

ENROLLED ORDINANCE 171-24

ADOPTION OF THE 2016 WAUKESHA COUNTY
ALL HAZARD MITIGATION PLAN

WHEREAS, Waukesha County recognizes the threat that natural, technological, and man-made hazards pose to people, property, and the environment; and

WHEREAS, undertaking hazard mitigation actions before disasters occur reduces the potential for harm to people, property, the environment, while saving taxpayer dollars; and

WHEREAS, an adopted all hazard mitigation plan is required by the Federal Emergency Management Agency (FEMA) as a condition of future grant funding for mitigation projects under FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, Waukesha County participated jointly in the planning and update process with other local units of government, the State of Wisconsin and the Federal Emergency Management Agency to prepare the 2016 Waukesha County All Hazard Mitigation Plan, which was made available for review and will reside permanently in the Waukesha County Emergency Management Division; and

WHEREAS, Wisconsin Emergency Management and Federal Emergency Management Agency, Region V, officials reviewed the 2016 update and approved it contingent upon official adoption by the participating governing bodies in Waukesha County;

THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that Waukesha County hereby repeals the 2011 Hazard Mitigation Plan, recreates and adopts the 2016 Waukesha County All Hazards Mitigation Plan as the official hazard mitigation plan for Waukesha County, and endorses and agrees to participate in the implementation of the 2016 Waukesha County All Hazard Mitigation Plan as it applies to this jurisdiction.

ADOPTION OF THE 2016 WAUKESHA COUNTY
ALL HAZARD MITIGATION PLAN


Presented by:
Judiciary & Law Enforcement Committee




Peter M. Wolff, Chair



Jim Batzko



Michael A. Crowley



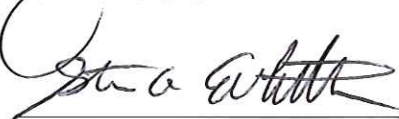
Kathleen M. Cummings



Timothy Dondlinger



Jennifer Grant



Steve Whittow

The foregoing legislation adopted by the County Board of Supervisors of Waukesha County, Wisconsin, was presented to the County Executive on:

Date: 7/26/16, 

Kathleen Novack, County Clerk

The foregoing legislation adopted by the County Board of Supervisors of Waukesha County, Wisconsin, is hereby:

Approved: X
Vetoed: _____

Date: 8/1/16, 

Paul Farrow, County Executive

Kolb	AYE	Wood	Absent
Zimmerman	AYE	Mitchell	AYE
Morris	AYE	Crowley	AYE
Batzko	AYE	Paulson	AYE
Dondlinger	(2) AYE	Nelson	AYE
Walz	AYE	Cummings	AYE
Grant	Absent	Schellinger	AYE
Michalski	AYE	Zaborowski	AYE
Heinrich	AYE	Wysocki	AYE
Swan	AYE	Hammitt	AYE
Howard	AYE	Whittow	AYE
Wolff	(M) AYE	Johnson	AYE
Decker	AYE		



2.1 Introduction and Overview

Published 12/9/2015 15:44 by Daiko Abe

WAUKESHA COUNTY, WISCONSIN

HAZARD MITIGATION PLAN

PREPARED BY:

WAUKESHA COUNTY HAZARD MITIGATION STEERING COMMITTEE

WAUKESHA COUNTY OFFICE OF EMERGENCY MANAGEMENT

WAUKESHA COUNTY COMMUNITIES

ADOPTED [INSERT DATE]

BY THE WAUKESHA COUNTY BOARD OF SUPERVISORS

I. Introduction and Overview

The Waukesha County Hazard Mitigation Plan is intended to provide strategies for reducing susceptibility to future damage to public and private infrastructure in the county. The procedures utilized in preparing this plan are based on guidance provided by FEMA and WEM and should therefore be considered consistent with the requirements and procedures in the Disaster Mitigation Act of 2000.

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-228, as amended) is the impetus for involvement of state and local governments in evaluating and mitigating natural hazards as a condition of receiving federal disaster assistance. The Federal Emergency Management Agency (FEMA) has rules in 44 CFR Part 206 Subpart M for implementing Section 409.

Section 409 states that the county is obligated to try to reduce any hazard that has received relief funding in the past. Developing a hazard mitigation plan provides an opportunity for communities to meet this requirement by developing strategies for reduction of potential losses from future natural disasters. Hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people and property from hazards and their effects. Completion of this plan should put Waukesha County in an advantageous position when competing for pre- and post-disaster mitigation project dollars because projects have been pre-identified. The cooperation of government, private and volunteer agencies is essential in mitigation efforts and over the long term it is hoped that implementation of this plan will save taxpayer dollars because less money is needed for post-disaster recovery activities. Furthermore, mitigation planning measures incorporated in economic or community development goals support more comprehensive and effective government. This plan evaluates the risks that all natural hazards pose to the citizens and property of Waukesha County by presenting:

- A profile and analysis of past hazardous events
- An assessment of vulnerability of community assets
- Potential hazard mitigation strategies
- Methods for building community support and ensuring plan adoption

Plan Overview

The Waukesha County Hazard Mitigation Plan provides background information on Waukesha County and identifies those hazards that have occurred or could occur in the county. It includes a description of each hazard, its frequency of occurrence, appropriate actions in case of emergency and possible steps to mitigate the hazard. These hazards are the basis for the development of all county emergency plans.

A well-prepared plan allows emergency management to act swiftly and efficiently in the event of a hazard, reducing the damage and the cost incurred from displacing residents and businesses. Hazard mitigation activities will be emphasized in the plan as a major component of overall emergency management. The plan is intended to provide strategies for reducing future damages to public and private infrastructure in the county, including flood damage.

Standard:

- Wisconsin Emergency Management (WEM) Mitigation Standard 2015; Element D Plan Review, Evaluation, and Implementation (UPDATES ONLY)
 - D1. Was the Plan revised to reflect changes in development? 44 CFR 201.6(d)(3)
 - D1.1. Changes in development in hazard prone areas that increased or decreased the vulnerability of each jurisdiction
 - D1.2. If no changes in development impacted the jurisdiction's vulnerability, validate the information in the previous plan

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Printed: 2016/05/06 10:12H

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2.5 Risk Assessment

Published 4/22/2016 19:32 by a-reum han



V. Risk Assessment

Waukesha County recognizes that a community's All Hazard Risk Assessment is the fundamental building block of the four core functions of emergency management: prepare, respond, recover, and mitigate. In today's hazard environment, emergency management is the crux of solving the complex challenges that face our communities during an emergency or following a disaster. The disaster activity over the past several years has re-emphasized the importance for communities to invest in creating thorough strategies to develop comprehensive emergency plans and to test, train, and exercise all emergency operations.

The objective of the risk methodology is to devise a process to compare and evaluate which natural, technological, and political hazards are the greatest threats to the County and where mitigation actions should be focused to provide the best value to Waukesha. The All-Hazard Risk Assessment describes, analyzes, and assesses the risks facing Waukesha County from three categories of hazards: Natural, Technological, and Political. Natural hazards are those events that are a result of our surrounding environment, such as wildfires, flooding, or hurricanes. Technological hazards are events that are a result of the failure of infrastructure and systems that we have become dependent on for daily activities, such as transportation networks or utilities. Political hazards are those events that are a result of local, national, or international societal interactions, such as terrorism or civil disturbances.

Each hazard category will elaborate upon and define the different types of hazards that are associated with each, identify historical events that have occurred locally and/or regionally, define the hazard profiles, parameters, and characteristics; assess possible vulnerabilities; determine probable scenarios; and model select hazards. The hazards investigated were identified through extensive research that utilized input from Waukesha County, Federal Emergency Management Agency (FEMA), Department of Homeland Security (DHS), hazard experts, historical occurrences, Geographic Information System databases, and hazard specific data such as Flood Insurance Maps.

Scope of Analysis

The following is a list of the hazards investigated in this study.

Natural Hazard	Technological Hazards	Political Hazards
Drought & Dust Storms	Utility Failure	
Earthquakes	Hazard Materials Release	
Flooding & Dam Failure	Rail Transportation Incident	
Fog		
Forest & Wildfires		
Severe Temperatures		
Hail		
Lightning		
Thunderstorms		
Tornadoes & High Winds		
Winter Storms		



Many of the hazards in the Risk Assessment do not pose a significant risk because of their low-probability of occurring or minimal impact; however, these hazards are still addressed in this report. Hazards that were determined to not occur in Waukesha County (e.g. hurricanes) were removed from the Risk Assessment. Several hazard types (e.g. hazardous materials release) transcend hazard categories (i.e., natural, technological, and political).

Hazard Loss Modeling

To supplement the impact analysis and risk determination, a hazard loss model and analysis was performed for select scenarios of each hazard category. The scenarios selected were based on historical occurrences of disasters, availability of data, and the severity of the hazard risk. The hazard loss analysis process utilized Hazards U.S. Multi Hazard (HAZUS-MH) modeling, Geographic Information Systems (GIS) analysis, and historical disaster data and information to conduct quantitative analysis to estimate the loss due to the selected natural, technological and political hazard events. HAZUS-MH is a powerful risk assessment software program for analyzing potential losses from floods and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest (GIS) technology to produce estimates of hazard related damage before, or after, a disaster occurs. The analysis reports obtained from the HAZUS-MH model includes the following:

- Estimation of the losses to structures and contents
- Estimation of the losses to structure use and function
- Projection of human losses
- Estimation of the primary direct and indirect loss

HAZUS-MH and GIS analysis was used to determine which individual assets were vulnerable to the largest potential losses; by adding the structure loss, content loss, and function loss for each asset to determine the total loss. This process produced the following:

- Calculation of the losses to each asset
- Calculation of the estimated damages for each hazard event
- Creation of a map that shows a composite of the areas of highest loss

Many of the human-induced hazards provide some unique implications for loss estimation because these events can take place with different magnitudes, in any location, at any time, and under various circumstances. Because the characteristics of many of the human-induced events are not definitive, a generalized loss analysis was conducted. The HAZUS-MH model was utilized when the human-induced hazard has geographic characteristics. When HAZUS-MH data was not relevant to the particular event, the best available historical data was used to provide a generalized loss estimate. The following scenarios were assessed and analyzed utilizing GIS data and HAZUS-MH modeling.

They are provided in the relevant section of this report.

Hazard Risk Determination

The determination of the risks associated with each hazard were not based on empirical values, but instead based on a function of the probability of the event occurring and its potential impact. This approach was necessary due to the complexities of a uniformed all-hazard approach and the numerous direct and indirect factors for a unique community like Waukesha County. To remain consistent, a color-coded scale was utilized to provide a descriptive assessment of each risk. An example of the risk scale is provided. Each hazard risk assessment will go through a review process involving the Waukesha County Steering Committee.

Standard

- Federal Emergency Management Agency (FEMA) Local Mitigation Standard 2014; Risk Assessment; §201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.
 - 5. Identify Hazards; Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type ... of all natural hazards that can affect the jurisdiction.
 - 5. Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?
 - 6. Profiling Hazards; Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
 - 6.A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the new or updated plan?
 - 6.B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?
 - 6.C. Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?
 - 6.D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the new or updated plan?
 - 7. Assessing Vulnerability: Overview; Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
 - 7.B. Does the new or updated plan address the impact of each hazard on the jurisdiction?
 - 8. Assessing Vulnerability: Addressing Repetitive Loss Properties; Requirement §201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.
 - 8.A. Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?
 - 9. Assessing Vulnerability: Identifying Structures; Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area ...
 - 9.A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?



2.5.1 Hazard Summary

Published 5/5/2016 15:28 by Daiko Abe

Hazard Analysis

The following sections identify those hazards that have occurred or could occur in Waukesha County. Each includes a description of a hazard and its frequency of occurrence. Also included is a section that describes the general vulnerabilities of the community and its infrastructure to each particular type of hazard.

Wisconsin Emergency Management (WEM) completed and regularly updates the State Hazard Mitigation Plan, which was last revised in 2011. This plan describes the hazards that have occurred or are most likely to occur within the state and includes the frequency of occurrence, potential impacts and suggested actions to mitigate the hazard. This plan is the basis for the development of all emergency management plans and is distributed upon revision to county emergency management directors and other stakeholder agencies.

The Waukesha County Emergency Management Coordinator develops and annually updates a listing of all hazards that have occurred or could occur within the county. This listing includes the definition, frequency of occurrence and actions to mitigate the hazard. In general, the threat of most hazards is consistent throughout the county. The only hazard where there were differences identified within the county was for flooding and for that hazard, specific locations are identified.

Due to the geographic location of Wisconsin and/or Waukesha County, volcanoes, landslides, hurricanes, and tsunamis were not considered to be a risk and will not have mitigation strategies associated with them.

Wisconsin Emergency Management (WEM) Hazard Matrix						
No.	Hazard	Location (if the risk is not equal for the entire jurisdiction)	Frequency/Probability (i.e. Future Probability)	Magnitude/Extent (i.e. Strength or Magnitude)	Vulnerability (i.e. Consequence and Impact)	Overall Risk Rating
01	Droughts and Dust Storms	Droughts will primarily impact the agricultural community of Waukesha County.	Medium	Low	Low	Low
02	Earthquakes	Countywide	Low	Low	Medium	Low
03	Flooding and Dam Failure	Historically, flooding has most significantly affected communities such as the villages of Elm Grove and Pewaukee; the cities of Brookfield, New Berlin, Muskego and Waukesha; and the unincorporated portions of Waukesha County.	High	High	High	High
04	Fog	Countywide	Medium	Low	Low	Low



05	Forest and Wildfires	As illustrated on the plan's wildfire maps, the highest risk areas are the areas where wildland is in close proximity to urban settlements. Communities adjacent to and surrounded by wildlands (e.g. areas of grassland, woodlands, bushland, scrubland) are most at risk of wildfires.	Low	Low	Low	Low
06	Hail	Countywide	High	Medium	Low	Medium
07	Lightning	Countywide	High	Medium	Medium	Medium
08	Severe Temperatures	Countywide	Medium	Medium	Medium	Medium
09	Thunderstorms	Countywide	High	Medium	Low	Medium
10	Tornadoes and High Winds	The highest risks associated with tornadoes and severe winds are within the urban areas of the County. The larger cities—Waukesha, New Berlin, Brookfield, Muskego, Oconomowoc, and Pewaukee and the Village of Menomonee Fall will suffer the greatest losses if a tornado touches down in one of these communities.	Medium	Medium	Medium	Medium
11	Winter Storms	Countywide	Medium	Medium	Low	Medium
12	Hazardous Materials Release	Near transit hubs, rail, or large industrial facilities that store or produce hazardous materials	Medium	Medium	Medium	Medium



13	Utility Failure	The highest risks associated with power failures and utility failures are in communities with hospitals, nursing homes, care facilities, elderly housing facilities and other housing/care facilities occupied by vulnerable populations.	Medium	Medium	Medium	Medium
14	Rail Transportation Incident	Countywide; Specifically near major rail lines and routes.	Low	Low	Medium	Low

- Wisconsin Emergency Management (WEM) Mitigation Standard 2015; Element B: Hazard Identification and Risk Assessment (see the end of this element for a checklist to use in reviewing each hazard section)
 - B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction? 44 CFR 201.6(c)(2)(i) and (iii)
 - B1.1. Description of natural hazards[1] that affect jurisdictions in the planning area
 - B1.2. Rationale for any omitted natural hazards that affect jurisdictions in the planning area
 - B1.3. Location (geographic areas in planning area) of each hazard; for multi-jurisdictional plans: description of hazards for participating jurisdictions that are unique or varied from those affecting the overall planning area (flooding, dam failure, wildfire)
 - B1.4. Extent (strength or magnitude) of each hazard
 - B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? 44 CFR 201.6(c)(2)(ii)
 - B.3.1 Potential impacts of each identified hazard for each participating jurisdiction
 - B.3.2 Vulnerability of each participating jurisdiction to the identified hazards
 - B5. Hazard Matrix
 - B5.2. Location (if the risk is not equal for the entire jurisdiction)
 - B5.3. Extent (strength or magnitude)
 - B5.5. Future Probability
 - B5.7. Vulnerability
- Federal Emergency Management Agency (FEMA) Local Mitigation Standard 2014; Risk Assessment; §201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.
 - 7. Assessing Vulnerability: Overview; Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
 - 7.A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?