

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.



# Climate Wisconsin 2050

## Scenarios of a State of Change

### ↑ TEMPERATURE – 2050

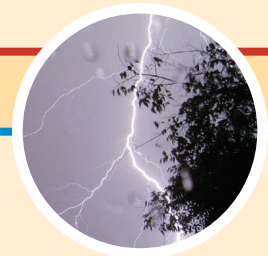


Annual **average** temperature will have **increased by 6°F**.

Average **maximum** temperature throughout the year will be **6°F warmer**.

**Peak temperatures will reach 110-112°F**, with **twenty additional days over 90°F**.

### 💧 PRECIPITATION – 2050



Annual **average** precipitation will **increase by +2" per year**.

Rainfall **frequency and intensity will increase**, including **more extreme rainfall events** (more than 6" in 24 hours).

Increased precipitation in winter and spring will result in **heavier snowfalls** and **higher groundwater levels**.

Temperature and precipitation scenarios courtesy of the UW-Center for Climatic Research. Contact: Dan Vimont.

#### PHOTO CREDITS

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# Public Health and Safety

## ↑ TEMPERATURE

### Climate Impacts

- Increased summer temperatures lead to related **health symptoms for the elderly and other vulnerable populations**, and power outages from increased demand for cooling create **risk for those who do have air conditioning**. High temperatures also create conditions for increased ozone, with **poor air quality** reaching dangerous levels for sensitive groups.
- High temperatures and power outages lead to increases in **food borne illnesses caused by food spoilage**.
- Increased summer water temperatures increase **harmful algal blooms (HABs)** in lakes and streams creating **health risk for humans and pets**.
- High temperatures and summer drought increase the **risk and severity of wildfire**.



### Adaptation Strategies

- 1 Educate the public, public health staff and service providers about heat stress prevention. Develop procedures for identifying, communicating and providing cooling services to heat vulnerable populations. Provide cooling shelters, shade and hydration stations at recreational facilities.
- 2 Train food establishments to monitor refrigeration temperatures and in methods to reduce food spoilage. Educate the public about food handling and preparation during hot weather.
- 3 Increase education about poor air quality and what can be done to minimize hot weather air pollution action days.
- 4 Reduce nutrient runoff that feeds harmful algae blooms. Develop procedures to monitor toxic algae and preventing human exposure.
- 5 Increase wildfire prevention and response capacity.



## Public Health and Safety – continued

### PRECIPITATION

## Climate Impacts

- Wetter conditions increase mosquito and tick activity leading to greater risk of **zoonotic disease**.
- Increased severity, frequency and persistence of regional flood events create **mold problems in homes and businesses**. Municipal sewer overflows and failure of private on-site wastewater systems lead to **contaminated surface waters**. Flooding of low-lying areas beyond established flood plains results in **contaminated drinking water wells**.



## Adaptation Strategies

- 1 Reduce the number of mosquito breeding sites. Provide pest and disease education to recreational land users. Monitor tick and mosquito populations.
- 2 Improve flood control and mitigation strategies. Restrict building and chemical storage on floodplains. Identify and test wells that are at risk for flood contamination, and upgrade private well and septic maintenance requirements. Revise flood response plans and procedures.



**“Climate change** affects our everyday lives. From warming trout streams to decreasing snow pack, lower lake levels to extreme weather...”

– Wisconsin Initiative on Climate Change Impacts (WICCI)



# Government Services

## ↑ TEMPERATURE

### Climate Impacts

- Increased number and duration of heat waves will require more education, communication and response. Public employees working outdoors will be at **more risk from heat stress**.
- A longer warm weather recreational season will put **increased demand on public recreational facilities**.

### Adaptation Strategies

- 1 Establish policies for heat wave actions and identify or create cooling centers. Provide employees with hydration stations, more frequent breaks and modified work schedules for hot weather.
- 2 Increase funding for tree planting programs and require tree coverage for new subdivisions, parking lots, etc.



## 💧 PRECIPITATION

### Climate Impacts

- Increased severity, frequency and persistence of regional flood events increase risk of **flood-related employee injuries and absenteeism**. Government **facilities are closed or services are unavailable** due to flooding.
- Localized flooding causes **stream bank instability, tree falls, loss of cropland, property damage** and **damage to bridges** as well as **changing boundaries of shorelines, floodplains and wetlands**.

## Government Services – continued

### PRECIPITATION

## Adaptation Strategies

- 1 Increase public education on heavy rainfall and flood impacts. Prepare for floods by establishing facility evacuation procedures. Perform flood studies using extreme rainfall scenarios.
- 2 Improve runoff mitigation for new development. Use upland areas, wetlands and floodplains for flood storage. Increase inspection of stormwater conveyances to identify vulnerabilities.



**“Some adaptation efforts will be reactive, handling situations as they arise. But WICCI strives to be proactive, anticipating challenges and preparing for them ahead of time. Effective planning and preparation could help save wildlife, property, money and even lives.”**

– WICCI



# Government Facilities & Infrastructure

## ↑ TEMPERATURE

### Climate Impacts

- High temperatures **buckle pavement**. Additional freeze-thaw cycles create **potholes**.
- Increased temperature puts more **demand on HVAC systems**.

### Adaptation Strategies

- 1 Increase monitoring of susceptible roadway pavements. Budget for increased roadway maintenance and repair.
- 2 Improve temperature control for public buildings (e.g. green roofs and windows with low-e glass). Service and replace HVAC systems for increased temperature.



## 💧 PRECIPITATION

### Climate Impacts

- **High water over roadways.**
- Increased **demand on stormwater drainage systems. Flooding and erosion** around government facilities.

### Adaptation Strategies

- 1 Planning, signage and alternative traffic routing for flooded roadways. Re-size culverts and drainageways to accommodate larger flows.
- 2 Inspect and maintain stormwater systems. Build retention areas to collect increased rainwater runoff and store for later use.



# Climate Wisconsin 2050

## Scenarios of a State of Change



**“Imagine being** a city planner or hydrologic engineer responsible for designing and implementing new stormwater structures that are meant to last for the next fifty years. If you design these structures based on the weather from the last fifty years, they might lack sufficient capacity to handle rainstorms of increasing intensity and frequency, perhaps leading to flooded streets and homes.”

– WICCI

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Please contact:

**Wisconsin Initiative on Climate Change Impacts (WICCI)**  
for more information.

Visit [wicci.wisc.edu](http://wicci.wisc.edu) for details.

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