

SECTION 1: INTRODUCTION

Damages caused by natural disasters are threatening the United States at increasing rates. Between 1980 and 2021, the U.S. experienced 298 natural disasters where damages exceeded \$1 billion. The total cost for these events exceeds \$1.975 trillion (adjusted to 2021 dollars using the Consumer Price Index). Flooding represents 11.7% of the number of events with 8% of the losses, while severe storms made up 45.6% of the number of events yet only 15.6% of total losses. Tropical cyclones represent the highest in damages with 52.2% of total losses and drought is responsible for 13.5% of damages. Nationwide, an increase in the number of severe storms, droughts, and flood events, has occurred over the last 20 years, resulting in an increase in property damage, and more frequent interruptions of business and government services. Natural disasters have a tremendous economic impact on governments, businesses, and individuals.

In the 1980s, Wisconsin experienced five billion-dollar disasters and was granted four Presidential Disaster Declarations. In the 1990s, there were three billion-dollar disasters and 12 Presidential Disaster Declarations. In the 2000s, there were 11 billion-dollar disasters and the state received ten Presidential Disaster Declarations. The 2010s had the most billion-dollar disasters, 14, and received ten Declarations. Finally, in 2020, there were 3 billion-dollar disasters and three Declarations in Wisconsin. Since 1980, Wisconsin has incurred somewhere between \$10 and \$20 billion-dollars' worth of disaster-related damages. Flooding, drought, and severe storms make up over 98% of these costs.

Hazard mitigation activities are sustained actions taken to eliminate or reduce the long-term risk to human life and property from natural and technological hazards. Along with preparedness, response, and recovery, hazard mitigation is one of the four phases of emergency management. Mitigation can occur during any phase of emergency management – before, during, or after a disaster. However, hazard mitigation is the only phase of emergency management that can break the cycle of damage and repair; thus, mitigation activities should be considered long before an emergency. A recent updated report released by the National Institute of Building Sciences (NIBS) in 2019 indicated that for every dollar spent on federal mitigation grants, \$6 or more can be saved in future damage costs. For flooding, \$7 or more can be saved in future damages for every dollar spent in federal mitigation grants

1.1 Purpose and Scope

The purpose of the State of Wisconsin Hazard Mitigation Plan is to identify the state's major hazards, assess the vulnerability to those hazards, and take steps to reduce that vulnerability using the technical and programmatic resources of State of Wisconsin agencies. The Plan includes a mitigation strategy that identifies goals and recommended actions and initiatives that will reduce or prevent injury and damage from the identified hazards.

The Plan assesses hazard risk, reviews current state and local hazard mitigation capabilities, develops mitigation strategies, and identifies state agency actions to address mitigation needs.

The Plan does not attempt to develop local mitigation projects. As a home rule state, the State of Wisconsin respects the rights of communities to implement specific mitigation actions that best serve them. The Plan identifies existing resources and develops tools to assist communities in their mitigation efforts. This is accomplished by establishing statewide mitigation policies, and providing technical resources, financial guidance, and training and education opportunities. To this end, the State of Wisconsin Hazard Mitigation Plan is the foundation for a viable statewide mitigation program.

1.2 Regulations

In 1988, the Disaster Relief Act of 1974, PL 93-288, was amended by PL 100-707, the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 404 of the Stafford Act allows the President to contribute up to 75% of the cost of hazard mitigation measures not to exceed 15% of the estimated federal assistance provided because of a Presidential Disaster Declaration. Section 404 funds can be used anywhere in the state and are not limited to the counties in the declared area.

Section 322 of the Disaster Mitigation Act of 2000 requires the development of a State Hazard Mitigation Plan for a state to be eligible for federal mitigation funds and certain other disaster assistance. States must develop and submit for approval to the Federal Emergency Management Agency (FEMA) a Standard Hazard Mitigation Plan that includes details of the planning process, identification of the state's natural hazards, a risk assessment for the identified natural hazards, a mitigation strategy, and a plan maintenance process. Section 322 of the Act also allows the President to increase the mitigation contributions to 20% of the federal assistance provided for the Presidential Disaster Declaration if the approved State Hazard Mitigation Plan contains enhanced mitigation program management information.

The Stafford Act was amended again in 2018 with the Disaster Recovery Reform Act. This law increased the amount of funding available to manage grants, providing 5% to subrecipients and 10% to WEM, to manage the Hazard Mitigation Assistance grants. It also strengthened the commitment to all-hazard non-disaster mitigation by replacing the Pre-Disaster Mitigation grant program with the Building Resilient Infrastructure and Communities program.

This Plan meets the requirements for a Standard and Enhanced State Plan under Interim Final Rule 44 CFR 201.4 and 201.5, published by the Federal Emergency Management Agency on February 26, 2002. The completed State Mitigation Plan Review Tool can be found in Appendix J.

Meeting the planning requirements of these regulations maintains the State of Wisconsin's eligibility for obtaining the maximum federal disaster assistance available in the Public Assistance (PA) program and the Hazard Mitigation Assistance (HMA) grant programs.

1.3 Assurances

The State of Wisconsin will comply with all applicable federal statutes and regulations in effect with respect to the periods in which it receives grant funding, including 44 CFR Part 13, and 2

CFR Parts 200 and 3002 for grant awards for declaration issued after December 26, 2014. The State of Wisconsin Hazard Mitigation Plan will be amended according to the process described in the Plan Maintenance Section whenever necessary to reflect changes in state and federal statutes. The Plan complies with state and federal regulations, as cited in the Authorities Appendix and other portions of the Plan.

1.4 Wisconsin Silver Jackets Hazard Mitigation Team

The Wisconsin Silver Jackets Hazard Mitigation Team (WSJHMT) is comprised of representatives from the following federal, state, and other agencies:

Federal
Federal Emergency Management Agency
National Weather Service
US Army Corps of Engineers
US Department of Agriculture, Natural Resources Conservation Service
US Department of Agriculture, Rural Development
US Department of Housing and Urban Development
US Economic Development Administration
US Geological Survey

State
Department of Administration, Division of Housing
Department of Administration, Division Intergovernmental Relations, Wisconsin Coastal Management Program*
Department of Administration, Division Intergovernmental Relations, Comprehensive Planning*
Department of Administration, Division of State Facilities*
Department of Agriculture, Trade and Consumer Protection*
Department of Health Services*

State of Wisconsin Hazard Mitigation Plan

Department of Natural Resources, Division of Water*
Department of Natural Resources, Division of Forestry*
Department of Natural Resources, Division of Enforcement and Science*
Department of Safety and Professional Services, Division of Safety and Buildings*
Department of Transportation*
Wisconsin Economic Development Corporation*
Wisconsin Emergency Management*
Wisconsin Historical Society*
Wisconsin Office of Commissioner of Insurance*
Wisconsin Public Service Commission*
University of Wisconsin - Cooperative Extension Office*

Other
Mississippi River Regional Planning Commission
Rural Electric Cooperative Network
Voluntary Organizations Active in Disaster
Wisconsin Association of Floodplain, Stormwater, and Coastal Management
Wisconsin Emergency Management Association

The heads of the agencies listed above (indicated with an asterisk) have reviewed and concurred that the State of Wisconsin Hazard Mitigation Plan is a working document that will improve the state's ability to minimize the effects of natural hazards and resist disaster, thereby protecting the health, safety, and economy of its citizens (see Appendix K). They further agree to implement the mitigation actions identified in the Mitigation Strategy and to provide support for and participate in plan updates.

1.5 State of Wisconsin Background Information

Wisconsin is the 25th largest state in the United States at 54,158 square miles (land only) and has the 20th greatest population. Wisconsin is home to numerous lakes, rolling hills, steep valleys, agricultural areas, conservation lands and forests.

1.5.1 State Government

The Wisconsin State Capitol, located in Madison, houses both branches of the Wisconsin Legislature, the State Supreme Court, and the Office of the Governor. The state is divided into 72 counties and many smaller jurisdictions: cities, villages, and towns. Cities and villages are incorporated urban areas. Towns are minor civil divisions of counties and are unincorporated.

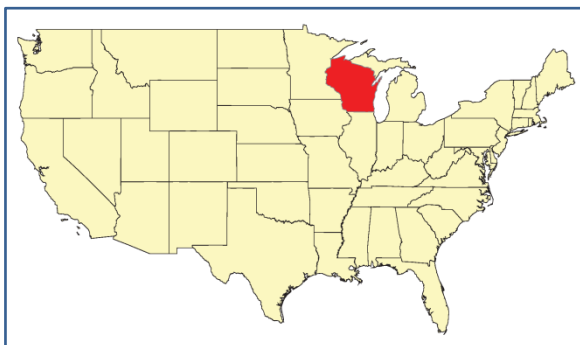


Wisconsin State Capitol

Source: Wisconsin Department of Administration

Wisconsin is a “home-rule” state. This means that state authority in local affairs is limited except when the state enacts legislation that applies to all local jurisdictions uniformly. The state can also prohibit cities and villages from enacting ordinances in matters of statewide concern. Cities and villages have home-rule authority, but towns do not. Counties have only administrative home rule, which means they can organize their administrative departments as they see fit. When cities or villages request action by the county on their behalf, home rule can extend to the counties. A significant feature of home-rule for mitigation purposes is that home-rule communities have zoning authority.

Typically, mitigation planning takes place at the county level since counties support and oversee more robust emergency management programs. They work closely with the municipal and township governments and tribal nations, to ensure that mitigation is supported by all local units of government in the county. This model also encourages local units of government to partner with neighboring communities whenever possible on mitigation initiatives and projects, since many projects can have impacts that go beyond municipal borders.



Wisconsin's Location in the US

Source: Wisconsin Emergency Management

1.5.2 Geography

Wisconsin is bordered by Lake Superior and the Upper Peninsula of Michigan to the north, Lake Michigan to the east, Illinois to the south, and Iowa and Minnesota to the west. The state's western boundary is defined by the Mississippi and St. Croix Rivers.

Geology

Thousands of years ago, most of Wisconsin was covered by glaciers which scraped the tops off tall hills, leaving rich earth deposits and beautiful lakes (over 15,000 of them) among rolling hills and ridges. As a result, the state can be divided into the five distinct geological land areas shown in Figure 1.5.2-1: the Lake Superior Lowland, the Eastern Ridges and Lowlands (Great Lakes Plains), the Northern Highland (also known as the Superior Upland), the Central Plain, and the Western Upland.

Figure 1.5.2-1: Wisconsin Geological Land Areas



Source: Wikipedia, public domain file

Lake Superior Lowland: In northern Wisconsin, the Lake Superior Lowland slopes gradually upwards toward the south from the shores of Lake Superior. This small area of nearly flat plain extends about five to 20 miles inland. Since this area is at a significantly lower elevation than the one immediately south, Wisconsin has experienced flash flooding disasters along the boundary of the Lake Superior Lowland and Northern Highland due to fast moving flood waters after heavy precipitation.

Northern Highland: Most of northern Wisconsin is characterized by Northern Highland geography. This area, lying south of the Lake Superior Lowland, expands southward over about one third of the state. The Northern Highland reaches its highest elevations in the north, sloping downward to the south. The Northern Highland supports hundreds of small lakes and heavily forested hills. Timms Hill, the highest point in Wisconsin, is in the Northern Highland.

Central Plain: South of the Northern Highland and curving across the central part of the state is the Central Plain. In the southern portion of the Central Plain, the Wisconsin River has carved the beautiful scenic gorge Wisconsin Dells. This is an area of buttes and mesas, an unexpected landscape for central Wisconsin. As a result, in periods of high groundwater, residents experience flooding that comes from non-riverine or non-lake sources, which is not characteristic of other places in the state.

Eastern Ridges and Lowlands: To the east of the Central Plain, the gently rolling hills of the Eastern Ridges and Lowlands area extend from Green Bay south to Illinois. This is the richest agricultural region of Wisconsin where ice-age glaciers deposited earth over limestone ridges.

Western Upland: To the west of the Central Plain, the Western Upland is characterized by limestone and sandstone bluffs along the Mississippi River. The Western Upland extends along the Mississippi River to the border of Illinois. The southwestern portion of the Western Upland, known as the Driftless Area, was not touched by glaciers and is an area that contains steeply sloped ravines and winding ridges. These steep valleys have led to numerous flash flooding events, heavy debris from steep ridges, and landslides during periods of heavy saturation.

Weather

Wisconsin lies between 42° 30' and 47° north latitude and is located centrally between the east and west coasts of the continent. As such, the state has four distinct seasons. The waters of Lake Superior and Lake Michigan create slightly more moderate climates along their shores.

Wisconsin lies in the belt of prevailing westerly winds.

1.5.3 Water Resources and Recreation

With over 15,000 inland lakes, 43,000 miles of rivers and streams, 659 miles of Great Lakes shoreline, and 5.3 million acres of wetlands to enjoy, Wisconsinites have a history of protecting their lakes and restoring their watersheds. Article IX of the Wisconsin Constitution declares that all navigable waters are “common highways and forever free” and held in trust by the State of Wisconsin. This concept of Public Trust Doctrine requires the state to intervene to protect public rights in commercial and recreational use of navigable waters. By codifying Public Trust Doctrine to protect surface water for use and enjoyment by all members of the public and habitat for aquatic species, the DNR and other related agencies can protect the Public’s use and enjoyment of surface water. Decades of case law established this precedent, and often comes into play during flood mitigation projects that impact road/water crossings (e.g., culverts, bridges, etc.) as these projects impact transportation/navigation, water quality, aquatic species habitat, and environmental benefits of waterways.

Aside from water, Wisconsin has numerous other outdoor assets. The Wisconsin State Park System manages nearly 156,000 acres of land and attracts over 20 million annual visitors to its 49 state parks, 14 state forests, and 8 recreation areas.

1.5.4 Infrastructure

Transportation

As of August 2021, the Wisconsin Department of Transportation has a record of 115,751 miles of roads in Wisconsin. That includes 11,748 miles of state trunk highways, 19,715 miles of county trunk highways, and 104,003 miles of local roads. Wisconsin is also home to nine railroads with 4,156 miles of railroad track, nine active lake harbors, and 672 airports, of which, 97 are publicly owned, 450 are privately owned, and 125 are specialized facilities.

Dams

There are currently about 3,900 dams in Wisconsin. About 900 dams have been washed out or removed since the late 19th century. 60% of Wisconsin dams are privately owned, 9% are owned by the state, 17% are owned by a municipality, and the remaining 14% have other types of ownership. About 5% of the dams in Wisconsin produce hydroelectricity and therefore fall under federal jurisdiction. The Wisconsin Department of Natural Resources regulates the remaining 95% of dams.

Nuclear Power Plants

There are three nuclear power plants in Wisconsin: Kewaunee in Kewaunee County, Point Beach in Manitowoc County, and the La Crosse Boiling Water Reactor (BWR) in La Crosse County. Kewaunee Nuclear Power Plant is in the decommissioning process. They are both on the shore of Lake Michigan. The Prairie Island nuclear power plant in Minnesota is on the shore of the Mississippi River and thus also impacts Wisconsin. These power plants are regulated by the Nuclear Regulatory Commission (NRC).

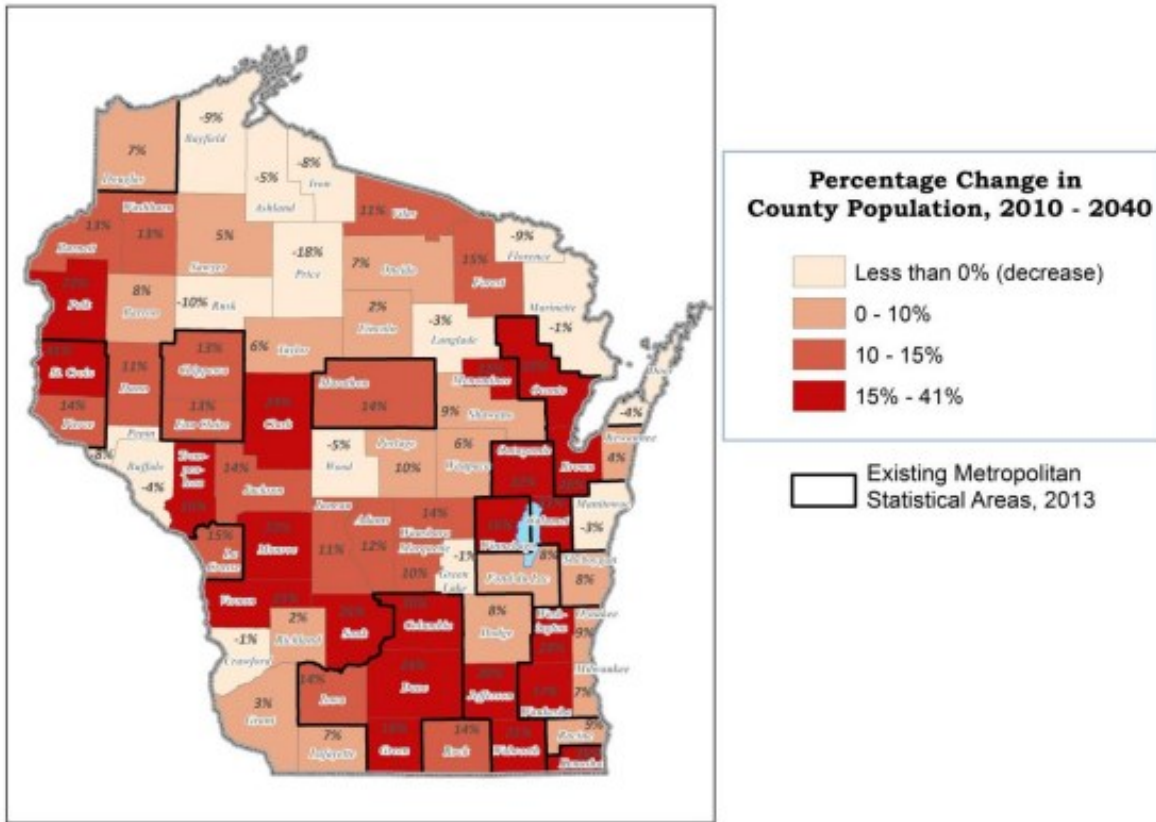
1.5.5 Population

The population of Wisconsin as of the April 2020 Census was 5,893,718. There was a 2.4% increase from April 2010 to July 2019. Population growth was concentrated in Dane, Washington, and Saint Croix Counties with increases of 12.4%, 13.4%, and 8.5% respectively.

The five largest counties in Wisconsin are Milwaukee, Madison, Dane, Waukesha, Brown, and Racine. Naturally, the five largest cities are Milwaukee, Madison, Green Bay, Kenosha, and Racine.

A study by the UW-Madison Applied Population Laboratory (completed in 2013) projected the state's population to grow by more than 800,000 people, or 14% from 2010. The study also claimed that villages are predicted to experience a greater percentage growth than cities and towns over the 30-year period. Figure 1.5.5-1 below outlines the percentage change predicted in each county.

Figure 1.5.5-1: Wisconsin’s Population Projections, 2010-2040



Source: UW-Madison Applied Population Laboratory

1.5.6 Tribal Nations

Tribal Nations have played a vital and significant role throughout Wisconsin’s history and for hundreds of years prior to statehood. There are 11 federally recognized Tribal Nations in Wisconsin:

- Bad River Band of Lake Superior Tribe of Chippewa Indians
- Forest County Potawatomi Community
- Ho-Chunk Nation
- Lac Courte Oreilles Chippewa Band of Lake Superior Indians
- Lac du Flambeau Band of Lake Superior Chippewa Indians
- Menominee Indian Tribe of Wisconsin
- Stockbridge-Munsee Community of Mohican Indians
- Oneida Nation

- Red Cliff Band of Lake Superior Chippewa Indians
- St. Croix Chippewa Indians of Wisconsin
- Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians)

As sovereign nations, the tribes may apply directly to FEMA for mitigation grants or through WEM as a sub applicant. They must meet the tribal mitigation planning requirements described in 44 CFR Part 201.7 to be awarded Hazard Mitigation Assistance funds. All the Tribal Nations in Wisconsin are actively engaged in emergency management; specifically hazard mitigation planning. In fact, most of Wisconsin's Tribal Nations have received FEMA Hazard Mitigation Assistance grant funding.

The Tribal Nations in WI are actively engaged in the mitigation process from applying for grant funding, to consulting with WEM and FEMA on the environmental, historical, and cultural impacts on mitigation projects on the lands that are important to their Tribal Nation. The Tribal Nations in WI are constantly innovating mitigation in Wisconsin. For example, the Oneida Nation applied for the state's first Advance Assistance Grant, the project scope is to investigate the use of microgrids to make Tribal critical facilities more resilient during disaster events. The Stockbridge-Munsee Community combined the construction of a community safe room with installation of seven backup power generators at critical facilities, this project was designed to aggregate the benefits of mitigation and wholistically think about safety of residents on Tribal land during severe weather and power outages. The Forest County Potawatomi Community expanded their Tribal mitigation plan's asset inventory to include buildings with historical and community significance to more wholistically consider risk and vulnerability to hazards identified in their plan.

Figure XXXX: Wisconsin's Federally Recognized Tribes



Source: Wisconsin Department of Public Instruction

1.5.7 Sources

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