally in order of significance, to make the county and all jurisdictions safer and more disaster resilient. These goals apply to all the currently participating and future participating jurisdictions in the countywide multi-jurisdictional plan.

Goal 1: Reduce the extent of fatalities and injuries due to hazards.

- Objective 1: Improve public warning capabilities against hazards.
- Objective 2: Improve awareness of hazard risks and methods to address risks.
- Objective 3: Enhance responder communications and equipment.
- Objective 4: Improve structural projects that will result in protection of life and safety.

Goal 2: Protect existing and future properties.

- Objective 1: Implement construction measures to protect properties.
- Objective 2: Increase stringency of codes and ordinances.
- Objective 3: Maximize citizen involvement in mitigation.

Goal 3: Ensure the continuity of local government and other critical services during and after disasters.

- Objective 1: Ensure short-term answers do not create long-term problems.
- Objective 2: Improve public infrastructure and critical assets in hazard impact areas.
- Objective 3: Provide back-up systems and facilities.
- Objective 4: Address mass casualty incidents better.

Goal 4: Build and support local capacity and commitment to become continuously less vulnerable to hazards in the future.

- Objective 1: Maximize utilization of the best technology.
- Objective 2: Improve organizational efficiency and planning capabilities.
- Objective 3: Enact and enforce regulatory measures that ensure new development does not increase threats to existing development.
- Objective 4: Maximize the use of outside sources of funding.

Please note that the above goals and objectives were created by planning team members with consideration of the goals and objectives included in other plans in the area.

The next chapter details the proposed mitigation actions for each jurisdiction consistent with the problem statements and goals and objectives listed in this chapter.