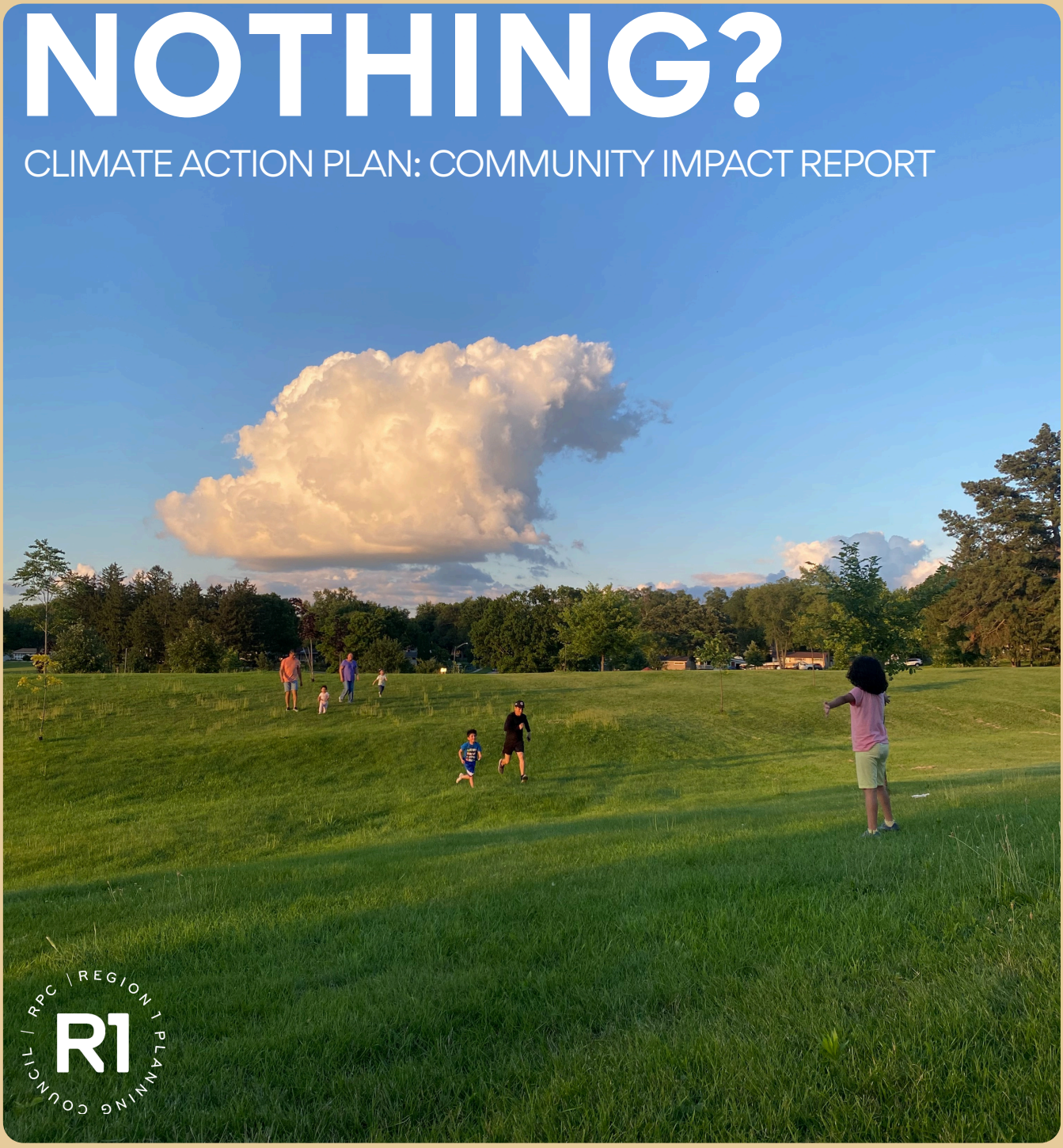
WHAT HAPPENS IF WE DO NOTHING?

CLIMATE ACTION PLAN: COMMUNITY IMPACT REPORT



R1 | REGION 1 PLANNING COUNCIL | RPC

What Happens If We Do Nothing?

Climate Action Plan: Community Impact Report

October 2025

This document has been prepared by Region 1 Planning Council in collaboration with its member agencies, partnership organizations, and local stakeholders.

This report was prepared using internal funds from the Region 1 Planning Council board.

COLLABORATIVE PLANNING FOR NORTHERN ILLINOIS

Region 1 Planning Council
127 N. Wyman St., Ste. 100 Rockford, IL, 61101
(815) 319-4180 | info@r1planning.org | r1planning.org

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INTRODUCTION

Region 1 Planning Council (R1) created the Climate Action Plan (CAP) to help Boone and Winnebago Counties (the Rockford Region) prepare for the challenges of climate change and guide future action. Climate change threatens the environment, economy, and public health, with its consequences felt by governments, businesses, households, and individuals alike.

This report highlights potential costs that the Rockford Region could face if action is not taken to combat climate change; these costs include monetary costs (i.e., the costs that hit our wallets) and nonmonetary costs (i.e., impacts to our quality of life that can't be measured in dollars). The data in this report is based on local current trends and future climate projections for air quality, extreme heat, and severe storms.

WHAT ARE GREENHOUSE GAS EMISSIONS?

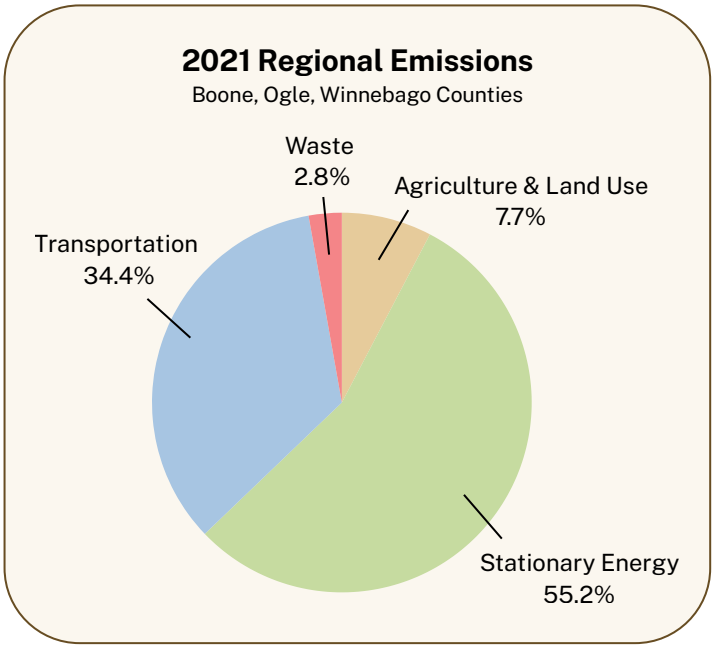
Climate change is driven largely by the release of greenhouse gases (GHGs) from human activities—particularly our transportation, energy, agriculture, and waste systems. Everyday activities, like driving, heating our homes, or cutting grass with a gas-powered lawn mower, release GHGs that collect in the atmosphere; this is because those activities rely on burning fossil fuels such as coal, oil, and natural gas. Technical Report #1. GHG Emissions Inventory & Air Quality Assessment found that, in the Rockford Region, stationary energy sources (i.e., energy to power buildings and facilities) account for 55 percent of GHG emissions, while transportation makes up 34 percent.

The primary forms of GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Of these, CO_2 is the most common, making up nearly 79 percent of U.S. emissions in 2020, followed by CH_4 at nearly 11 percent.

WHAT IS CLIMATE CHANGE?

Climate change refers to long-term shifts in temperatures and weather patterns caused by rising levels of greenhouse gases (GHGs) in the atmosphere. These gases, produced by natural processes and human activities, trap heat from the sun and warm the Earth. Since the Industrial Revolution, over 200 years ago, **the global average temperature of Earth's surface has risen 1.8°F** as a result of accumulated GHG emissions in the atmosphere.[i]

Changes in global temperature create shifts in climate and weather patterns, including increases in extreme weather events, droughts, rising sea levels, flooding, disease, habitat loss, and biodiversity decline. These shifts pose risks to local ecosystems and our health through worsening air and water quality.

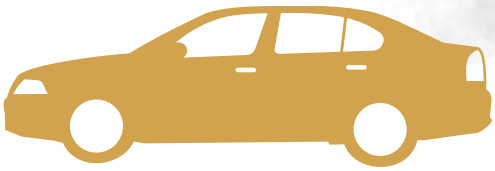


Source: Region 1 Planning Council

567,634 $MTCO_2E$

Emissions from residential electricity in Boone and Winnebago Counties in 2021

Source: Region 1 Planning Council



1,364,706 $MTCO_2E$

Emissions from on-road transportation in the Metropolitan Planning Area in 2021

Source: Region 1 Planning Council

36,819 $MTCO_2E$

Emissions from agriculture and land use in Boone and Winnebago Counties in 2022

Source: Region 1 Planning Council

The primary forms of GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Of these, CO_2 is the most common, making up nearly 79 percent of U.S. emissions in 2020, followed by CH_4 at nearly 11 percent.

Reducing emissions is key to slowing climate change. Common strategies include cutting back on fossil fuel use and shifting to cleaner, low-emission alternatives. In practice, this could look like replacing a gas-powered lawn mower with an electric one, or choosing to bike or walk instead of driving when possible.

WHAT ARE THE COSTS OF CLIMATE CHANGE?

This report discusses two types of cost: monetary and nonmonetary.

- **Monetary costs**: the dollar amount it will cost an individual, household, business, or government to respond to events caused by climate change. Examples may include costs to repair damages, pay hospital bills, or meet higher day-to-day expenses like electricity bills or insurance.
- **Nonmonetary costs**: impacts of climate change that are not or cannot be measured in dollars, such as acres of crops lost, concentrations of pollutants, or types of illnesses and vector-borne diseases.

The information in this report addresses central costs of climate change specific to the Rockford Region. This report is not a comprehensive list of all climate impact costs and is dependent on available data, as some impacts are hard to quantify or measure, such as the toll on mental health or deaths that are indirectly caused by extreme heat.

Emissions from lawn and garden equipment in Boone and Winnebago Counties in 2020

Source: Region 1 Planning Council

HOW MUCH WILL CLIMATE CHANGE COST?

This report explores costs of the three climate change impacts that most affect the Rockford Region: **air quality**, **extreme heat**, and **severe storms and flooding**. These impacts create financial and health-related burdens for individuals, households, businesses, and governments. Proactively taking action now to address climate change is essential to reduce these costs in the future.

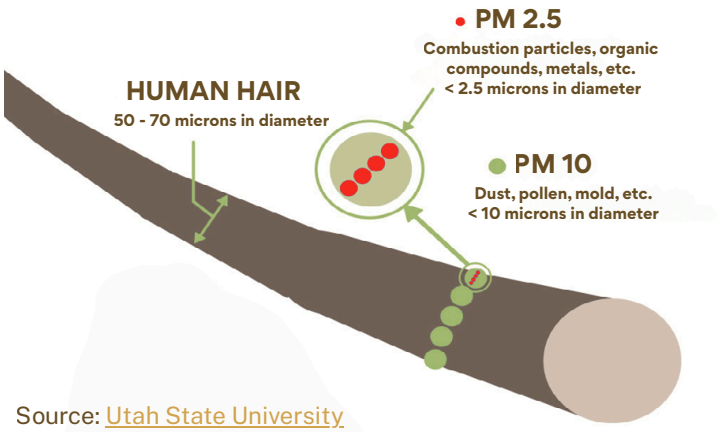
AIR QUALITY

Air is essential to life. The quality of the air directly affects our health and the activities we are able to participate in and enjoy.

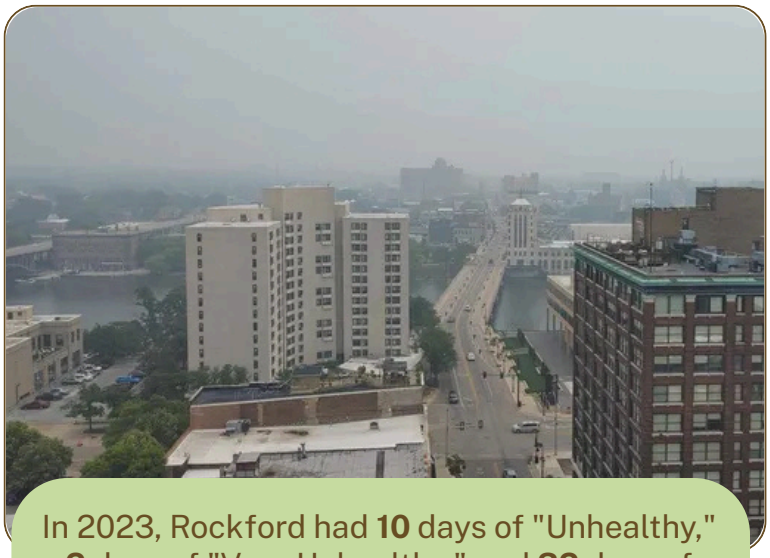
Air quality is measured by the concentration of contaminants in the atmosphere, including particle pollution ($PM_{2.5}$ and PM_{10}), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), and nitrogen dioxide (NO_2). Even though the Rockford Region currently meets national air quality standards, negative health effects can arise at lower particulate matter concentrations and are therefore still a risk to the region.

Additionally, not all air pollutant concentrations are known for the region. While the Illinois Environmental Protection Agency (IEPA) has monitoring stations throughout the Rockford Region that record $PM_{2.5}$ and O_3, the concentrations for SO_2, Pb, and NO_2 are unknown. These gaps in data make it hard to truly understand the state of the region's air quality.

RELATIVE SIZE OF PARTICULATE MATTER



Source: Utah State University



In 2023, Rockford had **10** days of "Unhealthy," **2** days of "Very Unhealthy," and **32** days of "Unhealthy for Sensitive Groups" air quality.

Source: Illinois Environmental Protection Agency Annual Report

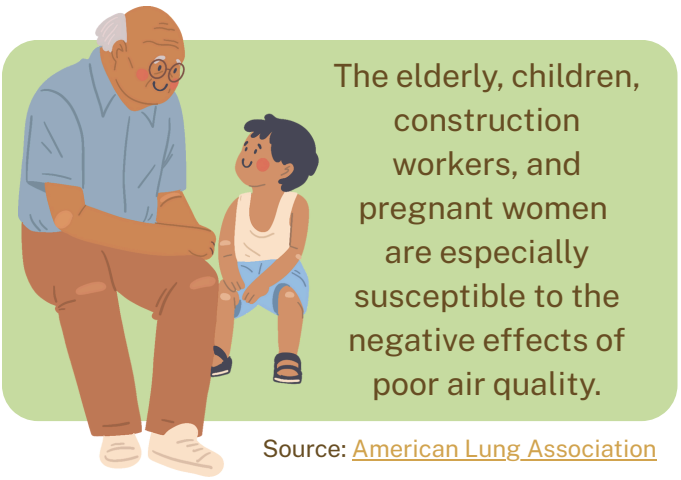
CURRENT & FUTURE PROJECTIONS

Currently, the Rockford Region meets the national air quality standards, classified as an air quality attainment area.[ii] However, in contrast to the national average, which has decreased by 5.79 percent since 2009, the average for ground-level ozone in the Rockford Region has increased by 4.76 percent. Between 2013 and 2023, the air quality monitoring stations in the Rockford Region recorded 16 exceedances of ground-level ozone. This indicates increasing levels of air quality pollutants, most likely a result of transportation in the area.

Climate change is expected to worsen current air quality levels by increasing ground-level ozone (O_3) and fine particulate matter ($PM_{2.5}$).[iii] Wildfires in Canada are also projected to increase 25 percent by 2030 and 75 percent by 2100, [iv] sending more smoke into the Rockford Region.

The following list includes health effects of common air pollutants:

- **Ground-level ozone (O_3)**: reduction in lung function, heightened airway resistance, and inflammation.[v]
- **Fine particle pollution ($PM_{2.5}$ and PM_{10})**: cardiovascular and neurological diseases, heart attacks, adverse birth outcomes, and premature death.[vi]
- **Lead (Pb)**: impairment of nervous system, kidney function, immune system, reproductive system and cardiovascular system; behavioral and developmental problems; premature birth, stillbirth, and miscarriage.[vii]
- **Sulfur dioxide (SO_2)**: reduction in lung function and difficulty breathing.[viii]
- **Nitrous oxide (NO_2)**: difficulty breathing, asthma, exacerbation of preexisting lung conditions, and increase in susceptibility to respiratory diseases.[ix]



Source: American Lung Association

COSTS

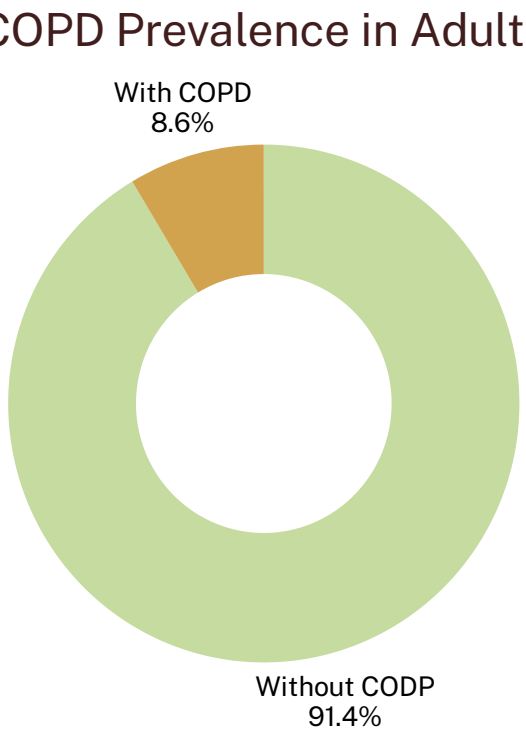
Public Health

Air pollutants can lead to adverse health effects such as trouble breathing, lung damage, heart attacks, neurological damage, and developmental problems.[x] These health risks are especially concerning for vulnerable populations, including older adults, children, low-income residents, outdoor workers, pregnant women, and individuals with chronic medical conditions like asthma and chronic obstructive pulmonary disease (COPD).[xi]

In the United States, between 100,000 and 200,000 deaths are associated with air pollution annually.[xii]

Air pollution is linked to respiratory and cardiovascular issues, including lung cancer and heart disease, and can worsen existing conditions like asthma and COPD. In the Rockford Region, the estimated number of COPD cases is 29,261.[xiii] This condition, which refers to a group of lung diseases that obstruct breathing, cannot be cured, and it will often worsen over time.

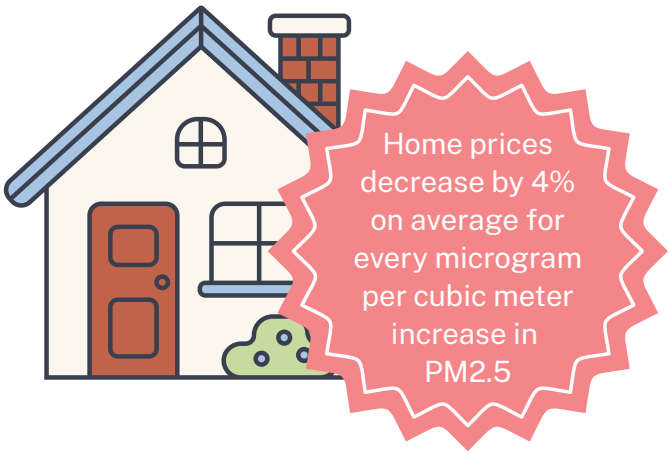
The average COPD medical cost per patient is $4,322 per year.[xiv] The estimated number of asthma cases in the region is 36,180,[xv] and the average asthma medical cost per patient is $5,250.[xvi] Air pollutants can cause negative health effects for the lungs, heart, and other systems, which impair our day-to-day ability to function and increase our health care costs.



Source: Centers for Disease Control and Prevention PLACES

Property Values

Low air quality can decrease the livability of an area and lower home values. In cities distant from wildfires but affected by wildfire smoke, home prices decrease by four percent on average for every microgram per cubic meter increase in PM2.5. Rent prices in these cities decrease by 0.7 percent on average for every microgram per cubic meter increase in PM2.5. [xvii] The higher the concentration of PM2.5, the larger the decrease in home and rental prices.[xviii]

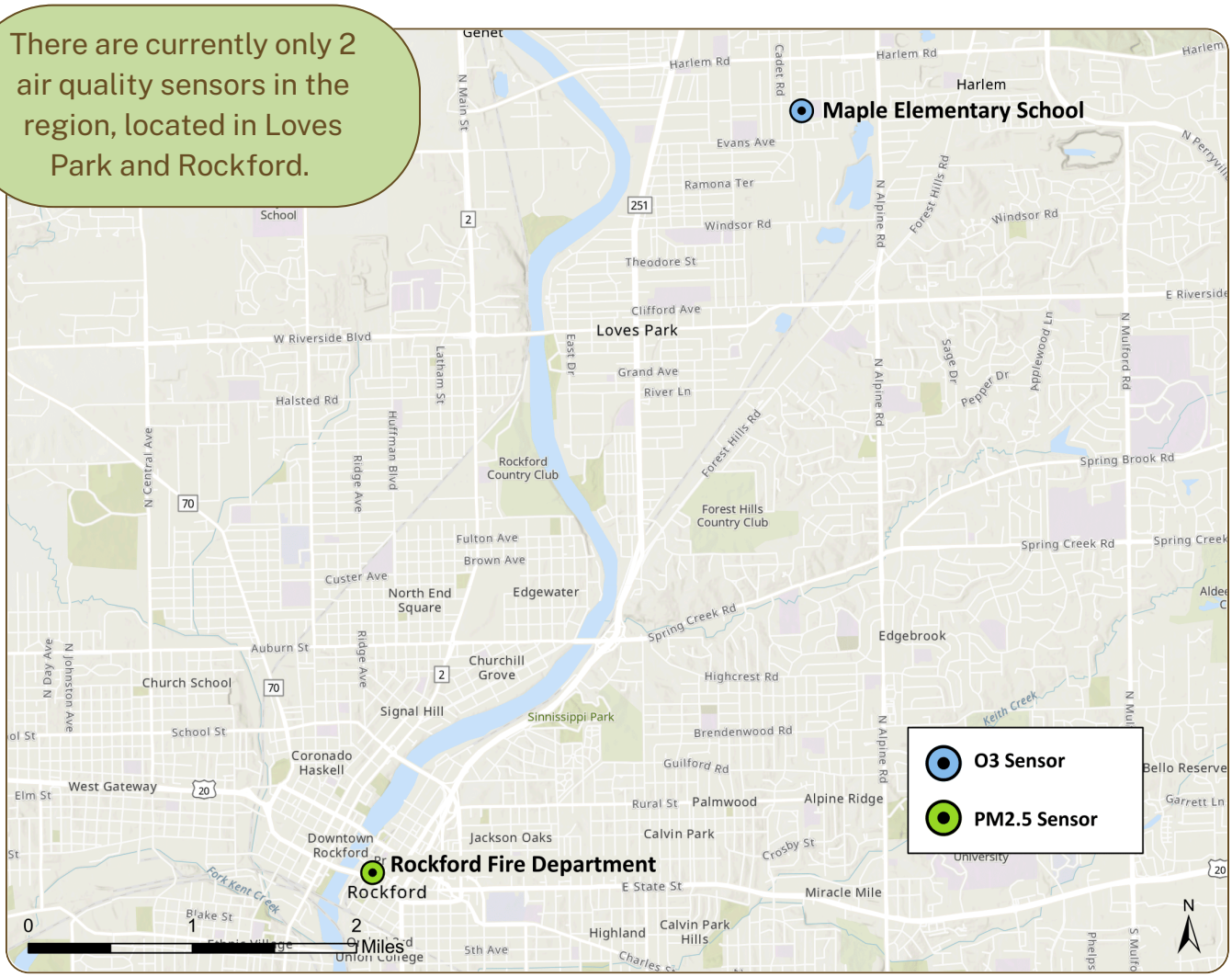


Source: Social Science Research Network

Recreation & Leisure

High concentrations of air pollutants, especially particulate matter, are associated with restricted outdoor activity.[xix] Days with poor outdoor air quality are projected to increase, which will also increase the number of days people are unable to participate in outdoor recreation and leisure activities like biking, swimming, walking, and playing sports outside.[xx]

There are currently only 2 air quality sensors in the region, located in Loves Park and Rockford.

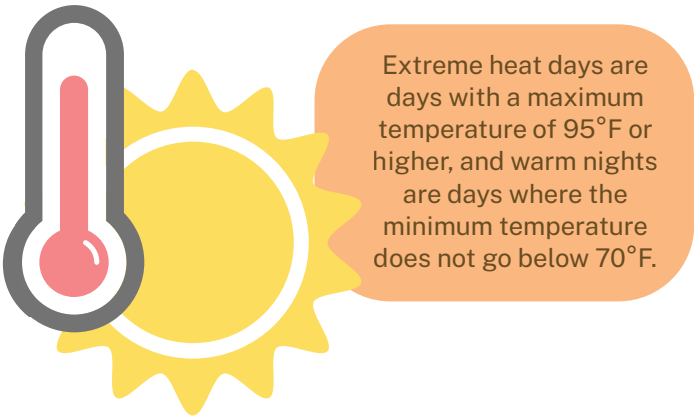


Source: Region 1 Planning Council

EXTREME HEAT

Extreme heat can make everyday life difficult by increasing the risk of heat-related illness, straining energy systems, and limiting our time outdoors. To reduce extreme heat days in the Rockford Region, it is vital for communities to reduce heat-trapping GHG emissions and prepare for the impacts of climate change.

Extreme heat can increase the rate of heat-related illnesses, lower agricultural productivity, and increase energy bills due to the increased demand for air conditioning. Heat-related health risks are especially concerning for vulnerable populations, such as older adults, children, individuals with chronic medical conditions, low-income residents, outdoor workers, and pregnant women.[xxi]



Source: Environmental Protection Agency

Urbanized areas, like Rockford and Belvidere, are at a higher risk of extreme heat due to the high prevalence of human-made materials, such as asphalt and steel, that retain heat at a higher rate than naturally occurring materials, like soil or vegetation.[xxii] Technical Report #2. Vulnerability Assessment found that 12 percent of people in the Rockford Region live in areas most at risk to extreme heat.

12%

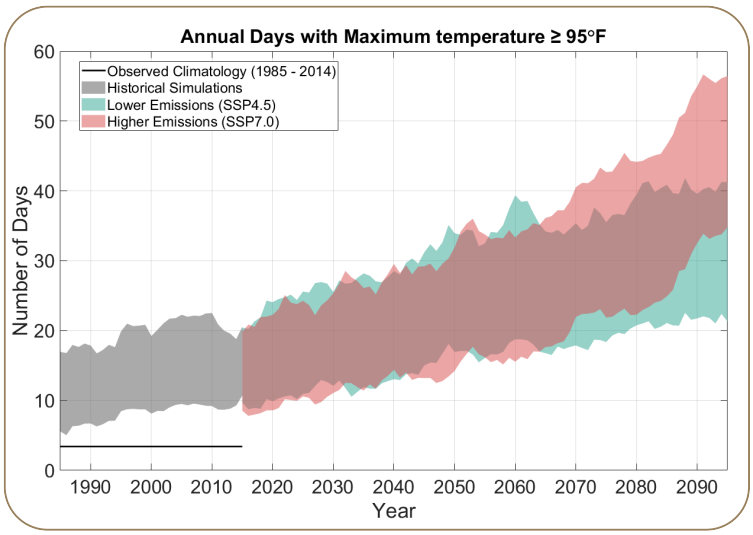
of people in the region live in areas at risk to extreme heat

Source: Region 1 Planning Council

Current & Future Projections

The Rockford Region will see an increase in extreme heat days and warm nights. The region currently averages three extreme heat days per year, but by 2050 there may be as many as 34 extreme heat days.[xxiii] Likewise, the region currently averages nine warm nights per year, but by 2050 there may be as many as 48 warm nights.[xxiv]

Between 2018 and 2024, the Rockford Region has experienced at least one extreme heat day every year. In four of those seven years, there was more than one extreme heat day, and three years had four or more extreme heat days.[xxv] In the past, the region has gone several years without a single extreme heat day, making this recent pattern a clear sign that extreme heat is becoming more frequent.

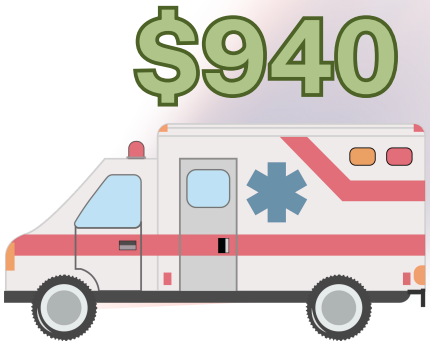


Source: Illinois State Water Survey

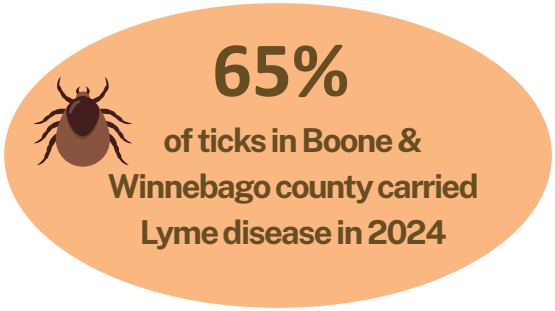
Costs

Heat-Related Illnesses

Extreme heat can increase the risk of heat-related illnesses, like heatstroke and heat exhaustion, and exacerbate existing conditions, like heart disease and respiratory conditions. The average cost of an ambulance with advanced life support (which can provide cardiac and respiratory support and perform limited surgical procedures) in the U.S. in 2020 was $1,277. The average cost of an ambulance with basic life support (which can support patients who do not need cardiac or respiratory intervention) in the U.S. in 2020 was $940.[xxvi]



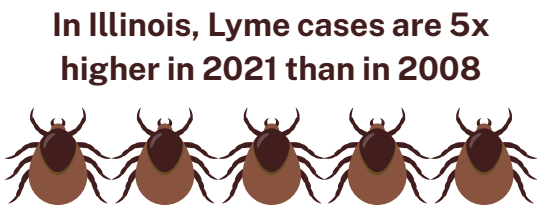
Source: Fair Health



Source: University of Illinois Urbana-Champaign

Vector-Borne Diseases

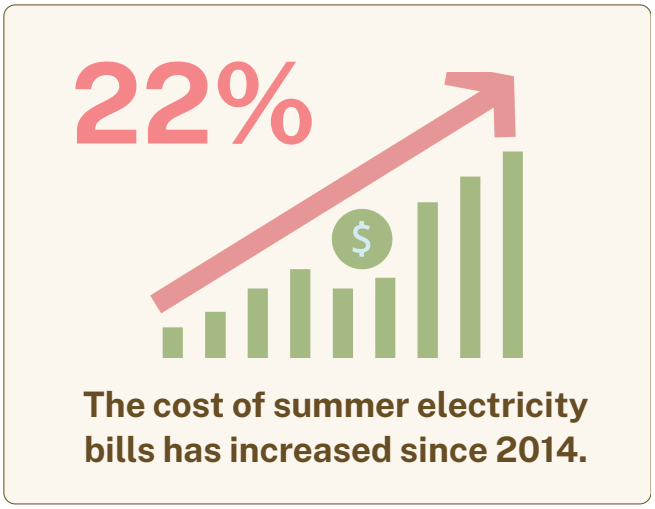
Warmer conditions have increased the habitat range of mosquitoes and ticks, which carry vector-borne diseases like Lyme disease and West Nile virus. Cases of Lyme disease are increasing in Illinois: the rate of Lyme disease in 2021 was five times higher than the rate in 2008.[xxvii] Over 65 percent of collected ticks in the Rockford Region tested positive for Lyme disease in 2024.[xxviii] Mean patient cost for Lyme disease was $1200, and patients who caught the disease late paid on average double that.[xxix] Additionally, Lyme disease can cause chronic conditions such as arthritis or heart disease in the future that incur additional medical costs.[xxx]



Source: Centers for Disease Control and Prevention

Electricity Bills

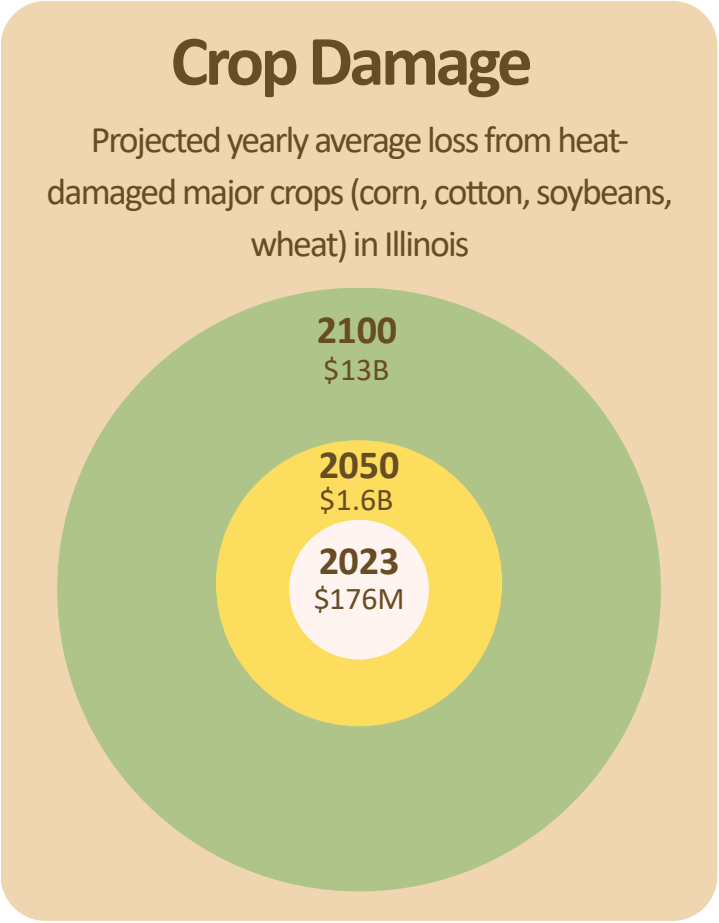
In the Midwest, the average electric bill for the “cooling season” (June through September) has risen 16.3 percent just between 2024 and 2025 (from $618 to $719: an increase of $101).[xxxi] Over the past 10 years, the average U.S. electric bill cost for June through September has risen 64.7 percent: from $476 in 2014 to $784 in 2025.[xxxii]



Source: National Energy Assistance Directors Association

Water Availability

Extreme heat and drought events can decrease water availability for consumption, irrigation, and industry use, which can also drive-up water utility bills. In 2020, water demand in Winnebago County outpaced supply by 6.2 million gallons per day.[xxxiii] Water demand in Illinois could increase by 20 to 50 percent in the coming decades.[xxxiv]



Source: Atlantic Council

Crop Loss

Heat-related weather conditions — drought, excessive heat, and wildfires — accounted for over $176.21 million in total crop losses in 2023 in Illinois.[xxxv] Projections indicate that this number could increase to $1.6 billion in heat-related crop loss per year by 2050, driven primarily by the loss of corn and soybeans. Illinois could lose up to $13 billion each year from crop losses by the end of the century [xxxvi] Crop insurance indemnity payments for crop loss from heat increased 1,012 percent between 2001 and 2022, from $142.5 million to $1.6 billion. Payments from crop loss from drought increased 690 percent, from $965.5 million to $7.6 billion.[xxxvii]

In addition to affecting crop growth via air temperatures, extreme heat also lowers the viability of soil. Soil heats at a faster rate than air and retains heat longer, which affects plants' ability to uptake nutrients, the rate of organic matter decomposition, and the water content and availability to plants. [xxxviii]

Workers Compensation

The region relies on outdoor labor, such as agriculture and construction; 39 percent of workers in Boone County and 34.8 percent of workers in Winnebago County are employed in sectors vulnerable to climate change, such as industry and agriculture.[xxxix] Hotter days are associated with more workers compensation claims, with up to 10% more claims on days with high temperatures compared to days with mild temperatures.[xl] While higher workers compensation claims are associated with higher temperatures across all economic sectors, the effects are largest for outdoor sectors.

In Boone County, 39% of workers are employed in climate vulnerable sectors.

In Winnebago County, 34.8% of workers are employed in climate vulnerable sectors.

Source: United States Census Bureau

SEVERE STORMS & FLOODING

Climate change is making severe storms and flooding more frequent and intense, putting our homes, roads, and local infrastructure at greater risk. These events can disrupt daily life, damage property, and strain community resources needed to keep people safe.

In the Rockford Region, storms often appear in the form of thunderstorms, ice storms, wind storms, tornadoes, and heavy rain events, many of which cause or contribute to flooding. Storms and flooding can cause injury, power outages, property damage, and water pollution.

Urban areas such as downtown Rockford, Belvidere, and Loves Park are more likely to experience flooding due to the high volume of impervious surfaces such as concrete, which do not allow water to flow through them. However, rural areas may also experience flooding due to limited stormwater management infrastructure. Technical Report #2. Vulnerability Assessment found that nearly 24 percent of the region's population lives in an area with a high exposure to flooding.

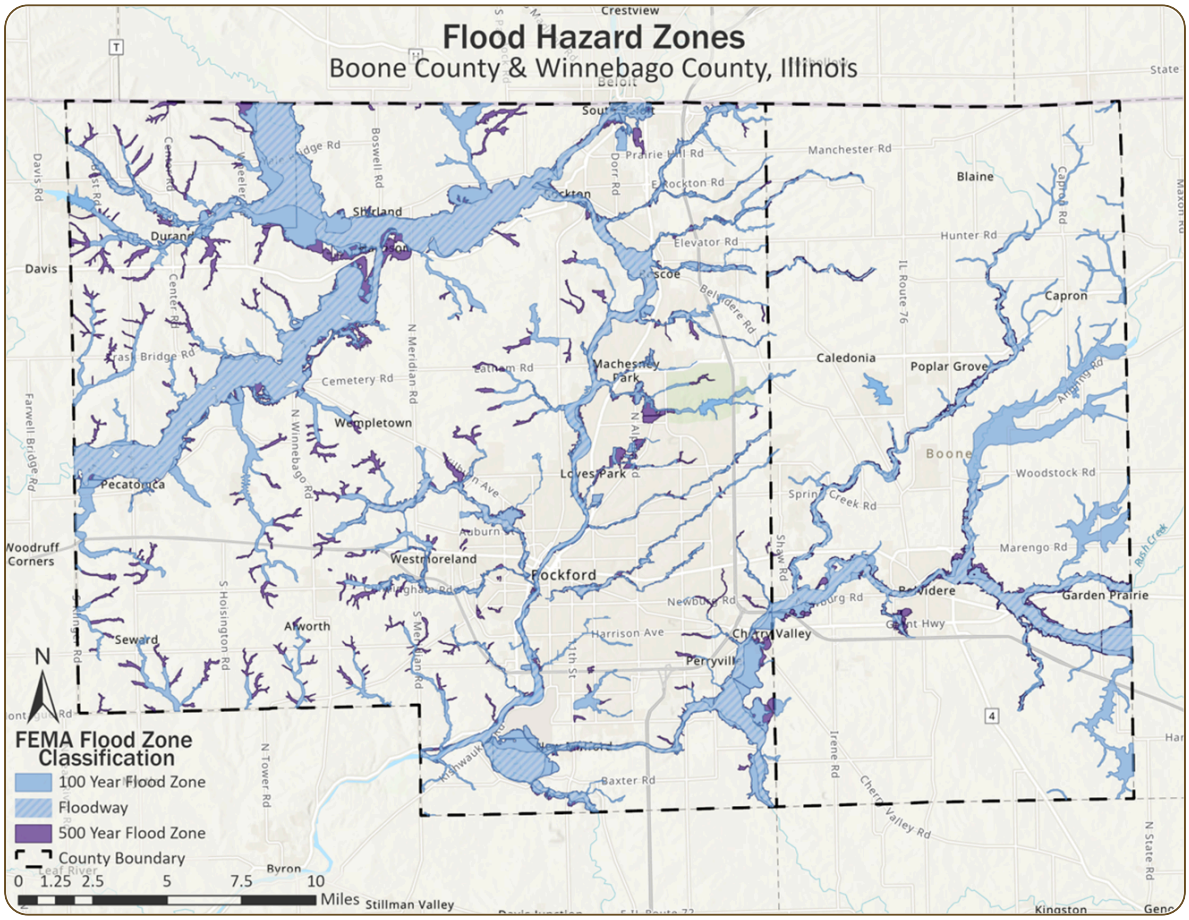
CURRENT & FUTURE PROJECTIONS

Since 1996, there have been 103 flooding events in Boone and Winnebago Counties, with flooding occurrences increasing in frequency over the years.[xli] Flooding events have risen from an average of 3.5 events annually between 1996 and 2007 to 5.1 events annually from 2008 to 2019.

Climate projections show annual precipitation in Illinois will rise from 36.3 inches up to 44.4 inches by 2050.[xlii] However, the number of days with precipitation is projected to remain the same, indicating that rain events will become more intense.[xliii] Climate models project that extreme storms may increase by up to 60 percent by 2100.[xliv]

22 of 89 census tracts face severe flood risk, that's 79,861 people at risk

Source: Region 1 Planning Council



Source: Region 1 Planning Council

COSTS

Insurance

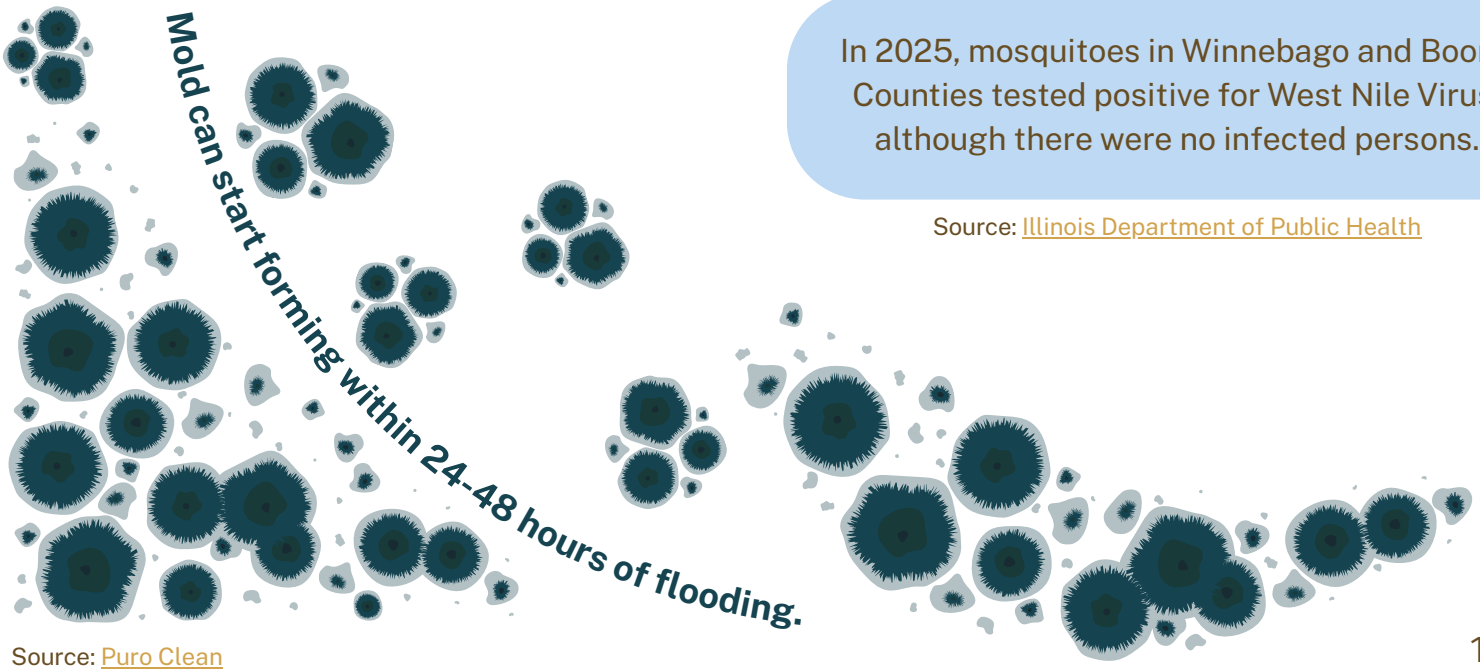
Flood insurance is not typically included in most home and renters' insurance policies and must be purchased as an additional policy. The average flood insurance cost of the Federal Emergency Management Funding (FEMA) National Flood Insurance Program (NFIP) for a single-family home in 2023 was $761 in Boone County and $1,108 in Winnebago County. However, the risk-based cost of insurance for 2023 was calculated as $877 for Boone County and $1,768 for Winnebago County, which means NFIP insurance costs will increase to match the risk.[xlv]

Private insurance agencies also recently increased homeowner insurance rates: in 2025, State Farm raised its rates by 27.2 percent due to the increase in extreme weather events.[xlvi]

Property Damage

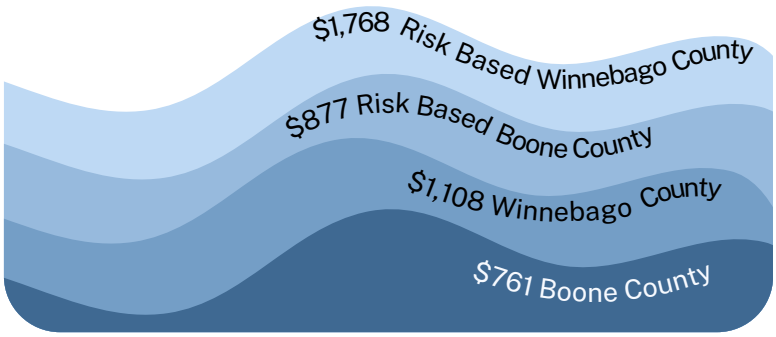
Tornadoes, lightning, winter storms, and floods result in an annual average of 190 deaths and $2.46 billion in property loss in the Midwest alone.[xlvii] Floods can damage a home's foundation, electrical wiring, plumbing and water supply, and personal belongings. One inch of water in a home can cause up to $25,000 in damage.[xlviii]

Mold can start forming within 24 to 48 hours of flooding.[xlix] Professional mold remediation typically costs between $1,500-9,000, with an average of $3,500 for most homeowners, though cost can reach $10,0000-30,000 for whole-house remediation.[l]



Source: Puro Clean

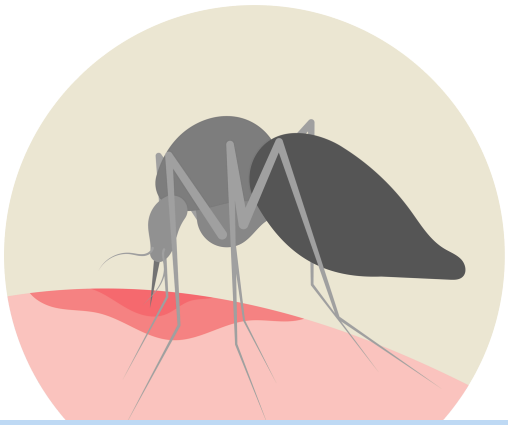
FEMA NFIP Flooding Home Insurance Rates



Source: Federal Emergency Management Agency

Runoff & Water Pollution

Extreme precipitation increases the amount of agricultural and industrial runoff that pollutes recreational and drinking water. Runoff is when pollutants such as pesticides, heavy metals, or bacteria are washed from farm fields or industrial sites into waterways or groundwater. These pollutants can cause illnesses. An increase in standing water paired with warming conditions can also contribute to the increase in mosquito-borne diseases such as West Nile virus.[li]



In 2025, mosquitoes in Winnebago and Boone Counties tested positive for West Nile Virus, although there were no infected persons.

Source: Illinois Department of Public Health

The length of power outages has doubled from 2013 to 2021.

Source: Time

Electricity Infrastructure & Outages

Storms and flooding can damage electricity infrastructure, cause power outages, and make it more difficult to restore service after an outage. High winds and thunderstorms caused 58 percent of weather-related power outages from 2000-2021.[lii] The Midwest region experiences the second highest number of weather-related outages in the country. In 2013, 50 percent of outages in the U.S. were due to severe weather like thunderstorms and snowstorms; in 2021, 72 percent of outages were due to severe weather.[liii] The average length of an outage has also increased, from three to four hours in 2013 to more than seven hours in 2021.[liv]

Source: National Weather Service

WHAT CAN YOU DO?

Everyone who lives, works, or visits the Rockford Region plays a vital part in mitigating the costs of climate change. Whether it's conserving energy, reducing waste, or supporting local sustainability efforts, your choices make a difference.

The Climate Action Plan includes specific steps that governments, businesses, community organizations, households, and individuals can take to help our region prepare for and adapt to the impacts of climate change. The following section highlights actions you can take to help alleviate future climate costs. For a more detailed list of actions available to agencies across the Rockford Region, refer to Part 5. Strategic Direction of the Climate Action Plan.

YOUR ROLE IN A GREENER & MORE RESILIENT FUTURE

Every action matters. Join us in building a cleaner, healthier future — one step at a time!

Get Involved

- Advocate for climate-friendly policies.
- Educate others by sharing sustainability tips and resources.
- Help increase awareness of public heating and cooling centers.
- Participate in clean-up events for parks, rivers, and streets.
- Volunteer with local environmental organizations.

Preserve Water Resources

- Capture and reuse rain water with rain barrels.
- Incorporate drought-tolerant plants into your yard.
- Install water efficient appliances.
- Properly dispose of hazardous materials.
- Reduce lawn and garden chemical use.

Save Energy

- Insulate your home to conserve energy.
- Invest in solar panels or an electric vehicle.
- Swap your gas-powered lawn equipment for battery-powered.
- Switch to LED bulbs and energy-efficient appliances.
- Unplug devices when not in use.

YOUR ROLE IN A GREENER & MORE RESILIENT FUTURE

Reduce Waste

- Choose products with minimal or compostable packaging.
- Compost food scraps and yard waste.
- Donate or repurpose old clothes and household items.
- Recycle materials like paper, glass, and plastic.
- Reduce single-use plastic consumption.

Use Sustainable Transportation

- Walk or bike for short trips instead of driving.
- Use public transit or carpool whenever possible.
- Consider driving an electric or hybrid vehicle.
- Turn car engine off when idling or parked.

Support Natural Areas

- Advocate for the preservation of forests, wetlands, grasslands, and prairies.
- Learn about and promote regenerative agriculture practices.
- Plant native species in your yard.
- Volunteer at invasive species removal events.

To learn more about climate action in the Rockford Region, check out the Climate Action Plan's webpage on Engage R1 at: https://engager1.mysocialpinpoint.com/climate-action-plan-cap.

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Region 1 Planning Council
127 N Wyman St. Suite 100
Rockford, Illinois 61101
815-319-4180 | info@r1planning.org