

Preparing for Extreme Weather Events in a Changing Climate

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Outline

Increasing Temp. and ppt. in Wisconsin and Extreme Events

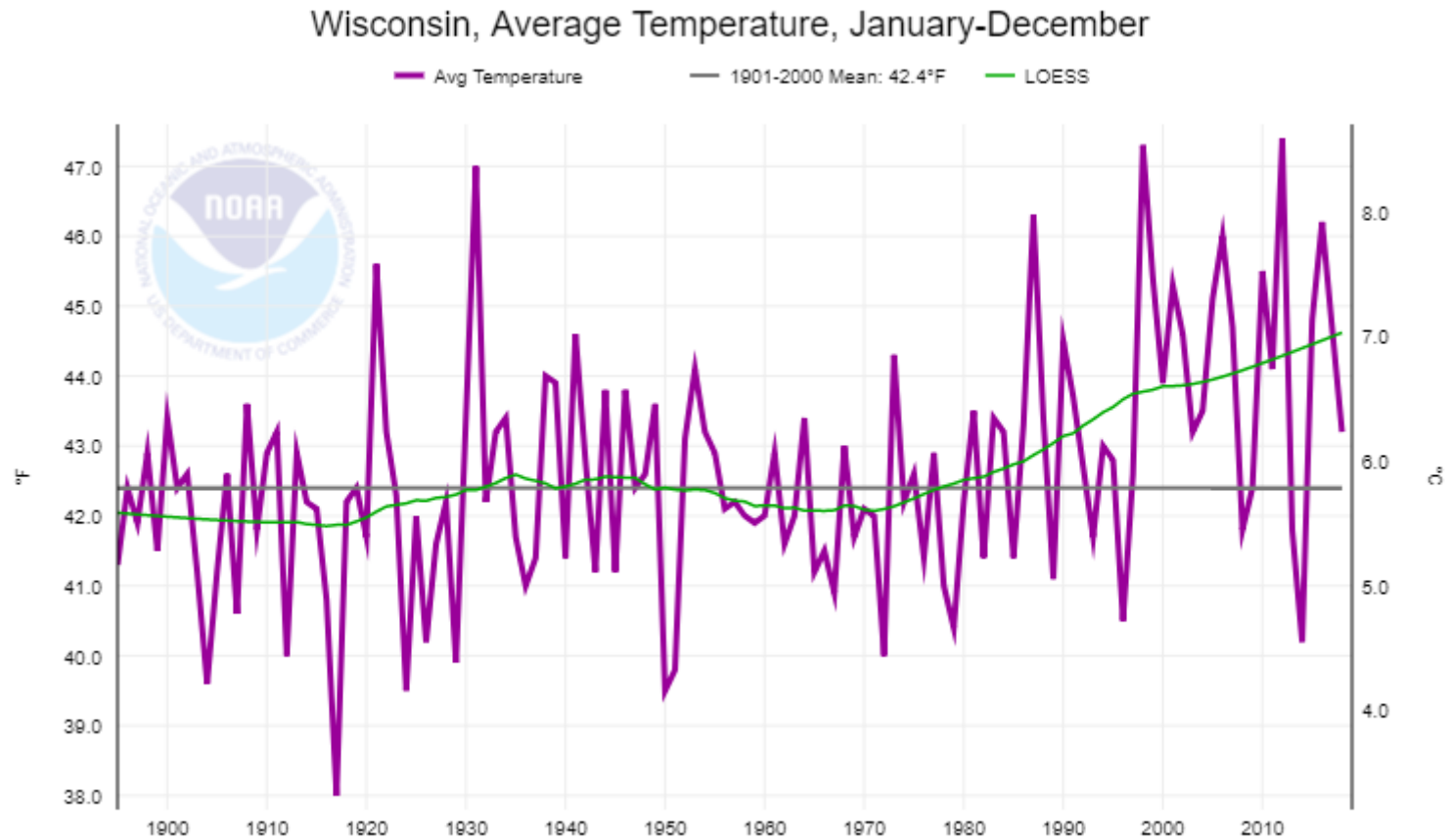
Resilience planning

Characteristics of a climate ready communities

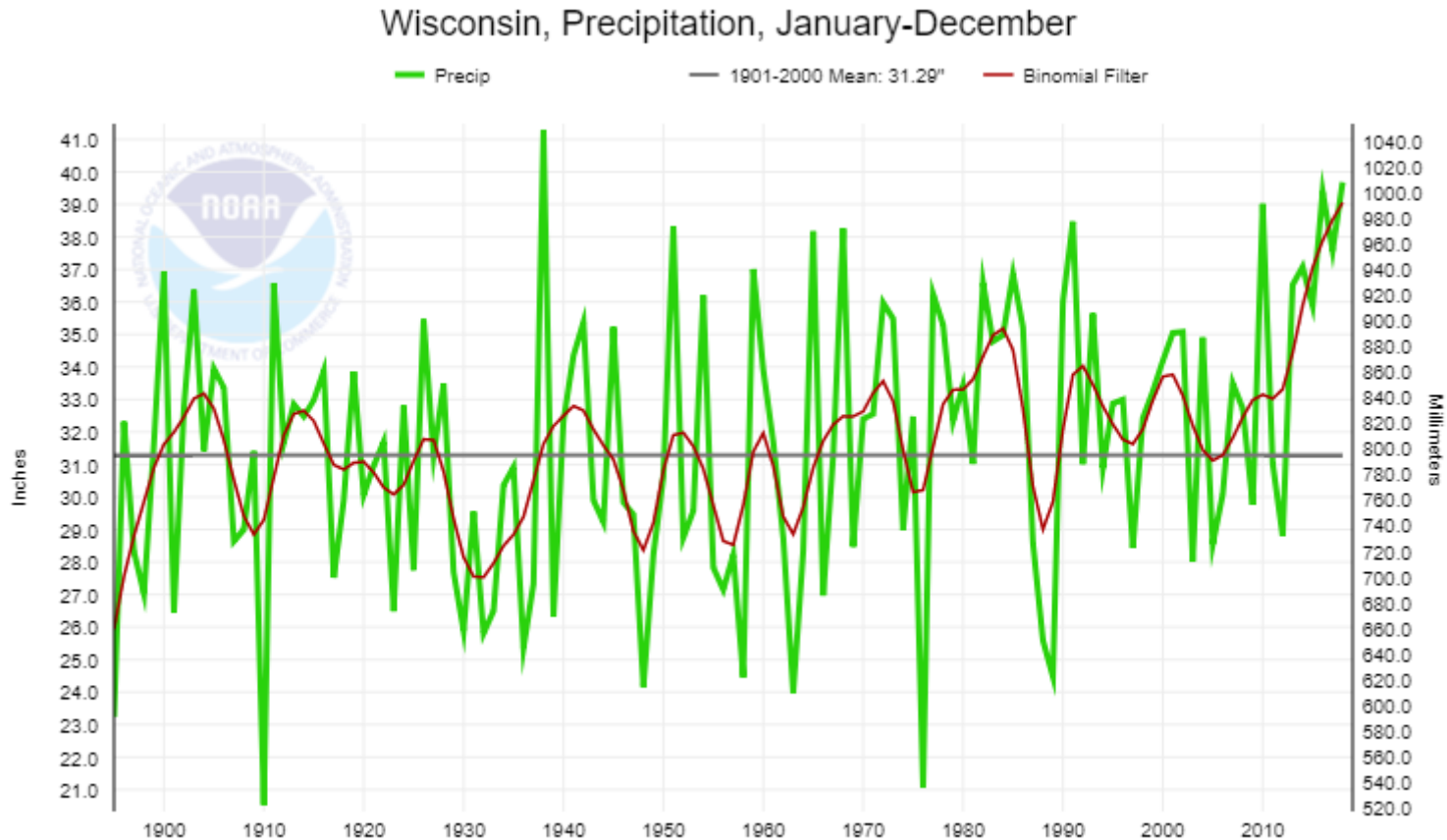
Toolkit, Examples, plans, and templates

Extension role and resources

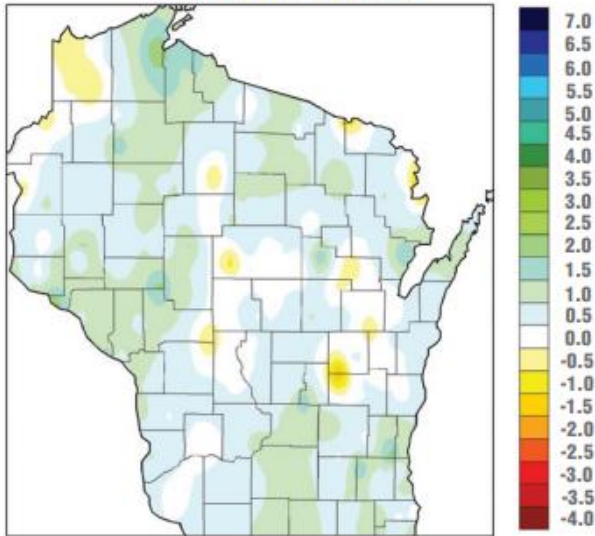
Increasing Temperature



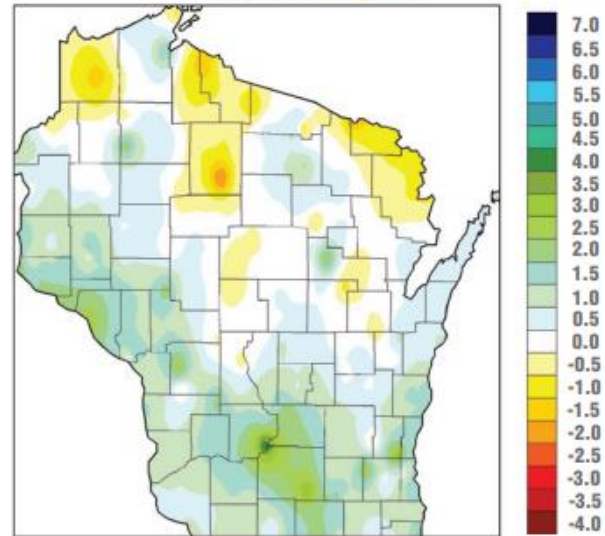
Increasing Precipitation



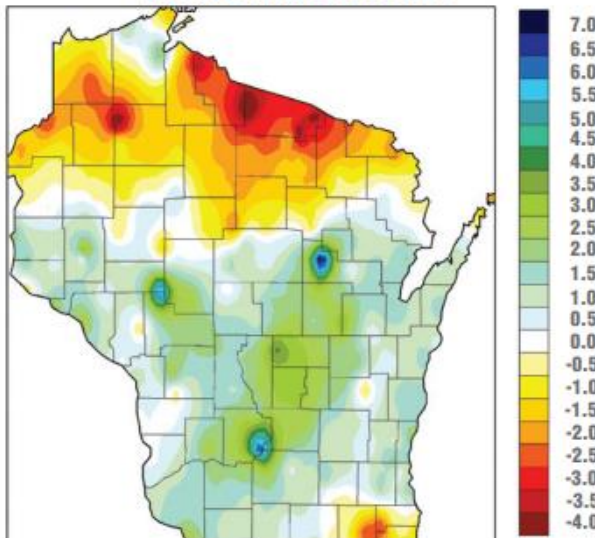
**CHANGE IN WINTER AVERAGE PRECIPITATION (INCHES)
FROM 1950 TO 2006**



**CHANGE IN SPRING AVERAGE PRECIPITATION (INCHES)
FROM 1950 TO 2006**



**CHANGE IN SUMMER AVERAGE PRECIPITATION
(INCHES) FROM 1950 TO 2006**



**CHANGE IN AUTUMN AVERAGE PRECIPITATION
(INCHES) FROM 1950 TO 2006**

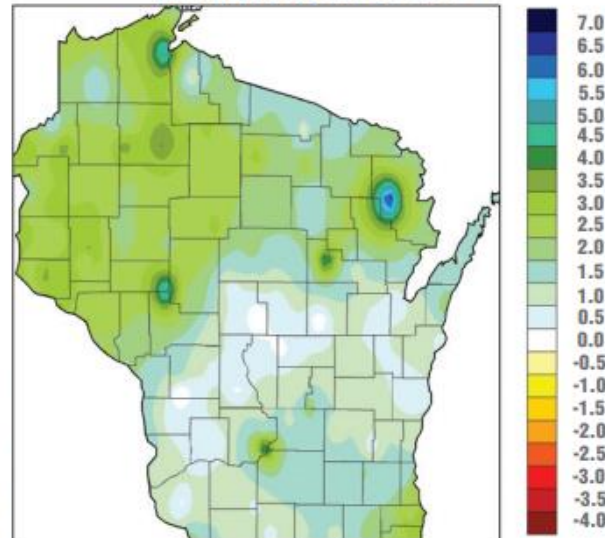
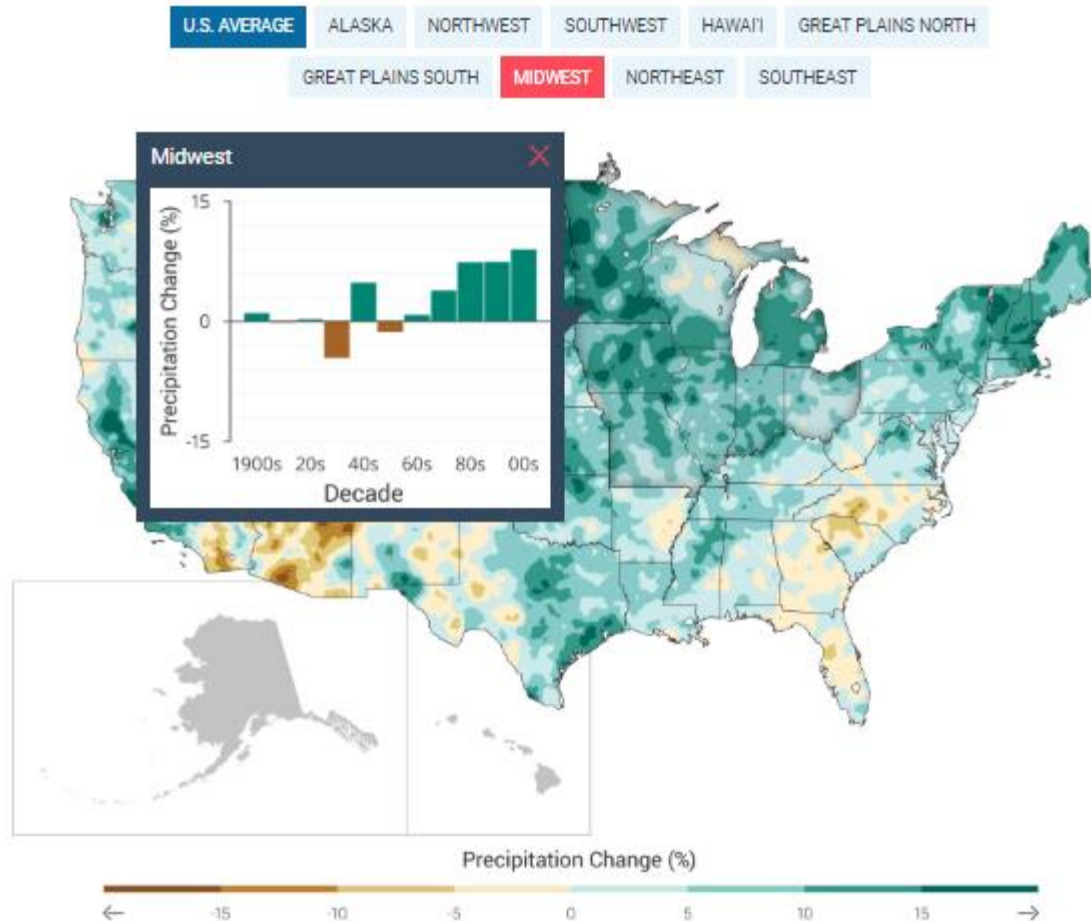


Figure 12. Precipitation generally increased across Wisconsin between 1950 and 2006, though the north saw a drying trend in spring and especially summer.

Source: Kucharik et al., 2006.

<https://www.wicci.wisc.edu/report/WICCI-Chapter-1.pdf>

Observed U.S. Precipitation Change



CLIMATE CHANGE & WATER USE



FLOODING

Contaminates
drinking water



HEAT

Fuels algae
blooms, lowers
snowpack



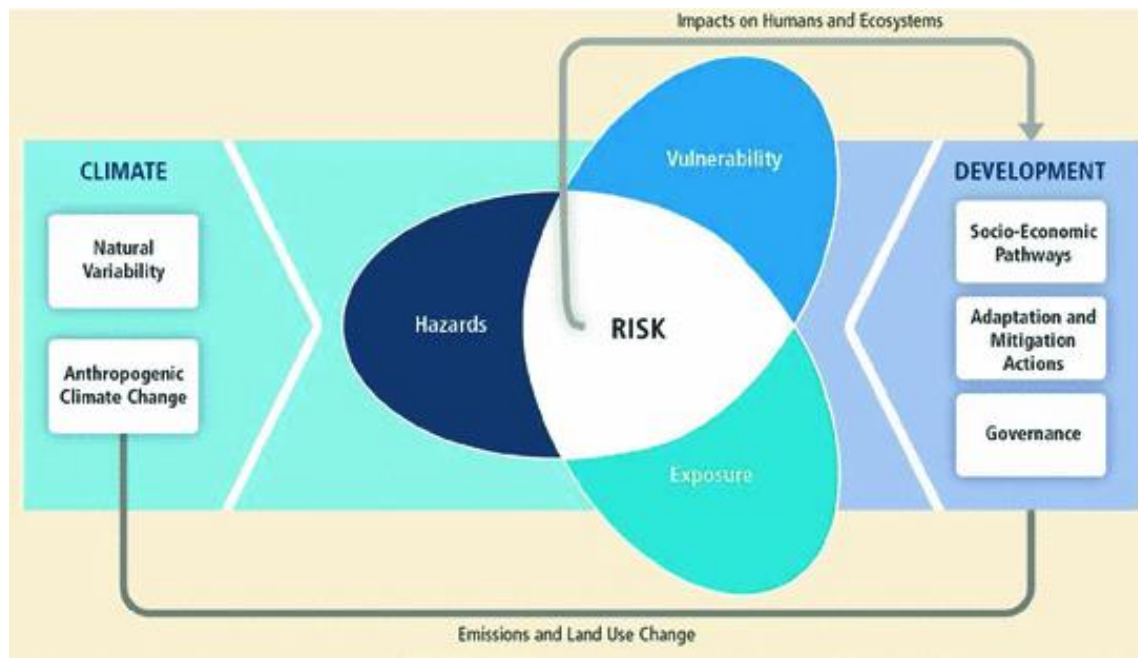
DROUGHT

Damages crops,
shrinks supply

CLIMATE  CENTRAL

Climate change leads to more flooding, drought, and heat--putting our water supply at risk.

<https://www.climatecentral.org/gallery/graphics/climate-change-water-use>



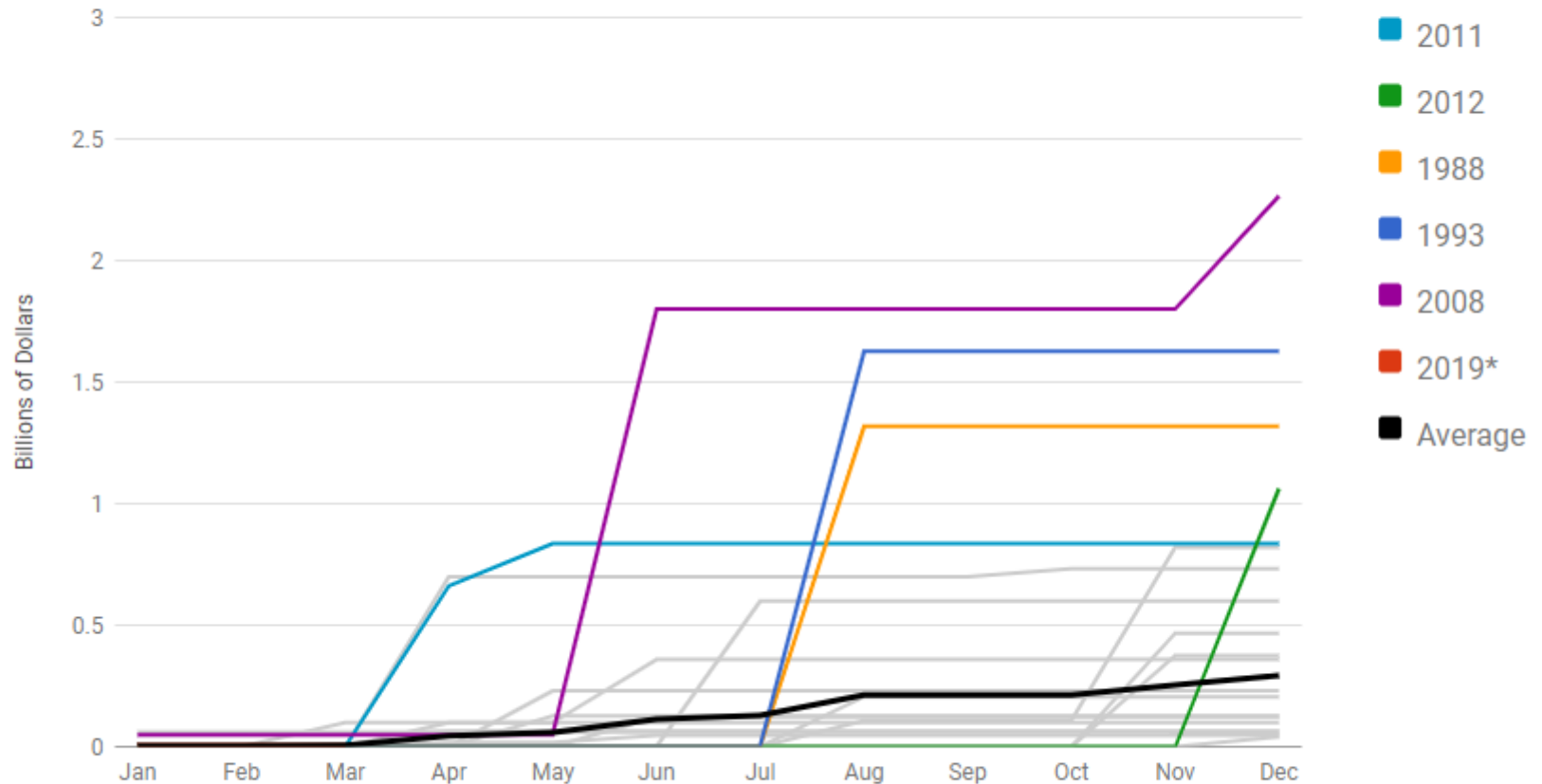
- *Source:* IPCC ([2012](#))

Risk
framework
for the
analysis of
extreme
event
impacts

Wisconsin Cost Update

1980-2019 Year-to-Date Wisconsin Billion-Dollar Disaster Event Cost (CPI-Adjusted)

Event statistics are added according to the date on which they ended.



Statistics valid as of April 9, 2019.

*Cost statistics not included for Midwest Flooding (March 2019)

<https://www.ncdc.noaa.gov/billions/overview>

Resilience Planning



Resilience planning is an opportunity



For communities to rethink current approaches



To make changes in policies, procedures, and plans



Will eventually protect and promote community health, well-being, and sustainability.

Meet the Challenges of a Changing Climate

Find information and tools to help you understand and address your climate risks.

LEARN HOW TO BUILD
RESILIENCE >

SEE WHAT OTHERS ARE
DOING >

USE THE CLIMATE
EXPLORER >

STEPS TO RESILIENCE

Use this framework to discover and document climate hazards, then develop workable solutions to lower climate-related risks. Watch the overview video or click any step to learn more.

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action



Basic questions to ask...

- Resilience to what, exactly?
 - *(e.g., flooding, heat, drought)*
- Resilience for whom or for what?
- Vulnerable populations
 - *(e.g., elderly, poor, disabled, children, tribal, underserved)*
- Vulnerable economic activities
 - *(e.g., tourism, agriculture, forestry, fishing/hunting)*
- Vulnerable infrastructure
 - *(e.g., bridges, roads, utilities, buildings)*



Attributes of a Climate Ready Community



Climate Aware

Community
leaders,
municipal
staff, local
educators and
others



Assessed vulnerability

Business, local
government,
social systems
and municipal
infrastructure



Adaptive capacity and resilience

Built
capability and
resources,
plans and
measures

Stakeholders to be involved



Agriculture and forest industry



Economic development leaders



Emergency response coordinators



Land use planners



Municipal water and wastewater utility operators



Natural resource managers



Public health officials.

Cautions

Integrate new information
about climate risk and
adaptation into ongoing
planning



Avoid potential pitfalls such
as:


Political or
social
controversy

Uncertainty
in projected
risk

Projections
of a distant
future

Local Examples-- communities for sustainability and resiliency

 Legacy Communities - a Green Tier Charter
Positioning Wisconsin Communities for the future

[HOME](#) [ABOUT](#) [LEGACY COMMUNITIES](#) [SUSTAINABLE STRATEGIES](#) [PROCESSES & BENEFITS](#) [RESOURCES](#) [CONTACT US](#) 



Sustainable Community Resilience Planning Initiative

- Raise awareness of the risks
- Encourage communities to take effective climate-adaptation actions
- Enhance effectiveness and increase capacity
- Share information about local community challenges, needs, successes
- Evaluate interventions, improve best practices, publish results

Wisconsin communities preparing for changes

Climate Wisconsin 2050

Wisconsin communities engage in numerous activities to prepare for the future. Many decisions related to future planning are affected by Wisconsin's climate.



This publication provides guidance on how specific aspects of Wisconsin's climate will be different in 2050 than they are today, and how communities can prepare themselves for those changes.



Scenarios of a State of Change

Wisconsin has 72 counties, 190 cities, 407 villages and 155 towns. Each of these units of government manages human and physical resources that are affected by Wisconsin's climate and weather based on the experience of years past.



However, Wisconsin's climate is changing, and our communities will need to change along with it.



To learn more, look inside for a snapshot of what we can expect from Wisconsin's climate and weather by the year 2050, and how communities can adapt to these changing conditions.





United States
Department of
Agriculture

National Institute
of Food
and Agriculture



The Role of Extension in Climate Adaptation in the United States

Report from the
Land Grant - Sea Grant Climate Extension Summit
June 2013



Resources

- <https://fyi.extension.wisc.edu/climate/climate-ready-communities/>
- <https://climatewisconsin.org/>
- <http://www.nc-climate.org/>
- <https://fyi.extension.wisc.edu/climate/climate-portal-cooperative-extension/>
- [The Wisconsin Initiative on Climate Change Impacts \(WICCI\)](#)
- [The Nelson Institute Center for Climatic Research \(CCR\)](#)
- [The Northeast Climate Sciences Center \(NECSC\)](#)
- <https://www.climatecentral.org/gallery/graphics>



Extreme event: Heavy rainfall

- **Flash flooding in streets and neighborhoods**
 - Adopt most current runoff management design statistics
 - Conduct rainfall modeling to identify areas susceptible to flooding
 - Reduce the amount of impervious area in watersheds.
 - Design streets and other surface conveyances to handle large runoff flows.
- **Flooding along rivers**
 - Evaluate potential for flooding above the FEMA 100 year level
 - Assess potential for: Loss of emergency access
 - Threat to hazardous materials
 - Vulnerability of civil infrastructure
- **Municipal stormwater BMPs can be overwhelmed**
 - Design of BMPs should accommodate extreme flows and prolonged inundation.

Extreme event: Heavy rainfall

- **Inflow and infiltration (I&I) to sanitary sewers**
 - Harden sanitary systems to prevent I&I.
 - Create temporary storage upstream of treatment plants
- **Develop contingency plans for sanitizing drinking water**
 - Provide backup power to lift stations and pumps
- **Intense rainfall can lead to erosion that can destabilize lake bluffs and roadways.**
 - Identify areas of potential failure and take preventative measures
- **Lake usage during high water can lead to bank erosion and home flooding.**
 - Anticipate conditions when recreational boating should be curtailed

HOW TO:

FIGHT FLOODING

at Home

EASY

*ways to keep water
out of your house*