SECTION 1: INTRODUCTION

Natural disasters threaten communities and citizens throughout the United States. Between 1980 and 2016, the US experienced 200 natural disasters where damages exceeded $1 billion. The total cost for these events exceeds $1.1 trillion (adjusted to 2016 dollars using the Consumer Price Index; NCEI, 2016). Flooding represents 13% of the number of events with 9.4% of the losses, while severe storms made up 41.5% of the number of events yet only 15.5% of total losses. Tropical cyclones represent the highest in damages with 47.6% of total losses and drought is responsible for 19.1% of damages (NCEI, 2016). 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 (NCEI, 2016). Natural disasters have a tremendous economic impact on governments, businesses, and individuals.

In the 1980s, Wisconsin was granted six Presidential Disaster Declarations. In the 1990s, it was twice that number, and in the 2000s, the state received ten Presidential Disaster Declarations. Between 2000 and 2016, the state received an additional fourteen Declarations. Since 1990, Wisconsin has incurred over $2.75 billion in disaster-related damages.

To reduce vulnerability to natural hazards and decrease the staggering costs individuals, the government, and the insurance industry pay in their wake, the state must find ways to minimize disaster losses through the implementation of mitigation projects and activities. 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. A report released by the Multihazard Mitigation Council (Institute of Building Sciences) in 2005 indicated that for every dollar spent on mitigation, $4 or more can be saved in future damage costs. For flooding, $5 or more can be saved in future damages for every dollar spent in mitigation.

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 as a result 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.

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 including the hazard mitigation grants available through the Stafford Act.

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 state and federal agencies:

Cooperative Network

Federal Emergency Management Agency

Milwaukee Metropolitan Sewage District

Mississippi River Regional Planning Commission

National Weather Service

Public Service Commission of Wisconsin*

University of Wisconsin-Extension*

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

Voluntary Organizations Active in Disaster

Wisconsin Association of Floodplain, Stormwater, and Coastal Managers

Wisconsin Economic Development Corporation*

Wisconsin Department of Administration*

- Division of Housing
- Division of Intergovernmental Relations; Wisconsin Coastal Management Program, Comprehensive Planning, and the Wisconsin Land Information Program
- Division of State Facilities

Wisconsin Department of Agriculture, Trade, and Consumer Protection*

Wisconsin Department of Health Services*

Wisconsin Department of Natural Resources*

- Division of Enforcement and Science
- Division of Forestry
- Division of Water

Wisconsin Department of Safety and Professional Services,* Division of Industry Services

Wisconsin Department of Transportation*

Wisconsin Emergency Management*

Wisconsin Emergency Management Association

Wisconsin Historical Society*

Wisconsin Office of the Commissioner of Insurance*

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 I). 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 23rd largest state in the United States at 54,310 square miles (land only) and has the 20th greatest population (5,771,337 as estimated by the American Community Survey in 2015). Wisconsin's natural beauty has made the state a favorite playground of the nation. Vacationers enjoy the state's clean lakes, rolling hills, quiet valleys, and deep forests. The winters

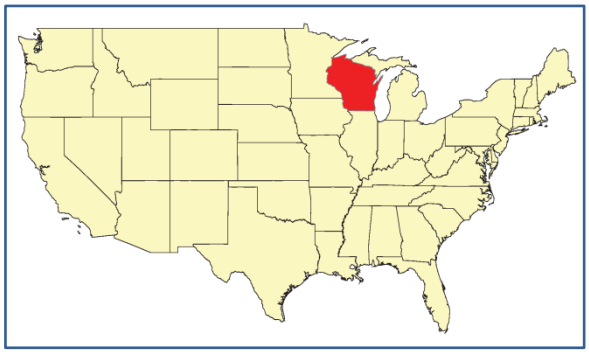
are ideal for skating, skiing, snowmobiling, tobogganing, and ice fishing. Many communities stage curling matches during the winter and others hold snowmobile derbies.

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, 2011.

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.



Wisconsin's Location in the US
Source: Wisconsin Emergency Management, 2011.

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, created March 16, 2010: http://en.wikipedia.org/wiki/File:Wisconsin_geographic_provinces.svg.

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.

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 located 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.

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, know and the Driftless Area, was not touched by glaciers and is an area that contains steeply sloped ravines and winding ridges.

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

Wisconsin values its water resources. With over 15,000 lakes, 33,000 miles of rivers and streams, and 5.3 million acres of wetlands to enjoy, Wisconsinites work hard to protect their lakes and restore their watersheds as shoreline use intensifies. Fishing and boating are major recreational activities in the state.

Aside from water, Wisconsin has numerous other outdoor recreational assets. According to the State of Wisconsin 2015-2016 Blue Book, there are nearly 6,000 state-owned campsites, and 6 million acres of hunting land. Wisconsin currently operates 49 state parks, 14 state forests, and 8 recreation areas. Visitors to Wisconsin's state parks, forests, trails, and recreation areas number over 14 million annually.

1.5.4 Infrastructure

Transportation

As of January 1, 2015, there were 115,212 miles of roads in Wisconsin. That includes 11,765 miles of state trunk highways, 19,867 miles of county trunk highways, and 81,828 miles of local roads. Over 79% of state roads (91,025 miles) are surfaced at bituminous grade or higher, with the remaining 21% being gravel- or soil-surfaced, graded and drained, or unimproved.

Wisconsin is also home to nine railroads with 3,489 miles of railroad, nine active lake harbors, and 662 airports of which 94 are publicly owned, 452 are privately owned, and 116 are specialized facilities.

Dams

There are currently about 3,900 dams in Wisconsin. About 100 dams have been removed since 1967. 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 two nuclear power plants in Wisconsin: Kewaunee in Kewaunee County and Point Beach in Manitowoc 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 2015 is estimated to be 5,771,337 a 7.6% increase from the 2000 Census. Population growth was concentrated in the Fox River Valley, the far western part of the state near Minnesota's Twin Cities, Dane County, and southeastern Wisconsin.

With respect to population change in rural and urban areas, Wisconsin's demographic history largely parallels that of the rest of the country. Urban population is defined as persons living in and around cities with populations over 50,000, and those who reside in smaller cities and villages with populations of at least 2,500. The remainder of the population is considered rural.

The 2000 Census found that 68% of Wisconsin's population lives in urban areas. This contrasted with 79% nationally.

The five largest cities in Wisconsin are Milwaukee, Madison, Green Bay, Kenosha, and Racine.

In 2008, the Wisconsin Demographic Services Center completed a set of long-range projections for Wisconsin including the state's fifteen coastal counties. These projections from 2000-2035, help public officials and others anticipate and plan for future growth and decline.

As a group, Wisconsin's fifteen coastal counties are projected to increase by 9.2% in population through 2035. This change is less than the projected statewide growth of 24.1%. Numerically, the coastal counties population is projected to increase by 179,000 persons, from 1.94 million in 2000 to 2.12 million in 2035.

1.5.6 American Indians

American Indians have been a vital and significant population throughout Wisconsin's history and for hundreds of years prior to statehood. Geographically, American Indians have a strong presence not only in those counties that have reservations or tribal lands but also in a number of urban counties. In 2010, the largest populations were in Milwaukee County (6,794), Brown County (5,191) and Menominee County (3,981). When considered as a percentage of the total population, northern Wisconsin counties have the highest percentage of American Indian residents. Four counties have populations that are 10% or more American Indian: Menominee (87%), Sawyer (16%), Forest (11%), and Ashland (10%).

According to the "Tribes of Wisconsin" book prepared in July, 2011 by the Wisconsin Department of Administration, there are 11 federally-recognized Indian Tribes 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

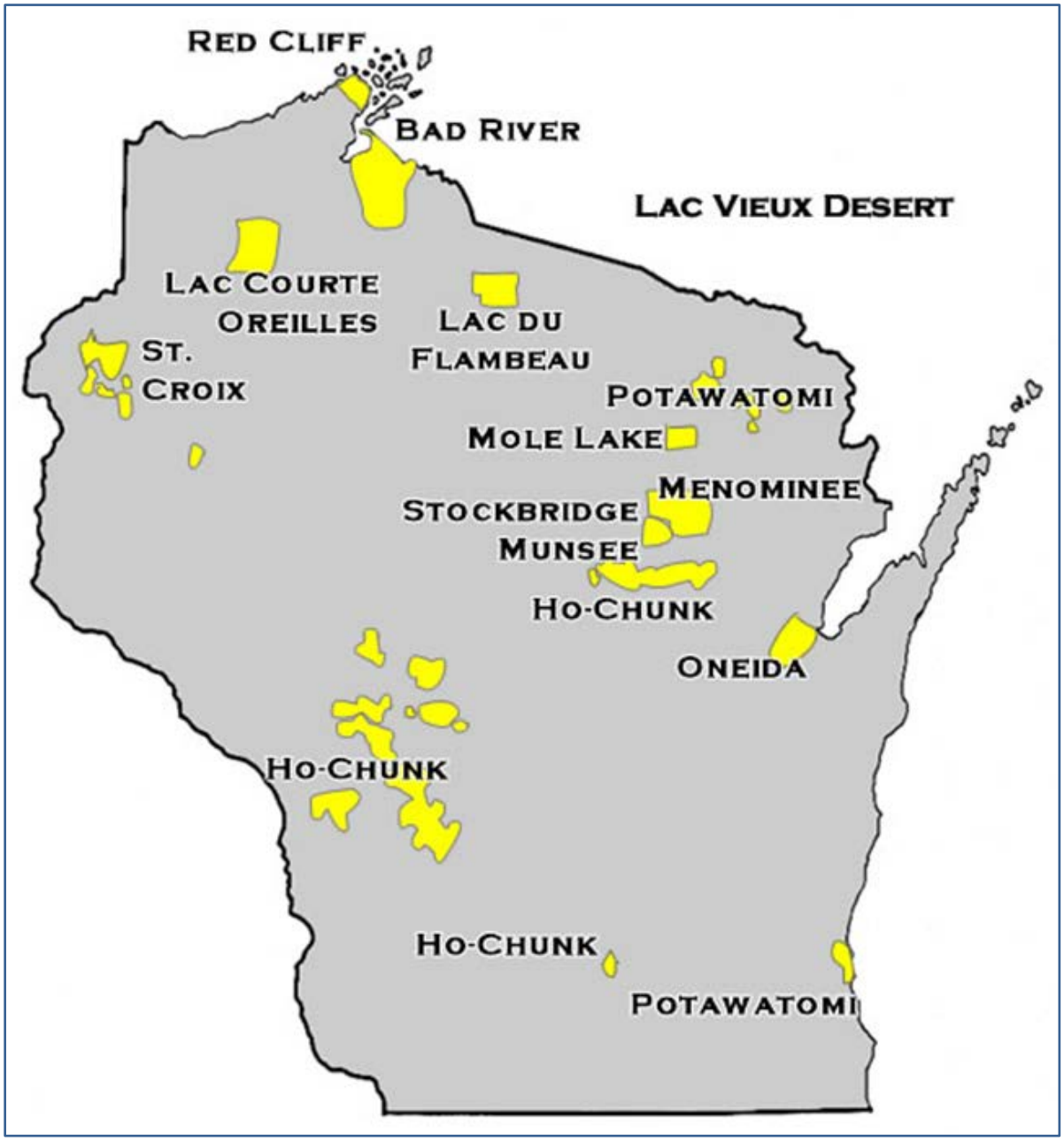
Oneida Nation

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, these tribes can apply directly to FEMA for mitigation grants or apply through the state as a subapplicant. They must meet the tribal mitigation planning requirements described in 44 CFR Part 201.7 to be awarded Hazard Mitigation Assistance funds.



Wisconsin's Federally-Recognized Tribes
Source: Great Lakes Inter-Tribal Council, 2016: http://www.glitc.org/.

1.5.7 Sources

The following agencies and document research assisted in providing background information.

1. NOAA National Centers for Environmental Information (NCEI). "U.S. Billion-Dollar Weather and Climate Disasters." 2016. https://www.ncdc.noaa.gov/billions/.
2. United States Census Bureau, American Community Survey Office. "ACS Data Tables on American FactFinder." http://www.census.gov/acs/www/data/data-tables-and-tools/american-factfinder/.