1.1 Purpose

Natural disasters can exact a heavy toll. In the past, natural hazards in Dane County have caused injury and loss of life, severe property damage, interruption of the delivery of vital goods and services, disruption of local economies, and environmental harm. Natural hazards are an inevitable fact of life on planet Earth. Planning for natural hazards and implementing mitigation measures, however, can reduce the *impact* of such events when they do occur. Monetary losses can be reduced. Personal injury and loss of life can be reduced. The economic, social, and environmental impact on the community as a whole can be reduced.

This plan outlines a strategy with specific programs and policies that can be implemented by Dane County and local units of government within Dane County to reduce the impact of natural hazards on people, structures, and the natural environment. This plan update also includes climate change as a factor in the planning process. In doing so, it hopes to account for the County's altered vulnerability to natural hazards in this changing climate and to plan strategies to reduce this vulnerability, before the next natural disaster occurs.

1.2 Plan Scope

This plan has been prepared as a multi-hazard or "all-hazards" mitigation plan, with a focus on natural hazards (i.e. meteorological, geological, or hydrological hazards.) A review of past natural disasters in Dane County, and across the State highlights fourteen hazards as presenting a significant risk to the communities of Dane County. These hazards include:

- Dam Failure
- Drought
- Extreme Cold
- Extreme Heat
- Flood
- Fog
- Hail
- Land Slide, Erosion, and Sinkholes
- Lightning
- Tornado
- Wildfire
- Windstorm
- Winter Storm
- Emerging Hazards (harmful algal blooms, vector-borne disease, and invasive species)

The plan identifies and describes each of these hazards, also analyzing our vulnerability to each hazard. The vulnerability assessment describes not only the physical characteristics of each hazard, but also the potential impact of each hazard on people, buildings, and the social and economic infrastructure of the communities of the County.

The vulnerability assessment is used as the basis for the County's mitigation strategy. The plan identifies goals and measures for hazard mitigation and risk reduction to make communities more disaster

resistant and sustainable. In addition, mitigation actions can protect critical community facilities, reduce exposure to liability, and minimize community disruption.

1.3 Plan Update Summary

This plan is the second update of the Dane County's Natural Hazards Mitigation Plan. The first version of the plan was adopted in May of 2005, with an update adopted in May of 2010. Much has changed since the previous versions of the plan were prepared. Most significantly:

- Many of the initial plan objectives have been accomplished or are well underway. This update identifies some of those actions taken and seeks to build on their success in reducing the long term vulnerability to natural hazards in Dane County.

- There have been significant changes in the County's capability and commitment to address natural hazards vulnerability. These include regulatory changes and updates, organizational changes in County government, new and updated plans and policies, and new information related to natural hazards and their effects on the people of Dane County. These changes and updates are incorporated into this plan.

- Climate change, once considered an issue for the distant future, has moved firmly into the present. Even subtle changes in climate pose significant risks to the well-being of county residents, the economy, and the environment. This plan update incorporates impacts of climate change into the hazard analysis and vulnerability assessment sections of the plan. The plan also incorporates adaption to changing natural conditions and natural hazards into the mitigation strategy and plan goals and objectives.

1.4 Plan Requirements

This plan is designed to meet the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The DMA 2000 established Federal hazard mitigation project funding mechanisms and new state and local planning requirements as conditions of project funding eligibility. The DMA 2000 also provides specific criteria for the preparation and adoption of multi-jurisdictional, "all-hazards" mitigation plans by local governments to meet these requirements. The Dane County Natural Hazard Mitigation Plan was prepared to support the requirements of a mitigation plan for all participating local governments in the County. DMA requirements specify that the following elements must be included in the plan:

- The plan must document how the plan was prepared and who was involved in the planning process. Public involvement is essential.

- A risk assessment section should include:

    - Identification of the hazards likely to affect the area, noting data limitations and providing an explanation for eliminating hazards from further consideration.
    - A discussion of past events and description of their severity and resulting effects.
    - A description of the local vulnerability to the described hazards in terms of the types and numbers of buildings, infrastructure, and critical facilities located in the jurisdiction.

  - A description of the potential dollar losses to the vulnerable structures identified and a description of the methods used to calculate the estimate.
  - A description of the vulnerability in terms of land use and development so that mitigation options can be considered in future land-use decisions.

- The plan must include a hazard mitigation strategy describing:

  - Goals to reduce or avoid long-term vulnerabilities to the identified hazards.
  - A range of specific mitigation actions and projects to be considered, with particular emphasis on new and existing buildings and infrastructure.
  - An action plan identifying how the actions will be prioritized, implemented, and administered by the local jurisdiction. Prioritization must include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
  - For multi-jurisdictional plans, there must be identifiable actions items specific to the jurisdiction requesting FEMA approval of the plan.

- All local units of government included in the plan must participate in the planning process.

- Provisions for reviewing, monitoring and evaluating progress of the plan's implementation. The plan must also be updated at least every five years and re-approved.

- Adoption by the local governing body. The plan must include documentation that the local governing body has formally adopted the plan. In a multi-jurisdictional plan, all participating local units of government seeking plan approval must individually adopt the plan.

In addition to the Federal planning requirements, Chapter 323 of the Wisconsin State Statutes requires that the governing body of each county, town, and municipality within the state adopt an effective program of emergency management that is consistent with the state plan. This plan was developed with input and assistance from Wisconsin Emergency Management and is consistent with programs outlined in the State of Wisconsin Hazard Mitigation Plan.

While this plan update was developed to meet the State and Federal planning requirements, it is also designed to meet the needs of the County and participating local units of government within the County.

1.5 Disaster Declaration History

Dane County has received Presidential disaster declarations on 15 occasions since 1976. That equates to a frequency of a receiving declared disaster nearly every three years:

Table 1.4.1 Disaster Declarations for Dane County (1971 – 2016)

Year	Disaster Type	Declaration Type	Damage Assessment
1976	Ice Storm	Presidential Disaster	$1.22 Million (Public Assistance)
1976	Drought	Presidential Emergency	$625 Million (statewide)
1978	Flooding and Tornados	Presidential Disaster	$180,000 (Public Assistance)

Year	Disaster Type	Declaration Type	Damage Assessment
1984	Tornados	Presidential Disaster	$775,394 (Public Assistance) $11.2 Million (Individual Assistance) Dane and Iowa Counties combined
1990	Flooding and Tornados	Presidential Disaster	$37,000 (Public Assistance) $30,343 (Individual Assistance)
1991	Severe Storms (Windstorm)	Presidential Disaster	$1.33 Million (Public Assistance)
1992	Tornados	Presidential Disaster	$163,000 (Public Assistance)
1993	Flooding	Presidential Disaster	$888,000 (Public Assistance) $1.44 Million (Individual Assistance) $22.6 Million (Total Damages)
1996	Flooding and Severe Storms	Local Sources	$940,000 (Public Assistance) $1.22 Million (Individual Assistance) $3.3 Million (Total Damages)
1998	High Winds and Severe Storms	Local Sources	$586,000 (Public Assistance)
2000	Severe Storms (Windstorm) and Flooding	Presidential Disaster	$940,000 (Public Assistance) $1.25 Million (Individual Assistance) $9.3 Million (Total Damages)
2000	Snow Emergency	Presidential Emergency	$586,000 (Public Assistance)
2004	Severe Storms and Tornados	Presidential Disaster	$1.5 Million (Public Assistance)
2005	Stoughton Area Tornado	State Disaster Fund and Local Sources	$ 1.92 Million (Public Expenses) 33.5 Million (Private Losses)
2007	Flooding	Presidential Disaster	FEMA PDA- $3,294,210 Private $1.64 Million (Public Assistance) 758 homes impacted
2008	Snow Emergency	Presidential Emergency	$1.44 Million (Public Assistance)
2008	Severe Storms, Tornados and Flooding	Presidential Disaster	$1.53 Million (Public Assistance) $1.76 Million (Individual Assistance) $1.64 Million (Housing Assistance) $120,000 other needs, 1,635 households requested aid Total damages $35,789,723
2011	Severe Winter Storm and Snowstorm	Presidential Disaster	$1.81 Million (Public Assistance)

Source: Dane County Emergency Management

The major disaster declaration figures in Table 1.4.1 do not tell the whole story of damages caused by natural hazards in Dane County. While the figures do show that Dane County has experienced a variety of events that have caused major losses on a fairly regular basis, this significantly underestimates the total losses caused by natural hazards.

Almost every year there are significant weather events that cause major damages for which federal disaster assistance is not granted. In addition, federal disaster assistance programs have strict eligibility requirements. These figures show only a small fraction of the total losses incurred by the private sector—those that are uninsured. Private sector losses, especially those covered by insurance, if tracked and compiled would make a significant contribution to these damage figures.

1.6 Multi-Jurisdictional Planning

This plan was prepared as a multi-jurisdictional plan. All 61 local units of government in the County were invited to participate in the planning process. The decision whether or not to participate in this process was a local decision, based on local community needs. Communities have the options to not prepare a plan, to prepare a stand-alone plan for their jurisdiction, or to participate in a multi-jurisdiction or county-wide plan. Thirty-seven local governments have opted to participate in this effort.

Figure 1.6.1 Participating Local Jurisdictions

Cities	Villages	Townships
Edgerton	Belleville	Albion
Fitchburg	Blue Mounds	Berry
Madison	Brooklyn	Blue Mounds
Middleton	Cambridge	Christiana
Sun Prairie	Cottage Grove	Cottage Grove
Verona	Cross Plains	Dunn
	Deforest	Mazomanie
	Marshall	Montrose
	Mazomanie	Perry
	McFarland	Pleasant Springs
	Oregon	Roxbury
	Shorewood Hills	Springdale
	Waunakee	Sun Prairie
	Windsor	Vermont
		Verona
		Vienna
		Westport

Each of these jurisdictions has a specific attachment to this plan. The local attachments describe particular risks and vulnerabilities and identify action items to be taken by the jurisdiction to reduce those risks. Local jurisdiction participation is described in more detail in Section 2.4.

Counties neighboring Dane County were also invited to review and comment on the draft plan, prior to final adoption.

1.7 Conceptual Underpinnings

There are a number of basic concepts guiding the plan and the planning process. These principals provide the philosophical and conceptual underpinnings of the plan development process and the resulting hazard mitigation strategies.

1. *Human beings, not nature, are the cause of disaster losses*. What we call “natural hazards” are an integral part of the function of the natural environment. Efforts to reduce losses should focus

on human behavior and expectations of the natural environment; these are the real causes of natural disaster losses. Natural disasters result from human decisions about how and where we choose to live and build.

2. *The County should make every attempt to plan for and adapt to a changing and increasingly uncertain world.* The interaction of human activity and the natural environment is becoming increasingly complex. The consequences of seemingly simple actions can produce highly complex and highly uncertain results. We have a choice to make. We can face that uncertainty by taking little or no action, responding to crisis as it occurs, and deferring the resulting problems to future generations. Or, we can prepare for a changing world, anticipating problems, shortening the response time, and taking action before issues become crises. This plan is based on the assumption that the latter is a preferred course of action.

3. *Changing climate patterns are likely to have a significant impact on natural hazards and their associated risks in Dane County.* Most risk assessments rely on the frequency and magnitude of past occurrences to make predictions about future conditions. In the context of changing climate, however, past occurrences are no longer a valid predictor of the likelihood and scale of future hazard events. Considering potential changes in future conditions is essential when developing mitigation strategies that will be adaptable and effective in reducing future disaster losses. In this sense, planning for and considering the effects of changing climate is an economic and social issue rather than strictly an environmental issue.

4. *The County should embrace the principles of sustainable development.* Our society's present energy and water resource usage patterns are unsustainable in the long-term. This has the potential to lead to ever increasing hazards and threats for future generations. Sustainability becomes more important as the population of the County continues to grow, demands for resources continue to increase, and the climate becomes more variable and long-term trends become less predictable. This correlates to two basic principles specific to the flood hazard:

    a. *The action of one property owner or community should not increase the flood risk of other property owners or communities*. Potential adverse impacts should be mitigated through community or watershed planning or other direct actions.

    b. *Water should be considered as a valuable resource rather than a hazard.* The County should promote good stewardship of our water resources in planning for the future. Good stewardship can make the most of this resource for us and for our children. Poor stewardship will lead to ever increasing hazards.

5. *This plan recognizes that discussions of natural hazard mitigation should be a public process.* Decisions made in this plan affect the public's safety and well-being. Every attempt should be made to involve the citizens of the County in identifying concerns and issues, generating ideas for addressing them, reaching agreement about how they will be resolved, how priorities will be determined, and ultimately what actions will be taken.

1.8 Mitigation in Relation to other Emergency Management Activities

Emergency management is often described as a cycle with four phases: preparedness, response, recovery, and mitigation. This concept provides a useful means of organizing the County's programs and policies regarding hazards management. As a hazards management process, however, these phases are integrated and are not entirely distinct from one another.

- *Preparedness* involves building an emergency response and management capability before a disaster occurs in order to facilitate an effective response when needed. Preparedness activities also include developing and maintaining warning systems, developing response plans and procedures, maintaining communications networks, establishing procedures for notifying and mobilizing response personnel, establishing mutual aid agreements, and developing an emergency operations center. Also essential to the County's preparedness efforts are programs for training emergency response personnel, exercising plans, and conducting public outreach.

- *Response* refers to the actions taken immediately before, during, and after an event occurs to save lives, minimize property damage, and aid in the recovery process. The activities carried on during the response phase typically involve public warning, evacuation and sheltering, fire suppression, search and rescue, emergency medical care, scene security and property protection. Other elements of response depend on the type of disaster and may include activities such as sand bagging to minimize flooding, closing roads, removal of debris from roads, shutting down power where there are downed electrical lines, attending to the needs of people with disabilities or other health concerns, and supplying emergency power and water. The effectiveness of a disaster response is very much a function of the quality of the planning, training, and exercising done during the pre-disaster preparedness phase.

- Disaster *recovery* involves short-term activities to restore vital support services and long-term activities to restore the community to normal. Typically, the first step in recovery is an assessment of the damages, which helps determine needs and set priorities. Recovery typically involves debris removal, repairing and reconstructing buildings and infrastructure, coordinating volunteers and donated goods, delivering disaster aid to individuals and families, and restoring vital community services. Again, the effectiveness and expedience of the recovery phase depends on the quality of the preparedness efforts and the level of coordination in the response. Recovery can take from days to years, depending on the magnitude of the disaster and the resources available to address the problems.

- Finally, *mitigation* refers to the policies and activities that will reduce the area's vulnerability to damage from future disasters. Generally, these measures are ones that can be put in place before a disaster occurs. There are a multitude of different types of mitigation programs that can be put in place. In general, mitigation activities can be broken into two categories, structural and non-structural.

1.9 Terminology

There are a number of terms used throughout this plan that have specific meanings. Many of these terms and concepts are related, but their definitions are distinct. For this reason, it is important to

define what is meant by the various terms used in this plan. The terminology is particularly relevant, as the way in which the impacts are defined and measured often defines the nature of the policies and programs designed to mitigate those impacts. This plan will make every effort to use these terms consistently and deliberately.

1.9.1 Terminology: Hazard and Risk

- *Natural Hazard:* A naturally occurring event or physical condition that poses a potential threat to life, health, property, or environment.

- *Vulnerability:* The susceptibility of human settlements to the harmful impacts of natural hazards. The degree to which people, property, the environment, and social and economic activity are susceptible to injury, damage, disruption, or loss. For the purposes of this plan, the terms *Vulnerability* and *Exposure* to loss are essentially synonymous.

- *Risk:* The potential losses associated with a hazard, defined in terms of expected probability and frequency, exposure, and consequences. Assessing risk involves the estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.

- *Acceptable Risk:* The level of disaster loss a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions. In this planning, it is important to recognize that individuals' perception of acceptable risk vary widely.

- *Hazard Mitigation*: Any sustained action taken to reduce or eliminate long-term risk to life and property from natural hazards.

- *Structural mitigation* measures minimize the effect of hazards on people, buildings, and infrastructure. This can include actions such as building dams and levees, flood proofing homes, constructing tornado shelters, and instituting building codes that require wind resistant construction.

- *Non-structural mitigation* measures typically concentrate on identifying hazard-prone areas and limiting their use. Examples may include land use zoning, the selection of building sites, tax incentives, insurance programs, relocation of residents to remove them from the path of a hazard, the establishment of warning systems, planning for at-risk populations, and education and outreach programs.

1.9.2 Terminology: Weather and Climate

- *Climate and Weather: Weather* is the mix of events that happen each day in the atmosphere, including temperature, cloud cover, rainfall, and humidity. In most places, weather changes from hour-to-hour, day-to-day, and season-to season. *Climate* is the average weather pattern in a certain location or region over a long period of time.

- *Climate Change* is change and projected change in climate; changes in the long term averages of daily weather resulting from an over-all warming of the planet.

- *Extreme Weather Events* are weather events that have severe impacts, typically happen infrequently, and vary from the norm in severity, intensity, or duration (e.g. droughts or floods that have historically occurred *on average* only once in 100 years or more). Extreme weather events are expected to become more frequent, consistent with the consequences of a warming planet and the resulting changing climate.

- *Climate Change Mitigation* refers to activities and actions taken to reduce emissions and stabilize the levels of heat-trapping gasses in the atmosphere with the intent of reducing the degree to which the planet warms and the climate actually changes. Climate change mitigation strategies and actions are beyond the scope of this plan.

- *Climate change adaptation* refers to strategies and actions taken adjust to changing climate conditions, reduce potential harm, take advantage of opportunities, or to otherwise cope with the consequences. This Natural Hazard Mitigation Plan is one element of the county's climate change adaptation strategy. The underlying assumptions related to managing the risk associated with many the hazards included in this plan include a climate change aspect. Understanding the links between climate change and these extreme events can help us plan for the future. That said, not all possible impacts of climate change are identified or addressed in this plan; many of these are simply beyond the scope of the plan.

1.9.3 Terminology: Disaster Impacts and Losses

Loss estimates from past events and projections for future losses serve as the basis for hazard mitigation efforts. It is important for policymakers at all levels of government to be aware of the total losses of disasters—and ideally of the extent to which those losses can be reduced by various mitigation strategies—so cost-effective mitigation strategies can be designed and implemented. The same is true for the private sector, where cost-effective mitigation measures can and should be used to reduce losses in future disasters.

- The *impact* of a disaster is the broadest term, and includes both economic and non-economic effects. For example, economic impacts include destruction to property and a reduction in income and sales. Non-economic effects include environmental consequences and psychological effects suffered by individuals involved in a disaster.

- The *losses* of a disaster represent negative economic impacts. These consist of direct losses that result from the physical destruction of buildings, crops, and natural resources and indirect losses that represent the consequences of that destruction, such as temporary unemployment and business interruption.

- The *costs* of a disaster typically refer to cash payouts by insurers and governments to reimburse the losses suffered by individuals and businesses.

- The *damages* caused by a disaster refer to physical destruction, measured by physical indicators, such as the numbers of deaths and injuries or the number of buildings destroyed. When valued in economic terms, damages become direct losses.

When assessing vulnerability and designing mitigation programs, it is also useful to distinguish between the physical destruction caused by the disaster and the consequences of that destruction. There are ways to break this down even further:

- *Primary direct losses* are those resulting from the immediate destruction of the event itself, such as water damage from a flood or structural damage from high winds.

- *Secondary direct losses* are those additional losses that occur as a result of the primary damage. Examples include tornado damage resulting in a hazardous materials release or downed overhead power lines as a result of falling tree limbs after an ice storm.

- *Indirect losses* are those that result from the consequences of the actual physical destruction. Indirect losses include: business losses due to direct physical damage to commercial structures or loss of infrastructure, loss of wages to employees, rippling effects due to the loss of wages as employees reduce their spending on other consumer products and services, the loss of function of critical facilities such as schools or health care facilities, and environmental damages.

- *Reimbursed and un-reimbursed losses*. Reimbursed losses are claims that are paid by private insurers or local, state, and federal governments. In contrast, un-reimbursed losses are the uncompensated impacts that victims must bear. Different types of disasters tend to produce different proportions of reimbursed and un-reimbursed losses. For example, a larger fraction of the total losses from flooding typically is un-reimbursed (primarily because ordinary homeowners insurance does not cover flooding and many homeowners choose not to purchase flood insurance coverage) as compared to a tornado where direct losses are typically insured.

1.10 Hazard Mitigation Project Funding

As of November 1, 2004 cities, villages, and counties not having a FEMA approved hazard mitigation plan will be ineligible for certain types of disaster assistance. Under the terms of the DMA, local governments affected by a federally declared disaster are still eligible for emergency aid without having a plan in place. However, those local units would be ineligible for FEMA funds to support hazard mitigation projects that are a part of the normal rebuilding and recovery process.

In addition to post-disaster mitigation funding, local preparation and FEMA approval of a mitigation plan provides participants the opportunity to apply for FEMA administered pre-disaster mitigation project funding. This is a competitive, national grant program designed to reduce over-all risks to the population and structures, as well as reducing the future reliance on federal funding for recovery after a disaster. There are strict applicant and project eligibility requirements that must be met in order for a local government to receive assistance through this program.

1.11 Sustainability, Resilience, and Natural Hazard Mitigation

In recent years, Dane County has placed greater emphasis on sustainability and building “disaster-resilient” communities. It is important to note that the concept of sustainability does not conflict with economic development. In fact, it is complimentary. By carefully identifying where and how communities are built, they are less likely to suffer the potentially devastating economic impacts

associated with disasters. Disaster resilient communities suffer fewer impacts and are able to recover more readily than those that have not embraced hazard mitigation principles.

Disasters can have social consequences that undermine communities, including the loss of security and sense of well-being of affected individuals, stress and anxiety, diminished trust in local government, and disruption of familiar environments and daily routines. Economic vitality, including limiting economic losses associated with disasters is essential to sustainability.

But sustainability means much more than that. Sustainability is a societal value. As put forth by the World Commission on Environment and Development, a working definition of sustainability is, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

This is not a new concept, but the interpretation can be controversial. Even the interpretation of this seemingly simple definition is open to question: What should be sustained and for whom? How do we define equity? How are individual rights balanced with the common good? How is it even possible for present generations to live without somehow compromising future options? In a highly complex and interconnected world, how do we account for the unforeseen and unintended consequences of our actions? Who makes these decisions and by what mechanism can they be enforced? These are questions of values and the answers will vary widely from person to person and group to group.

This plan acknowledges that these are unanswered questions for further public discussion. Even so, the concept of sustainability is still useful in forming the framework of a hazard mitigation program. Working toward sustainability can help reduce losses from disasters. Actions designed to mitigate disasters should also strengthen the community and build resilience to other social, economic, and environmental problems. A sustainability approach accomplishes this. A set of principles for sustainable hazard mitigation is proposed below:

- *Maintain and, if possible, enhance environmental quality.* Settlement in hazardous or environmentally sensitive areas has damaged or destroyed the capacity of those areas to moderate certain hazards. Draining wetlands, for example, has exposed more people to flooding while destroying the natural system that would have helped minimize the effects. Linking environmental quality to hazard mitigation is essential to assuring that these sorts of problems do not grow.

- *Foster local resiliency and responsibility.* Resiliency to disasters means a locale can withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community. Hazards should be approached as integral parts of the much larger contexts of environmental and social issues. The measures used to achieve resiliency will vary based on the types of hazards that are present, the local economic base, and the social factors that influence the local population's vulnerability (e.g. age, ethnicity, income level). Incorporating sustainable hazards mitigation criteria into new development plans and projects would make mitigation an on-going focus.

- *Recognize that vibrant local economies are essential*. Communities should take mitigation actions that foster a strong local economy rather than detract from one. The concept of sustainability does not inherently conflict with economic development. At the same time, a

sustainable economy cannot be based on unlimited population growth, high consumption of natural resources, or dependence on non-renewable resources. Thus, there are immense political, social, and cultural barriers in the present system that must be faced.

- *Ensure inter- and intra-generational equity.* A sustainable community selects mitigation activities that reduce hazards across all ethnic, racial, and income groups, and between genders equally, now and in the future. The costs of today's advances should not be shifted onto later generations or less powerful groups. Future generations should also be considered as stakeholders in our planning process. Sustainable hazards mitigation would not defer costs and hazards to future generations without considering their implications and whether appropriate benefits would accompany them.

- *Adopt local consensus building.* A sustainable community selects mitigation strategies that evolve from full participation among all public and private stakeholders. The participatory process itself is as important as the outcome.

1.12 Relationship To Other Regional And Community Plans

The County's natural hazards mitigation plan is not a stand-alone effort. The natural hazards mitigation strategy has been developed and should be implemented in coordination with a broad range of other related efforts at the county and local level.

1.12.1 Comprehensive Planning

All of the jurisdictions in Dane County utilize some form of comprehensive land use or master planning, zoning, capital improvements planning, and building codes to guide and control local building and land development. The purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. When conducted in coordination with other community planning, a mitigation plan will yield the most cost-effective and efficient results, optimal use of limited resources, and also serve to protect lives, property and natural resources.

Mitigation planning also enables communities and states to better identify sources of technical and financial resources outside of traditional venues. Hazard mitigation plans are most effective when coordinated with other community planning and development activities. Integrating mitigation concepts and policies into existing plans provides expanded means for implementing initiatives via well-established mechanisms. In the past, some communities have undertaken mitigation actions with good intentions but with little advance planning or coordination with other local plans. In other cases, better land use or development decisions addressing natural hazards may have been made in advance with careful consideration of the contributing factors of vulnerability and risk that natural hazards present to the community.

As comprehensive plans are reviewed and updated, and after mitigation strategies are developed, mitigation policies and activities should be incorporated into any of the plan elements. All comprehensive planning in Wisconsin should address a minimum of nine planning elements:

- Issues and Opportunities

- Housing
- Transportation
- Utilities and Community Facilities
- Agriculture, Natural, and Cultural Resources
- Economic Development
- Intergovernmental Cooperation
- Land Use
- Implementation

Each of these planning elements has a potential relation to hazard mitigation activities. A separate natural hazards element may also be desirable. Planning for future land uses by considering hazard constraints and opportunities, addressing environmental concerns, and incorporating hazard reduction into capital improvements and infrastructure elements are all potential mitigation opportunities.

1.12.2 Yahara Lakes Advisory Group 2 (YLAG2)

Early in 2011, the Department of Natural Resources (DNR) created the Yahara Lakes Water Level Advisory Group (YLAG2) to make recommendations regarding the water levels on the Yahara Lakes, including Mendota, Monona, Waubesa, Kegonsa and the Stoughton millpond.

In 2001, DNR convened the Yahara Lakes Advisory Group (YLAG1), with representatives from area governments, organizations and interests to discuss lake levels and other actions to reduce flooding. YLAG2's organized to review YLAG1 recommendations and discuss and evaluate current conditions. The groups charge was to examine the operation, physical constraints, and changing hydrology of the Yahara chain of lakes and make water level recommendations that balance public and private interests. Public interests include navigation, fish and wildlife habitat, water quality and natural scenic beauty. Private and cultural interests include historic values, riparian and business access and economic development. This was a stakeholder and public input driven process, with seven group meetings and one public comment meeting in 2012.

The YLAG2 group developed a series of recommendations on how to best manage the Yahara lakes as a system and to build consensus on the issue instead of fragmented approaches. The policy recommendations made by this group form the Yahara River and Chain of Lakes management strategies that are still in place today. The recommendations of the group are consistent with the goals and objectives described in the *Natural Hazards Mitigation Plan* update.

1.12.3 Dane County Sustainable Operations Plan

Dane County government is pursuing a goal of becoming more environmentally, socially, and economically sustainable in its planning, operations, management, and policymaking. Over the last several years the county has initiated and implemented numerous efforts that are contributing to greater sustainability through energy conservation, greenhouse gas emission reductions, stormwater runoff reduction, renewable fuel vehicles, and employee wellness programs. This plan provides a more formal and comprehensive guideline for building on our existing efforts and achieving greater environmental, social, and economic sustainability across county departments and functions.

The *Dane County Government Sustainable Operations Plan* focuses on the county's internal operations and management and is intended to guide county leadership, elected officials, and county government staff in collectively carrying out the county's daily operations in a sustainable manner. It incorporates the county's adopted sustainability principles across virtually all operational areas of the county—the vehicles we drive, the energy and water we consume, the construction and operation of our buildings, the products we purchase, the way in which we view and handle our "used" materials—to create a more environmentally, economically, and socially sustainable county government now and into the future.

The comprehensive set of goals, objectives, and strategies identified in this plan are intended to be achievable by county staff. They are aimed at helping Dane County, as a government agency, transition to greater sustainability in its day-to-day operations. The plan is broken into eight key operational categories. Each category represents an operational aspect of county government that spans all departments and divisions, and for which numerous staff share some level of responsibility.

- Climate Change Mitigation & Adaptation
- Transportation & Vehicle Fleet
- Water
- Waste
- County Buildings & Facilities
- Purchasing
- Education & Outreach
- Employee Experience

Each operational category states a broad goal, objectives that have been identified to meet the goal, and a list of strategies identified to achieve the goal and objectives, including identification of parties responsible for implementation, timelines for implementation, and priority level.

1.12.4 Dane County Climate Change Action Plan

In March of 2013, the Dane County Climate Change Action Council was created with the mission of ensuring that the Dane County government is better prepared for weather extremes brought on by global climate change. In the preparation of this plan, the Council facilitated an internal review of preparations and potential modifications to the county's operations and capital investments. Based on the internal review, this report identifies potential vulnerabilities to climate change, and provides sector based adaptation strategies.

The report addresses climate impacts for public health, public safety and emergency management, infrastructure and facilities, and Dane County lakes. The climate related risks within each sector are detailed and each are followed by "near term adaptations," as well as methods for preparing for projected adaptations through planning and mitigation.

Three additional resiliency strategies are introduced which include: Collaborating for Security, Corridors of Sustainability, and Resilient Watersheds Partnerships.

- The *Collaborating for Security* strategy would aim to further coordinate emergency response and communications capacity, share information and technology with partners, and deepen collaborations on public safety strategies with other departments and governments.

- *Corridors of Sustainability* addresses county-wide coordination to strengthen infrastructure resiliency - which specifically will include integrated water management, energy efficiency, and ways to protect public health from climate change impacts.

- *Resilient Watershed Partnerships* is a collaborative strategy to engage watershed partners and the agricultural community by, first, coordinated restoration of important ecosystem functions to prevent agricultural runoff and flooding, and, second, by development of a resilient local food system.

Identified adaptation measures funded through the County's capital and operating budget process include a $1 million allocation for infrastructure upgrades, updates to culverts that handle storm water, and the creation of an emergency sandbag fund for potential floods.

Dane County Climate Change Council

The County's 2017 budget created a new Office of Energy and Climate Change and a new Council on Climate Change. This is the next step in the work Dane County initiated years ago which resulted in creation of the "Dane County Climate Action Plan." The Council includes representatives of local governments, business, utilities, and environmental advocates, working together to extend the work of county government. A recent agreement with the LaFollette School of Public Affairs at the University of Wisconsin will help the county assess the impact of the progress Dane County has made to date at reducing carbon emissions, increasing green energy production, and consumption, and making energy efficiency improvements to facilities. The new Office and Council will develop strategies to not only prepare locally for the effects of the changing climate, but also to better identify ways to reduce carbon emissions and promote further development of solar and clean, green energy production.

1.12.5 Stormwater Technical Advisory Committee

During the time period of the preparation of this plan update, the Lakes and Watershed Commission and the Capital Area Regional Planning Commission established a Stormwater Technical Advisory Committee to evaluate the County's stormwater management strategies and make recommendations regarding flood risk reduction. The work group identified a number of limitations in the existing strategies and included a series of recommendations for modifying the Dane County Stormwater Ordinance.

While making recommendations regarding specific stormwater management regulatory practices is beyond the scope of the Hazard Mitigation Plan, the goals of these efforts are entirely consistent. Regular evaluation of the Stormwater Management Ordinance and an on-going effort to reduce stormwater runoff rates and volumes, have been identified objectives in the Plan since its initial inception. These efforts continue to be a priority.