COOK COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

VOLUME 1 – PLANNING-AREA-WIDE ELEMENTS

JULY 2024 | PUBLIC VERSION

PREPARED FOR:

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TABLE OF CONTENTS

Executive Summary **1**
Part 1. The Planning Process **8**
Chapter 1 Introduction 9
1.1 Why Prepare This Plan 9
1.2 Who Will Benefit from this Plan? 10
1.3 How to Use This Plan 11
Chapter 2 Plan Methodology 12
2.1 Grant Funding 12
2.2 Formation of the Planning Team 12
2.3 Establishment of the Planning Partnership 12
2.4 Defining the Planning Area 13
2.5 The Steering Committee 13
2.6 Coordination with Other Agencies, Partners, and Neighboring Jurisdictions 15
2.7 Local Jurisdiction Plan Participation 19
2.8 Review of Existing Plans and Programs 27
2.9 Updates of Prior Plans 27
2.10 Public Involvement 28
2.11 Plan Development Chronology/Milestones 30
Part 2. Risk Assessment **31**
Chapter 3 Identified Hazards of Cook County 32
3.1 Identified Hazards of Concern 32
3.2 Other Hazards of Interest (Human-caused and Technological Hazards) 33
3.3 Presidential Disaster (DR) & Emergency Declarations (EM) in Cook County 34
3.4 Risk Assessment Methodology 37
3.5 Overall Risk Scores 43
Chapter 4 Cook County Profile 45
4.1 Jurisdiction and Attractions 46
4.2 Historical Overview 47
4.3 Physical Setting 49
4.4 Land Use 50
4.5 Population Data and Characteristics 51
4.6 Critical Facilities and Infrastructure 68
4.7 Economy 70

4.8 Higher Education 73
4.9 Transportation 74
4.10 Housing and Living 75
4.11 Future Trends in Development 76
4.12 Laws, Ordinances, Programs, and Plans 76
Chapter 5 Risk Assessment 83
5.1 High Hazard Dams and Levees 83
5.2 Drought 124
5.3 Earthquake 139
5.4 Flooding 169
5.5 Severe Weather 255
5.6 Severe Winter Weather 334
5.7 Tornado 395
5.8 Wildfire 410
5.9 Other Hazards of Concern 426
Part 3. Mitigation Strategy 468
Chapter 6 Mission, Goals, and Objectives 469
6.1 Mission 469
6.2 Goals 469
6.3 Objectives 469
6.4 Community Lifelines 470
Chapter 7 Mitigation Action Plan 472
7.1 Mitigation Strategy/Action Timeline Parameters 473
7.2 Mitigation Strategy/Action Benefit Parameters 473
7.3 Mitigation Strategy/Action Estimated Cost Parameters 473
7.4 Mitigation Strategy/Action Prioritization Process 473
Chapter 8 Mitigation Alternatives and Strategies 475
8.1 Mitigation Strategies by County or Regional Agencies/Departments 478
8.2 Mitigation Strategies by Community 478
8.3 NFIP-Specific Mitigation Actions and Implementation 478
Chapter 9 Plan Integration Strategy 480
9.1 Process and Mechanism for Plan Integration 480
9.2 Examples of Plan Integration 481
Part 4. Plan Maintenance Strategy 489
Chapter 10 Steering Committee 490

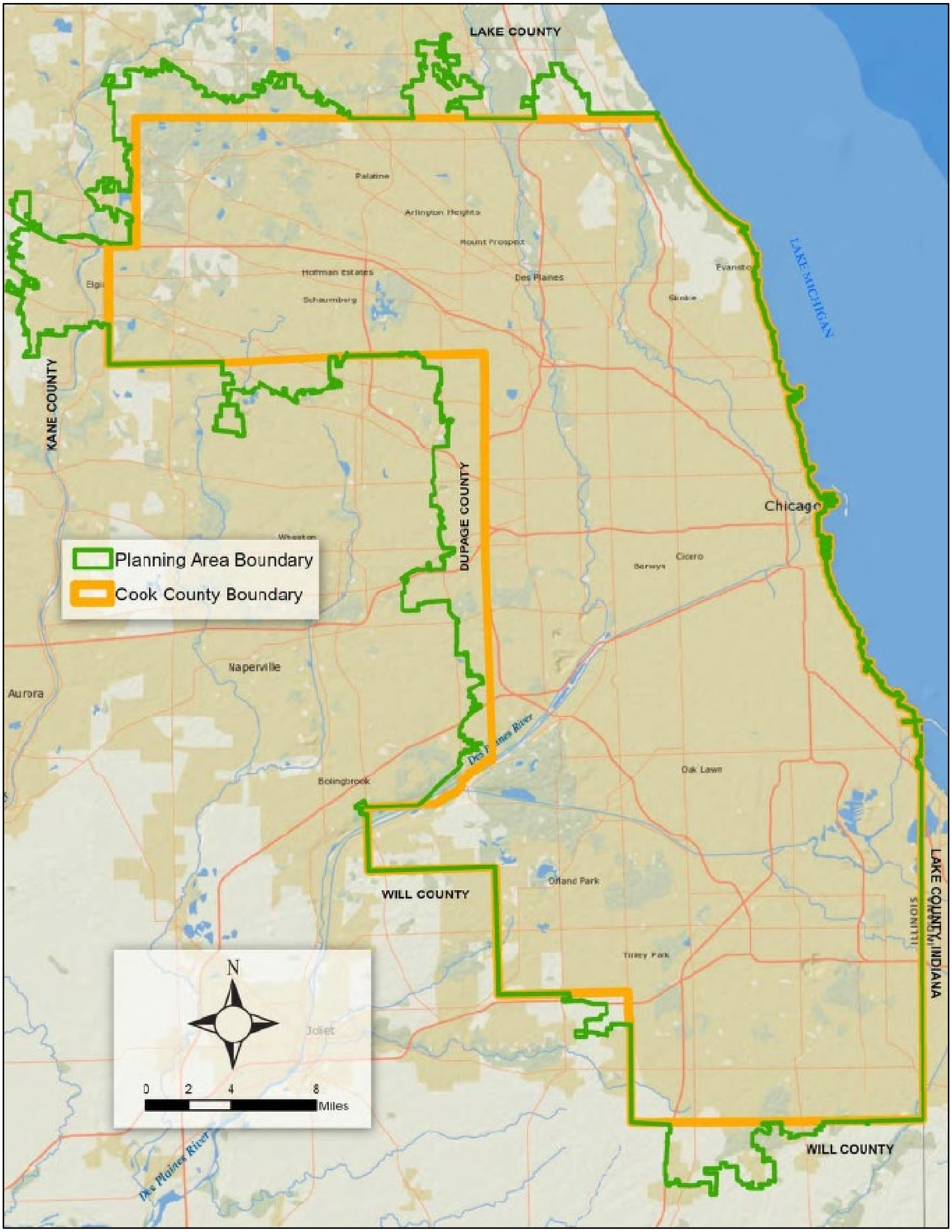
Chapter 11 Plan Implementation....491
11.1 Formal Review Process....491
11.2 Monitoring, Evaluation, and Assessing Plan Effectiveness....492
11.3 Annual Steering Committee Planning Meetings....492
Chapter 12 Annual Progress Report....494
Chapter 13 Plan Update Process....497
13.1 Five-Year Action Plan....497
Chapter 14 Continuing Public Involvement....500
Chapter 15 Incorporation into Other Planning Mechanisms....501
Part 5. Plan Adoption....502
Appendices....503
Appendix A Acronyms and Definitions....504
Appendix B Plan Process and Development....515
Appendix C Public Participation Documentation....546
Appendix D Concepts, Methods and Data Sources Used for Hazard Mapping....629
Appendix E Annual Progress Report Template and Process....632
Appendix F Jurisdictional Linkage Strategy....635
Appendix G Plan Adoption Resolution from Planning Partners....642

EXECUTIVE SUMMARY

Hazard mitigation is the use of long-term and short-term policies, programs, projects, and other activities to alleviate the death, injury, and property damage that can result from a disaster. Cook County and a coalition of 125 municipal planning partners prepared and updated the **2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan** (**MJ-HMP**) in order to identify the risks posed by hazards and find ways to reduce their impacts. The plan reduces risk for those who live in, work in, and visit the County.

Participating Partners and the Planning Area

The responsibility for hazard mitigation lies with many, including private property owners, business and industry, and local, state, and federal government. Through multi-jurisdictional partnerships, local jurisdictions within an area with uniform risk exposure can pool resources and eliminate redundant planning activities. Cook County opened this planning effort to all municipalities within the County. *Table: Planning Partners* lists the partners that participated in the planning process and are covered under this plan. The planning area was defined as all incorporated and unincorporated areas of Cook County and the incorporated areas of cities that cross county boundaries. The planning area boundary is shown in the figure below (*Figure: Planning Area*).


LAKE COUNTY
Palatine
Arlington Heights
Mount Prospect
Hoffman Estates
Schaumburg
Des Plaines
Evanston
Skokie
LAKE MICHIGAN
KANE COUNTY
DUPAGE COUNTY
Chicago
Wheaton
Planning Area Boundary
Cook County Boundary
Berwyn
Cicero
Naperville
Aurora
Des Plaines River
Bolingbrook
Oak Lawn
WILL COUNTY
Orland Park
ILLINOIS
LAKE COUNTY, INDIANA
Tinley Park
N
Joliet
0 2 4 8
Miles
WILL COUNTY
Des Plaines River

The jurisdictions not participating in the 2024 MJ-HMP are border jurisdictions and are part of other county mitigation plans.

TABLE: PLANNING PARTNERS PLANNING PARTNERS COVERED BY THIS HAZARD MITIGATION PLAN		
Arlington Heights	Bellwood	Alsip
Barrington	Berkeley	Bedford Park
Buffalo Grove	Berwyn	Blue Island
Des Plaines	Broadview	Bridgeview
Elgin	Brookfield	Burbank
Elk Grove Village	City of Chicago	Burnham
Evanston	Cicero	Calumet City
Glencoe	Countryside	Calumet Park
Glenview	Elmwood Park	Chicago Heights
Golf	Forest Park	Chicago Ridge
Hanover Park	Forest View	Country Club Hills
Hoffman Estates	Franklin Park	Crestwood
Inverness	Harwood Heights	Dixmoor
Kenilworth	Hillside	Dolton
Lincolnwood	Hodgkins	East Hazel Crest
Morton Grove	Indian Head Park	Evergreen Park
Mount Prospect	LaGrange	Flossmoor
Niles	LaGrange Park	Ford Heights
Northbrook	Lyons	Glenwood
Northfield	Maywood	Harvey
Palatine	McCook	Hazel Crest
Park Ridge	Melrose Park	Hickory Hills
Prospect Heights	Norridge	Hometown
Rolling Meadows	Northlake	Homewood
Schaumburg	North Riverside	Justice
Skokie	Oak Park	Lansing
South Barrington	River Forest	Lemont
Streamwood	River Grove	Lynwood
Wheeling	Riverside	Markham
Wilmette	Rosemont	Matteson
Winnetka	Schiller Park	Merrionette Park
Barrington Hills *(Not Participating in 2024 Cook County MJ-HMP)*	Stickney	Midlothian
Bartlett *(Not Participating in 2024 Cook County MJ-HMP)*	Stone Park	Oak Forest
Deerfield *(Not Participating in 2024 Cook County MJ-HMP)*	Summit	Oak Lawn

Deer Park *(Not Participating in 2024 Cook County MJ-HMP)*	Westchester	Olympia Fields
East Dundee *(Not Participating in 2024 Cook County MJ-HMP))*	Western Springs	Orland Hills
Roselle *(Not Participating in 2024 Cook County MJ-HMP)*	Bensenville *(Not Participating in 2024 Cook County MJ-HMP)*	Orland Park
	Burr Ridge *(Not Participating in 2024 Cook County MJ-HMP)*	Palos Heights
	Elmhurst *(Not Participating in 2024 Cook County MJ-HMP)*	Palos Hills
	Hinsdale *(Not Participating in 2024 Cook County MJ-HMP)*	Palos Park
	Oak Brook *(Not Participating in 2024 Cook County MJ-HMP)*	Park Forest
		Phoenix
		Posen
		Richton Park
		Riverdale
		Robbins
		Sauk Village
		South Chicago Heights
		South Holland
		Steger
		Thornton
		Tinley Park
		University Park
		Willow Springs
		Worth
		Frankfort *(Not Participating in 2024 Cook County MJ-HMP)*
		Woodridge *(Not Participating in 2024 Cook County MJ-HMP)*

Plan Development and Organization

The 2024 Cook County MJ-HMP was updated by a planning team of Cook County Department of Emergency Management and Regional Security staff and expert consultants, with guidance from a steering committee representing the planning partners and other local stakeholders. The key steps in updating the plan were as follows:

1. Determine the Planning Area and Resources
2. Build and Reconvene the Planning Team
3. Outreach Strategy
4. Review and Update Community Capabilities
5. Update and Conduct the Risk Assessment
6. Update the Mitigation Strategy
7. Keep the Plan Current

8. Review and Adopt the Plan
9. Create a Safe and Resilient Community

The final plan consists of two volumes. Volume 1 includes all federally required elements of a disaster mitigation plan that apply to the entire planning area. Volume 2 consists of all federally required jurisdiction-specific elements in individual annexes for each participating jurisdiction.

Mission Goals and Objectives

The defined mission for the 2024 Cook County MJ-HMP is to "Identify risks and sustainable, cost-effective actions to mitigate the impact of natural hazards to protect the life, health, safety, welfare, and economy of the communities of Cook County." Mitigation **goals** were established as follows:

1. Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.
2. Protect the lives, health, safety, and property of Cook County residents from natural hazards.
3. Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events and potential damage from such activities.
4. Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of natural hazards.
5. Develop, promote, and integrate mitigation action plans.
6. Promote public understanding of and support for hazard mitigation.

Thirteen **objectives** were established for the plan to meet multiple goals and serve as stand-alone measurements of the effectiveness of the mitigation action. Proposed mitigation actions were evaluated in part based on how many goals and objectives they would help to fulfill.

1. Eliminate or minimize disruption of local government operations caused by natural hazards through all phases of emergency management.
2. Increase the resilience of (or protect and maintain) infrastructure and critical facilities.
3. Consider the impacts of natural hazards on future land uses in the planning area, including possible impacts from climate change.
4. Integrate hazard mitigation policies into land use plans in the planning area.
5. Develop, improve, and protect systems that provide early warnings, emergency response communications, and evacuation procedures.
6. Use the best available data, science and technologies to educate the public and to improve understanding of the location and potential impacts of natural hazards, the vulnerability of building types and community development patterns, and the measures needed to protect life safety.
7. Retrofit, purchase, or relocate structures in high-hazard areas, including those known to be repetitively damaged.
8. Establish partnerships among all levels of local government, the private sector, and/or nongovernmental organizations to improve and implement methods to protect people, including underserved and underrepresented groups, and property.
9. Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
10. Strengthen codes and land use planning and their enforcement so that new construction or redevelopment can avoid or withstand the impacts of natural hazards.

11. Encourage mitigation through incentive-based programs like the Community Rating System and StormReady programs.
12. Reduce natural hazard-related risks and vulnerability to potentially isolated and underserved populations within the planning area and ensure mitigation strategies result in equitable outcomes.
13. Encourage hazard mitigation measures that have the least adverse effect on the natural environment and use natural processes.

Detailed risk assessments were performed for each of these hazards of concern. Also, a brief qualitative review was conducted of technological and human-caused hazards of interest. Climate Change was addressed for each hazard, as applicable.

Risk Assessment Methodology

The risk assessments of the identified hazards of concern describe the risks associated with each hazard. The following steps were used to define the risk of each hazard:

- Profile and update each hazard, describing the geographic area it affects, its frequency and severity, and the warning time provided before a hazard event occurs.
- Use maps of hazard impact areas, as appropriate, to determine and update the number of structures, facilities, and systems exposed to each hazard.
- Assess the vulnerability of exposed structures and infrastructure based on exposure and the probability of occurrence of a hazard event. Tools such as the Federal Emergency Management Agency's (FEMA's) hazard-modeling program HAZUS-MH were used to perform an assessment for flood and earthquake.

Profiles of Cook County Natural Hazards

The following natural hazards are addressed in the 2024 Cook County MJ-HMP. For a more detailed analysis of each hazard, please refer to Part 2. Risk Assessment.

- Dam/levee failure
  - Dam Failure
  - Levee Failure
- Drought
- Earthquake
- Flood
  - Riverine Flooding
  - Urban Flooding
  - Coastal Flooding
    - Seiche
    - Coastal Erosion
- Severe Summer Storms
  - Extreme Heat
  - Lightning
  - Hail
  - Fog

  - High Winds
- Severe Winter Storms
  - Snow
  - Blizzards
  - Ice Storms
  - Extreme Cold and Wind Chill
- Tornado
- Wildfire

PART 1. THE PLANNING PROCESS

Property damage that can result from a disaster through long- and short-term strategies. It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many groups including private property owners, business and industry, and local, state, and federal governments.

The 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan (MJ-HMP) was updated by Integrated Solutions Consulting under a contract with the Cook County Department of Emergency Management and Regional Security (EMRS). The Cook County MJ-HMP is organized into two (2) volumes. Volume 1 addresses planning-area-wide elements for Cook County and all jurisdictions; and Volume 2 addresses jurisdiction-specific elements in annexes for each participating jurisdiction.

Chapter 1 Introduction

This chapter provides the following introductory information regarding hazard mitigation planning and its purpose.

- Why Prepare this Plan?
- Who Will Benefit from this Plan?
- How to Use this Plan

1.1 Why Prepare This Plan

This section presents information on the big picture of hazard mitigation planning, the primary hazards of concern in the Cook County area, and the purpose that the hazard mitigation plan and its planning process serves.

1.1.1 The Big Picture

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) required state and local governments to develop hazard mitigation plans as a condition for federal mitigation grant assistance. Prior to 2000, federal disaster funding focused on disaster relief and recovery, with limited funding for hazard mitigation planning. The DMA increased the emphasis on planning for disasters before they occur.

The DMA encourages state and local authorities to work together on pre-disaster planning and promotes sustainability for disaster resistance. “Sustainable hazard mitigation” includes the sound management of natural resources and the recognition that hazards, and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps local governments articulate accurate needs for mitigation, resulting in the faster allocation of funding and more cost-effective risk reduction projects.

This plan also meets FEMA planning requirements of the National Flood Insurance Program’s (NFIP) Community Rating System (CRS). CRS allows participating communities to earn credit toward discounts in flood insurance premiums. FEMA requires that mitigation plans be updated and readopted every five years.

1.1.2 Local Concerns

Natural hazards impact citizens, property, the environment, and the economy of Cook County. Dam and levee failure, drought, earthquake, flooding, severe weather, severe winter weather, and tornadoes are examples of hazards that have exposed Cook County residents and businesses to the financial and emotional costs of recovering after natural disasters.

The inevitability of natural hazards, a large and diverse population, and extensive critical infrastructure and critical facilities in Cook County created an urgent need to develop and update strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future hazard events. Identifying risks posed by hazards and developing strategies to reduce the impact of a hazard event can help protect the life and property of citizens and communities. To accomplish these objectives, Cook County and a coalition of planning partners prepared this hazard mitigation plan and are committed to the continual update and maintenance of this important document. Several factors inform this planning effort:

- The Cook County area has significant exposure to numerous natural hazards that have caused hundreds of millions of dollars in past damage.
- Limited local resources make it difficult to be pre-emptive in risk reduction actions. Being able to leverage federal financial assistance is paramount to successful hazard mitigation in the area.
- The partners wanted to be proactive in their preparedness for the probable impacts of natural hazards.

With these factors in mind, Cook County committed to the continued preparation and maintenance of the plan by attaining grant funding for the effort and then securing technical assistance to facilitate a planning process that would comply with all program requirements related to this update.

1.1.3 Purpose for Planning

This hazard mitigation plan identifies resources, information, and strategies for reducing risk from natural hazards. Elements and strategies in the plan were selected because they meet a program requirement and because they best meet the needs of the planning partners and their citizens. One of the benefits of multi-jurisdictional planning is the ability to pool resources and eliminate redundant activities within a planning area with uniform risk exposure and vulnerabilities. The Federal Emergency Management Agency (FEMA) encourages multi-jurisdictional planning under its guidance for the DMA. The plan will help guide and coordinate mitigation activities throughout the planning area. The plan was updated to meet the following objectives:

- Meet or exceed the requirements of the DMA, specifically new guidance that became effective on April 19, 2023.
- Enable all planning partners to continue using federal grant funding to reduce risk through mitigation.
- Meet the needs of each planning partner as well as state and federal requirements.
- Update the risk assessment that focuses on Cook County hazards of concern.
- Create a single planning document that integrates all planning partners into a framework that supports partnerships within the County and puts all partners on the same planning cycle for future updates.
- Meet the planning requirements of FEMA's Community Rating System (CRS), allowing planning partners that participate in the CRS program to maintain or enhance their CRS classifications.
- Coordinate existing plans and programs so that high-priority mitigation actions are funded and implemented.

1.2 Who Will Benefit from this Plan?

All residents and organizations within the defined planning area are the ultimate beneficiaries of this hazard mitigation plan. The plan reduces risk for those who live in, work in, and visit the County and provides a viable planning framework for foreseeable natural hazards that may impact the County as well. It is also highly likely that secondary benefits will fall to those immediately outside of the planning area as well, not to mention the benefit that comes to state and federal entities and resources by having hazards competently addressed at the local level.

Participation in the development of the plan by key stakeholders in the County helped ensure that outcomes will be mutually beneficial for all involved. The resources and background information in the plan are applicable countywide, and the plan's goals and recommendations can lay groundwork for the development and implementation of further local mitigation activities and partnerships.

1.3 How to Use This Plan

This plan has been set up in two volumes so that elements that are jurisdiction-specific can easily be distinguished from those that apply to the whole planning area:

- **Volume 1** includes all federally required elements of a disaster mitigation plan that apply to the entire planning area. This includes the description of the planning process, public involvement strategy, goals and objectives, countywide hazard risk assessment, countywide mitigation actions, and a plan maintenance strategy. The following appendices at the end of Volume 1 include information or explanations to support the main content of the plan:
  - Appendix A - Acronyms and Definitions
  - Appendix B - Plan Process and Development Documentation
  - Appendix C - Public Participation Documentation
  - Appendix D - Annual Progress Report Template and Process
  - Appendix E - Jurisdictional Linkage Strategy
  - Appendix F - Plan Adoption Resolutions from Planning Partners

- **Volume 2** includes all federally required jurisdiction-specific elements, in annexes for each participating jurisdiction.

All planning partners will adopt Volume 1 and the Countywide annex in (Volume 2) in its entirety. They will also adopt their respective jurisdiction-specific annex within (Volume 2).

Chapter 2 Plan Methodology

To update the 2024 Cook County MJ-HMP, the County followed a process that had the following primary objectives:

- Secure grant funding
- Form a planning team
- Establish a planning partnership
- Define/Reassess the planning area
- Engage the Steering Committee and Participating Jurisdictions
- Coordinate with other agencies
- Review existing programs
- Engage the public

These objectives are discussed in the following sections.

2.1 Grant Funding

This planning effort was supplemented by a grant to the Cook County Department of Emergency Management and Regional Security (EMRS) from FEMA through the Illinois Emergency Management Agency (IEMA). FEMA/IEMA hazard mitigation grants provide 75 percent in federal funds for a plan, or a project and 25 percent non-federal funds are required as matching funds.

2.2 Formation of the Planning Team

Cook County hired Integrated Solutions Consulting (ISC) to assist with the update and implementation of the plan. The Integrated Solutions Consulting project manager and lead project planner reported directly to a County-designated project manager. A planning team was formed to lead the planning effort, made up of the following key members:

- Griffin Byers, Cook County EMRS
- Kim Nowicki, Cook County EMRS
- Caitlin McElroy, Cook County PIO
- Sharon Cuncannan, Cook County Finance
- Daiko Abe, Integrated Solutions Consulting
- George DeTella, Integrated Solutions Consulting
- Melissa Rome, Integrated Solutions Consulting

2.3 Establishment of the Planning Partnership

Each jurisdiction desiring to join the planning partnership was asked to provide a "letter of intent to participate" that designated a point of contact for the jurisdiction and confirmed the jurisdiction's commitment to the process and understanding of expectations.

Cook County townships were invited to participate in meetings and workshops throughout the planning process. Townships are included, and meet DMA planning requirements, through the County's adoption of the 2024 Cook County MJ-HMP.

2.4 Defining the Planning Area

The planning area was defined as all incorporated and unincorporated areas of Cook County as well as the incorporated areas of cities that cross county boundaries.

All partners to this plan have jurisdictional authority within this planning area. Other municipalities that are partially in Cook County, and are participating in the mitigation planning efforts of adjacent counties (and not Cook County) are identified below:

- Barrington Hills - Cook, Kane, Lake and McHenry
- Bartlett - Cook, DuPage and Lake
- Bensenville - Cook and DuPage
- Burr Ridge - Cook and DuPage
- Deer Park - Cook and Lake
- Deerfield - Cook and Lake
- East Dundee - Cook and Kane
- Elmhurst - Cook and DuPage
- Frankfort - Cook and Will
- Hinsdale - Cook and DuPage
- Oak Brook - Cook and DuPage
- Roselle - Cook and DuPage
- Woodridge - Cook, DuPage and Will

2.5 The Steering Committee

Hazard mitigation planning enhances collaboration and support among diverse parties whose interests can be affected by hazard losses. In 2014, a steering committee was initially formed to oversee all phases of the plan. The members of this committee included key planning partner staff, elected officials, citizens, and other stakeholders from within the planning area. The steering committee was, again, instrumental in the update of the 2024 Cook County MJ-HMP.

During the 2024 update of the Plan, the steering committee agreed to meet as often as needed throughout the course of the plan's development. The planning team facilitated each steering committee meeting, which addressed a set of objectives based on the work plan established for the plan. The steering committee met multiple times from March 2024 through June 2024.

The steering committee was responsible for:

- The updating and prioritizing of natural hazards that impact Cook County
- Defining critical facilities and providing necessary updates
- Updating the plan's mission, goals, and objectives
- The overall planning area's capability assessment and consideration of mitigation alternatives
- The identification of new mitigation actions and the update of past countywide mitigation action items

The recommendations of the steering committee were provided to the planning partners via a series of webinars and workshops.

The membership of the steering committee that supported the 2024 Cook County MJ-HMP update is detailed in the following table (*Table: Steering Committee Membership*).

Table: Steering Committee Membership **2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan (MJ-HMP) Update**		
Agency / Organization	***Name***	***Title***
American Red Cross	Joy Medrano	External Relations Manager
American Red Cross	Robb Morford	Senior Disaster Program Manager
Salvation Army	Karen Hanton	Emergency Disaster Services Manager
Army Corp of Engineers	Kira Baltutis	Safety Data Coordinator / Contracts Specialist
Cook County Dept. of Transportation and Highways (DOTH)	John McNelis*	Supervising Engineer / Township Liaison
Cook County Dept. of Environment and Sustainability Hazmat	Kevin Schnoes*	Deputy Director
Cook County Dept. of Environment and Sustainability Hazmat	Ricardo Magallon	Manager, Air Inspection Division
Cook County Environment and Sustainability (Climate)	Sarah Edwards	Program Manager
Cook County Bureau of Asset Management	Andrew Williams-Clark	Director, Build up Cook
Cook County Bureau of Asset Management	Cindy Cambray	Relationship Manager
Cook County Bureau of Economic Development	Dominic Tocci	Deputy Bureau Chief
Cook County Bureau of Economic Development	Cheryl Cooke	Deputy Director of Community Development
Cook County Dept. of Emergency Management and Regional Security (EMRS)	Kim Nowicki	Regional Planner
Cook County Forest Preserves	John McCabe	Resource Manager
Cook County Forest Preserves	Troy Showerman	Resource Project Manager
Cook County Dept. of Building and Zoning	Tim Bleuher	Commissioner
Cook County Dept. of Building and Zoning	Mike Fazio	Deputy Commissioner
Illinois Department of Natural Resources, Office of Water Resources	Marilyn Sucoe	NFIP Coordinator
Mutual Aid Box Alarm System (MABAS)	Kevin Lyne	Operations Section Chief
Mutual Aid Box Alarm System (MABAS)	Spencer Kimura	Supervisor
Metropolitan Water Reclamation District	Rick Fisher	Principal Civil Engineer
Metropolitan Water Reclamation District	Anne Wright	Public Affairs Specialist

Table: Steering Committee Membership 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan (MJ-HMP) Update		
Agency / Organization	***Name***	***Title***
City of Chicago	Matt Doughtie	Mgr. of Emergency Management Services
City of Chicago	Kyra Woods	Project Manager
Village of Homewood/Public Works Association	John Schafer	Director of Public Works
CMAP	Kate Evasic	Senior Planner
Joint Emergency Management System	Mick Fleming	Director
National Oceanic and Atmospheric Administration (NOAA)	Scott Lincoln	Senior Service Hydrologist
National Oceanic and Atmospheric Administration (NOAA)	Mike Bardou	Senior Forecaster
North Region-Schaumburg	Tracy Raimondo	Emergency Manager
Central Region- Maywood	Kendall Silas	Chief
South Region- Markham	Derrick Champion	City Administrator
Cook County Cyber Security (Bureau of Technology)	Christopher Hausken	Business Continuity Program Manager
Cook County Cyber Security (Bureau of Technology)	Hema Sundaram	Chief Technology Officer
Cook County Sheriffs Dept.	Bryan Carr	Director/Law Enforcement Liaison
Cook County Dept. of Public Health	Lori Katich	Interim Director, EPRU

2.6 Coordination with Other Agencies, Partners, and Neighboring Jurisdictions

Opportunities for involvement in the planning process must be provided to neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (Title 44 of the Code of Federal Regulations (44 CFR), Section 201.6(b)(2)).

Agency coordination was accomplished by the planning team as follows:

Steering Committee Involvement—Agency representatives were invited to participate on the Steering Committee. The Steering Committee represented a wide range of councils of governments, members of academia, government representatives, watershed management entities, and other stakeholders.

Agency Notification—The following agencies were invited to participate in the plan development process from the beginning and were kept apprised of plan development milestones:

- FEMA Region V
- Illinois Emergency Management Agency
- Metropolitan Water Reclamation District of Greater Chicago

- American Red Cross
- Salvation Army
- Army Corp of Engineers
- Cook County Dept. of Transportation and Highways
- Cook County Dept. of Environment and Sustainability Hazmat
- Cook County Environment and Sustainability
- Cook County Bureau of Asset Management
- Cook County Bureau of Economic Development
- Cook County Dept. of Emergency Management and Regional Security (EMRS)
- Cook County Forest Preserves
- Cook County Dept. of Building and Zoning
- City of Chicago Office of Emergency Management and Communications
- Cook County Cyber Security (Bureau of Technology)
- Cook County Sheriffs Dept.
- Cook County Dept. of Public Health
- Illinois Department of Natural Resources, Office of Water Resources
- Mutual Aid Box Alarm System (MABAS)
- CMAP
- National Oceanic and Atmospheric Administration (NOAA)

These agencies received meeting announcements, meeting agendas, and meeting minutes by e-mail throughout the plan development process. These agencies supported the effort by attending meetings or providing feedback on issues.

These agencies received meeting announcements, meeting agendas, and meeting minutes by e-mail throughout the plan development process. These agencies supported the effort by attending meetings or providing feedback on issues.

Neighboring Counties—The following counties were invited to participate in the plan development process and were kept apprised of plan development milestones. They are Lake County, IL; Will County, IL; DuPage County, IL; McHenry County, IL; and Kane County, IL.

EMRS briefed the Metro-County Emergency Management Coordinators Monthly Meeting on Cook County's ongoing update to its Multi-Jurisdictional Hazard Mitigation Plan (MJ-HMP).

Table: Additional Neighboring Community Participation

Neighboring Jurisdiction	Organization	Participation Description
Kane County, IL	Office of Emergency Management	Invited to review and comment on the draft plan. Briefed and updated at the Metro-County Emergency Management Coordinators Monthly Meeting
McHenry County, IL	Emergency Management Agency	Invited to review and comment on the draft plan. Briefed and updated at the Metro-County Emergency Management Coordinators Monthly Meeting
Lake County, IL	Emergency Management Agency	Invited to review and comment on the draft plan. Briefed and updated at the Metro-County Emergency Management Coordinators Monthly Meeting
DuPage County, IL	Office of Homeland Security and Emergency Management	Invited to review and comment on the draft plan. Briefed and updated at the Metro-County Emergency Management Coordinators Monthly Meeting
Will County, IL	Emergency Management Agency	Invited to review and comment on the draft plan. Briefed and updated at the Metro-County Emergency Management Coordinators Monthly Meeting

Border Municipality Outreach and Integration:

The Planning Team determined twenty-two (22) municipalities sharing a border – border municipality – with Cook County and one or more other counties. These counties include DuPage, Kane, Lake, McHenry and Will.

The Planning Team decided the most comprehensive approach for a border municipality was to recommend and encourage each municipality to participate in all appropriate county mitigation planning. This includes municipalities already participating in the Cook County 2019 HMP and the 2024 MJ-HMP Update. In the development of the 2024 MJ-HMP the Planning Team did increase the number of border municipality multi-county participation from eight to nine.

Cook County, once the 2024 MJ-HMP is complete, will continue to support the Mitigation Program, which was implemented in 2019. As part of the Mitigation Program, during the annual review and update process, Cook County will continue to promote and encourage the border counties and municipalities to participate in all appropriate mitigation planning and programs. This inter-county coordination will provide municipalities with more and simplified mitigation funding opportunities.

Table: Border Municipalities

No	Jurisdiction Name	Cook County Region	Counties	2019 Cook Plan Participation	2024 Cook Plan Participation	County Plan Participation
1	Barrington	North Region	Cook and Lake	Yes	Yes	Lake 2022 Cook 2024
2	Barrington Hills	North Region	Cook, Kane, Lake and McHenry	No	No	Lake 2022
3	Bartlett	North Region	Cook, DuPage and Lake	Yes	No	DuPage 2023 Cook 2019
4	Bensenville	Central Region	Cook and DuPage	No	No	DuPage 2023
.5	Buffalo Grove	North Region	Cook and Lake	No	Yes	Lake 2022 Cook 2024
6	Burr Ridge	Central Region	Cook and DuPage	No	No	DuPage 2023
7	Deerfield	North Region	Cook and Lake	No	No	Lake 2022
8	Deer Park	North Region	Cook and Lake	No	No	Lake 2022
9	East Dundee	North Region	Cook and Kane	No	No	Kane 2024
10	Elgin	North Region	Cook and Kane	No	Yes	Kane 2024 Cook 2024
11	Elk Grove Village	North Region	Cook, DuPage and Lake	Yes	Yes	DuPage 2023 Cook 2024
12	Elmhurst	Central Region	Cook and DuPage	No	No	DuPage 2023
13	Frankfort	South Region	Cook and Will	No	No	Will County 2020
14	Hanover Park	North Region	Cook and DuPage	Yes	Yes	DuPage 2023 Cook 2024
15	Hinsdale	Central Region	Cook and DuPage	No	No	DuPage 2024
16	Lemont	South Region	Cook, DuPage and Will	Yes	Yes	DuPage 2023 Cook 2024
17	Oak Brook	Central Region	Cook and DuPage	No	No	DuPage 2023
18	Park Forest	South Region	Cook and Will	Yes	Yes	Will 2020 Cook 2024

No	Jurisdiction Name	Cook County Region	Counties	2019 Cook Plan Participation	2024 Cook Plan Participation	County Plan Participation
19	Roselle	North Region	Cook and DuPage	No	No	DuPage 2023
20	Steger	South Region	Cook and Will	Yes	Yes	Will 2020 Cook 2024
21	University Park	South Region	Cook and Will	Yes	Yes	Will County 2020 Cook 2024
22	Woodridge	South Region	Cook, DuPage and Will	No	No	DuPage 2023

Neighboring Communities and Adverse Impacts

One of the benefits of using the Online Planning System, and organizing jurisdictions by North, Central and South regions, was to ensure neighboring communities had full visibility of each other's mitigation initiatives. This was done to ensure synergies were identified, when applicable, and that mitigation actions in one community would not adversely impact another nearby community. During the mitigation workshops, community representatives were encouraged to collaborate with neighboring jurisdictions during the update and identification of new mitigation strategies.

Pre-Adoption Review—All participating municipalities and the Steering Committee were provided an opportunity to review and comment on this plan. Each agency was sent an e-mail message informing them that draft portions of the plan were available for review.

2.7 Local Jurisdiction Plan Participation

Local Planning Team activities included the following below. Each region in the corresponding subsections (i.e. North Region Participation, Central Region Participation, etc.) indicates the level of participation by each jurisdiction. This section explains, in greater detail, the key activities and supporting documentation. More information about each of these activities is also provided in the following section: Plan Participation Validation.

<u>Annual Report Update</u>

In 2020, due to COVID19, Cook County EMRS did not request all participating jurisdictions of the 2019 Cook County MJ-HMP to submit a 2020 Annual Report Update.

Cook County EMRS requested all participating jurisdictions of the 2019 Cook County MJ-HMP to submit Annual Report Updates for 2021, 2022, and 2023, which included any new hazards, status updates on their mitigation efforts, and any new mitigation projects.

<u>2024 Letter of Intent</u>

Cook County EMRS requested all jurisdictions in Cook County to submit a Letter of Intent, demonstrating their commitment to being part of the 2024 MJ-HMP.

Mitigation Orientation Webinar

A series of webinars to introduce the mitigation planning process to local officials was conducted. In total, seven (7) webinars were conducted over a three-week period, including morning, afternoon, and evening webinars. Of the 125 participating jurisdictions, 116 jurisdictions (including Cook County Departments and Organizations) attended at least one webinar session.

Regional Mitigation Meeting/Workshops

Five (5) workshops were strategically held throughout Cook County to identify hazards and update and consider new mitigation strategies, including one workshop for the City of Chicago. Workshop topics and activities helped participants integrate and consider input from the public regarding key hazards of concerns and potential mitigation strategies. This was done by sharing results from the mitigation survey that was made available to county residents.

As Needed Local Outreach Meetings

The Planning Team worked with individual jurisdictions and planning partners in order to provide one-on-one guidance and support. Local outreach meetings occurred on an as-needed basis.

2024 Municipal HMP Annex

As part of the 2024 MJ-HMP update, all participating jurisdictions and planning partners were required to create and/or update their respective Municipal HMP Annex. Each municipal annex included the following information:

- Hazard Mitigation Plan Point of Contact
- Jurisdiction Profile
- Capability Assessment
- Jurisdiction-Specific Natural Hazard Event History
- Hazard Risk Ranking
- Hazard Mitigation Actions
- Future Needs to Better Understand Risk/Vulnerability
- Additional Comments
- Hazard Mapping

New Mitigation Actions

Each participating jurisdiction was required to consider and, if appropriate and needed, submit at least one new mitigation action as part of the 2024 MJ-HMP. New mitigation actions are documented in each respective Municipal HMP Annex.

2024 MJ-HMP and Municipal Annex Review and Approval

As part of the draft review and approval process, each participating jurisdiction was asked to review the 2024 MJ-HMP and their respective Municipal Annex. Jurisdictions were able to provide their approval, or any additional changes/improvements, by utilizing the online planning system's "Comment" tool.

Online Planning System

The Online Planning System (https://cookcountydhsem.isc-cemp.com), Cook County EMRS Knowledge Management System (KMS), gave members of the Steering Committee and Local Planning Team access to 2019 MJ-HMP and 2024 MJ-HMP Update resources, including documents and forms, instructions and examples, and contact for Project Team members. In addition, the Online Planning System featured real-time access to the Plan and comment functionality. Crucially, the latter provided users the ability to directly interact with Project Team members, encouraging engagement throughout the planning process and collaboration. The comment function was intuitive, allowing users to quickly acclimate to the system:

To make a comment, users were instructed to click on the Comment link on the bottom of the content page and a pop-up box would appear. The person used the drop-down box to designate whether the comment was a Feedback or an Observation. After entering the comment, they clicked the Send Comments button to submit.

- The comments tool allowed the user to make comments on any page within the manual and mark the comment as an observation or feedback.
- The comments for pages were visible to all administrators and users who had editing privileges for the specific page.
- The comment would appear after the page refreshes (if user is allowed to view comments). An email notification was sent to users who were designated to receive comment notification.

The jurisdictions listed in the table below were represented by one or more municipal officials. Representatives not only attended the meetings, but also participated by gathering appropriate data and historical information, completed the community preparedness survey, participated in their community hazard analysis, identified new mitigation strategies, updated past mitigation strategies, and participated in other efforts (i.e. webinars, phone interviews, and reviewing drafts).

Local mitigation planning team representatives and their contact information and the documentation of participation in the Plan update are available in Volume 2.

2.7.1 North Region Participation

Municipality	2019 MJ-HMP Participation	Annual Reports (Years Participated)	2024 MJ-HMP Letter of Intent (LOI)	FEMA PTAS	Attended Webinar	Attended Mitigation Workshop	As Needed Local Outreach Meeting	Community Mitigation Survey Participation	2024 Annex Updated	2024 MJ-HMP Annex Review/ Approval
Arlington Heights	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Barrington	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Buffalo Grove	No	-	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Des Plaines	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Elgin	No	-	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Elk Grove Village	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Evanston	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Glencoe	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Glenview	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Golf	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Hanover Park	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Hoffman Estates	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Inverness	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Kenilworth	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Lincolnwood	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Morton Grove	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Mount Prospect	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Niles	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Northbrook	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Northfield	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Palatine	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Park Ridge	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Prospect Heights	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes			Yes	Yes
Rolling Meadows	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Schaumburg	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Skokie	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
South Barrington	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes			Yes	Yes
Streamwood	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Wheeling	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Wilmette	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Winnetka	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes

2.7.2 Central Region Participation

Municipality	2019 MJ-HMP Participation	Annual Reports (Years Participated)	2024 MJ-HMP Letter of Intent (LOI)	FEMA PTAS	Attended Webinar	Attended Mitigation Workshop	As Needed Local Outreach Meeting	Community Mitigation Survey Participation	2024 Annex Updated	2024 MJ-HMP Annex Review/ Approval
Bellwood	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Berkeley	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Berwyn	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Broadview	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Brookfield	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
City of Chicago	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Cicero	Yes	2021, 2022, 2023	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Countryside	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Elmwood Park	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Forest Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Forest View	Yes	2021, 2022	Yes		Yes	Yes			Yes	Yes
Franklin Park	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Harwood Heights	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Hillside	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Hodgkins	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Indian Head Park	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
LaGrange	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
LaGrange Park	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Lyons	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Maywood	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
McCook	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Melrose Park	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Norridge	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Northlake	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
North Riverside	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Oak Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes

River Forest	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
River Grove	Yes	2021, 2022, 2023	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Riverside	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Rosemont	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Schiller Park	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Stickney	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Stone Park	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Westchester	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Western Springs	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes

2.7.3 South Region Participation

Municipality	2019 MJ-HMP Participation	Annual Reports (Years Participated)	2024 MJ-HMP Letter of Intent (LOI)	FEMA PTAS	Attended Webinar	Attended Mitigation Workshop	As Needed Local Outreach Meeting	Community Mitigation Survey Participation	2024 Annex Updated	2024 MJ-HMP Annex Review/ Approval
Alsip	Yes	2021, 2022, 2023	Yes			Yes		Yes	Yes	Yes
Bedford Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Blue Island	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Bridgeview	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Burbank	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Burnham	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Calumet City	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Calumet Park	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes
Chicago Heights	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Chicago Ridge	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Country Club Hills	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Crestwood	Yes	2021, 2022, 2023	Yes	Yes	yes	Yes		Yes	Yes	Yes
Dixmoor	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes			Yes	Yes
Dolton	Yes	2021				Yes		Yes	Yes	Yes
East Hazel Crest	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Evergreen Park	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Flossmoor	Yes	2021, 2022, 2023, 2022	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Ford Heights	Yes	2021, 2022	Yes			Yes			Yes	Yes

Municipality	2019 MJ-HMP Participation	Annual Reports (Years Participated)	2024 MJ-HMP Letter of Intent (LOI)	FEMA PTAS	Attended Webinar	Attended Mitigation Workshop	As Needed Local Outreach Meeting	Community Mitigation Survey Participation	2024 Annex Updated	2024 MJ-HMP Annex Review/ Approval
Glenwood	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Harvey	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Hazel Crest	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Hickory Hills	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Hometown	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Homewood	Yes	2021, 2022	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Justice	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Lansing	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Lemont	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Lynwood	Yes	2021	Yes		Yes	Yes		Yes	Yes	Yes
Markham	Yes	2021, 2022, 2023	Yes			Yes		Yes	Yes	Yes
Matteson	Yes	2021, 2022	Yes	Yes		Yes		Yes	Yes	Yes
Merrionette Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Midlothian	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes			Yes	Yes
Oak Forest	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Oak Lawn	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Olympia Fields	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Orland Hills	Yes	2021, 2022, 2023	Yes			Yes		Yes	Yes	Yes
Orland Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Palos Heights	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
Palos Hills	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Palos Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Park Forest	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Phoenix	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Posen	Yes	2021, 2022	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Richton Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Riverdale	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Robbins	Yes	2021, 2022	Yes		Yes	Yes		Yes	Yes	Yes
Sauk Village	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
South Chicago Heights	Yes	2021, 2022, 2023	Yes		Yes	Yes		Yes	Yes	Yes
South Holland	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Steger	Yes	2021. 2023	Yes		Yes		Yes	Yes	Yes	Yes
Summit	Yes	2021, 2022, 2023	Yes		Yes		Yes	Yes	Yes	Yes

Municipality	2019 MJ-HMP Participation	Annual Reports (Years Participated)	2024 MJ-HMP Letter of Intent (LOI)	FEMA PTAS	Attended Webinar	Attended Mitigation Workshop	As Needed Local Outreach Meeting	Community Mitigation Survey Participation	2024 Annex Updated	2024 MJ-HMP Annex Review/ Approval
Thornton	Yes	2021, 2022, 2023	Yes		Yes	Yes			Yes	Yes
Tinley Park	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
University Park	Yes	2021, 2023	Yes	Yes		Yes			Yes	Yes
Willow Springs	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Worth	Yes	2021, 2022, 2023	Yes	Yes	Yes	Yes			Yes	Yes

2.7.4 Plan Participation Validation

Appendix B: Plan Process and Development Documentation provides the necessary detail and documentation of the various plan development activities that took place during the update of the 2024 Cook County MJ-HMP.

The appendix details plan participation validation for local jurisdictions. In accordance with best practices as outlined in CPG 101, Cook County EMRS and its partners embraced the whole community approach throughout the 2024 MJ-HMP Update process, involving civic leaders, community representatives and organizations, and the general public. Understanding that critical infrastructure and key resources (CIKR), as well as public opinion and hazard likeliness, can dramatically change in a five-year period, the EMRS and its partners leveraged in-person, on-site outreach opportunities to educate stakeholders and collect and validate the information. To support the 2024 MJ-HMP Update process, the following were facilitated for jurisdiction leaders and POCs:

- Annual Report Participation
- Letters of Intent
- Local Government Meetings
- Webinars
- Hazard Mitigation Planning Workshops

2.8 Review of Existing Plans and Programs

Hazard mitigation planning must include review and incorporation, if appropriate, of existing plans, studies, reports and technical information (44 CFR, Section 201.6(b)(3)). Chapter 4: Cook County Profile provides a review of laws and ordinances in effect within the planning area that can affect hazard mitigation actions. In addition, the following programs can affect mitigation within the planning area:

- The 2023 Illinois Natural Hazard Mitigation Plan
- Hazard mitigation plans for the adjacent counties of Lake, DuPage, and Will
- The Cook County Stormwater Management Plan and Annual Reports (developed by the Metropolitan Water Reclamation District of Greater Chicago)
- The Cook County Watershed Management Ordinance
- Six detailed watershed plans developed by the Metropolitan Water Reclamation District of Greater Chicago (Lower Des Plaines, Poplar Creek, Upper Salt Creek, Little Calumet River, Cal-Sag Channel, and the Chicago River, North Branch)
- Next Century Conservation Plan for the Forest Preserve District of Cook County.
- Transition Report Mayor Brandon Johnson (2024)

An assessment of all planning partners' regulatory, technical, and financial capabilities to implement hazard mitigation actions is presented in the individual jurisdiction-specific annexes in Volume 2. Many of these relevant plans, studies and regulations are cited in these capability assessments.

2.9 Updates of Prior Plans

Cook County completed its previous MJ-HMP in 2019. Integrated Solutions Consulting and the planning team reviewed the 2019 plan prior to beginning this five-year update process for 2024.

2.10 Public Involvement

Broad public participation in the planning process helps ensure that diverse points of view about the planning area's needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR, Section 201.6(b)(1)). The Community Rating System (CRS) expands on these requirements by making CRS credits available for optional public involvement activities. The Cook County EMRS with partners Integrated Solutions Consulting, Inc. (ISC), and the Metropolitan Water Reclamation District (MWRD) engaged Cook County stakeholders and its citizens prior to and throughout the 2024 MJ-HMP Update process. Per Federal Emergency Management Agency (FEMA) Comprehensive Preparedness Guide 101 (CPG 101) guidance, our public outreach efforts encompassed all 125 participating jurisdictions, leveraging our expertise to educate the population and engage them in developing new mitigation actions. The following section details our public outreach strategy, including a combination of in-person and virtual methods.

2.10.1 Public Involvement Strategy

Elements of virtual public outreach included the 2024 Cook County Preparedness Survey, local government meetings, social media, such as Twitter and NextDoor, and hazard mitigation plan public meetings. The physical component of the outreach efforts focused on maximizing attendance at hazard mitigation meetings.

Appendix C: Public Participation Documentation details the specific activities and results from the Planning Team's public outreach efforts.

2024 Cook County Community Preparedness Survey

An integral component of the 2024 MJ-HMP public involvement strategy was the use of a questionnaire. To engage the whole community in the MJ-HMP Update process, EMRS and ISC developed the 2024 Cook County Community Preparedness Survey to engage the general public by providing information on the update process while collecting and validating information from citizens throughout all 135 jurisdictions. The 31-question web-based tool was used to gauge household preparedness for natural hazards and the public's knowledge of tools and techniques that assist in reducing risk and loss from natural hazards. The results of the survey were used by the Steering Committee to guide them in developing objectives and mitigation strategies.

The survey was accessible to the public from April 24, 2024, to May 31, 2024, via multiple websites, including the City of Chicago Office of Emergency Management and Communications (OEMC) website. In addition, a link to the survey was disseminated through various social media platforms, local government websites, and press releases (see Survey Outreach). As emphasized in the National Response Framework (NRF), resilient communities are borne out of prepared individuals and strong leadership across governments, agencies, and businesses. Accordingly, the survey gauged the community's overall resiliency by collecting hundreds of responses from respondents that represent the diverse backgrounds of the County.

1,498 individuals entered the survey with 969 completing the full survey by answering every question. A copy of the survey, as well as a summary of results, is presented in 2024 Cook County Community Preparedness Survey Results in Appendix C.

2024 Hazard Mitigation Plan Meetings

Cook County EMRS, with the help of ISC and MWRD, facilitated four successful public meetings across the North, South, and Central regions of the County.

The public meetings focused on educating the public on what hazard mitigation is, what it means, and how to work together to create a more resilient community. This included formal presentations, interactive group discussions, and defining new mitigation actions within each participants' respective jurisdiction.

2024 Hazard Mitigation Plan Website and Draft

A web site dedicated specifically to hazard mitigation was developed so the public would have continual access to the hazard mitigation plan process and subsequent updates. Bulletins, fact sheets, a draft of the 2024 MJ-HMP, and mitigation success stories were hosted on the dedicated website. The website will be maintained to ensure the public has continual engagement and input on new and ongoing mitigation strategies.

Website: https://www.cookcountyemergencymanagement.org/reducing-risk-response/2024-hazard-mitigation-plan-update

Cook County Invites Residents to Review 2024 Hazard Mitigation Plan Draft

Cook County's Department of Emergency Management and Regional Security (EMRS) invites the public to review the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan, which is undergoing a mandatory five-year update.

Cook County is committed to improving its emergency preparedness and mitigation capabilities, and community involvement in the process is crucial to its success. Cook County experienced two major Presidential disaster declarations in 2023 due to natural hazards, underscoring the need for this important work. There are two ways for the public to participate in this plan update.

Cook County is currently seeking stakeholder and public comment on the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan draft, which can be accessed by clicking the link below.

LINK TO DRAFT PLAN: PUBLIC VERSION CookCounty.2024.MJ-HMP.Vol1 (DRAFT).pdf

Comments can be submitted by using the feedback form below.

LINK TO FORM: https://integratedsolutions.wufoo.com/forms/comment-form-cook-county-hazard-mitigation-plan/

The 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan is designed to help communities reduce the impact of natural hazards. The public meetings will assist the County in identifying and prioritizing the services, disaster-related projects and capabilities the community may need during an emergency.

The federal government requires local and state governments to have a FEMA-approved hazard mitigation plan as established by the Disaster Mitigation Act of 2000 to qualify for Hazard Mitigation Assistance (HMA) funding. These programs are critical sources of federal funding, especially for a community that wants to proactively initiate mitigation projects or for a community that needs Hazard Mitigation Grant Program (HMGP) funding following a presidential disaster declaration.

For more information about the Cook County Multi-Jurisdictional Hazard Mitigation Plan, visit: https://www.cookcountyemergencymanagement.org/reducing-risk-response/2024-hazard-mitigation-plan-update

2.10.2 Community Stakeholders and Organizations

Throughout the planning process, key stakeholders and community organizations were involved in providing key input, data, disseminating information about the Plan, meetings, and reviewing the draft of the plan.

Community organizations were invited to participate in the Community Stakeholder Webinar series. This webinar was for key community stakeholders to participate in the planning process of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. Organization given an opportunity to advise on the complexities of natural hazards and their impacts in Cook County and to identify possible mitigation projects needed to address these concerns. The webinar dates were:

- Wednesday, May 22, 2024, | 1 p.m. to 2:30 p.m.
- Friday, May 24, 2024, | 9 a.m. to 10:30 a.m.

74 individuals representing various community organizations attended the two webinars.

Appendix C: Public Participation Documentation details the specific activities and results from the Planning Team's public outreach efforts.

2.11 Plan Development Chronology/Milestones

The table below summarizes important milestones in the 2024 update of the Cook County MJ-HMP.

Plan Development Milestones			
Date	**Event**	**Description (meeting objectives)**	**Attendance**
2019			
2019	Submit and Adopt the 2019 Cook County MJ-HMP		N/A
2020 – No activity			
2021			
2021	Annual Reports begin in 2021 for Cook County MJ-HMP – no reports required in 2020 due to COVID19		N/A
2022			
2022	Annual Reports submitted for the Cook County MJ-HMP		N/A
2023			
2023	Annual Reports submitted for the Cook County MJ-HMP		N/A
2024			
April 2024	Letters of Intent submitted by planning partners		N/A
April and May 2024	Countywide Webinars and Workshops		See Appendix B
May and June 2024	Update the 2024 Cook County MJ-HMP		N/A
July 2024	Submit the 2024 Cook County MJ-HMP		N/A

PART 2. RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, injury or disability, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on a sound risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people.

Chapter 3 Identified Hazards of Cook County

Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. It allows emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets. The process focuses on the following elements:

- **Identify hazards**—Use all available information to determine what types of disasters may affect a jurisdiction, how often they can occur, and their potential severity.
- **Assess vulnerability**—Determine the impact of natural hazard events on the people, property, environment, economy, and lands of the region.
- **Estimate cost**—Estimate the cost of potential damage that could be avoided by mitigation.

The risk assessment for this hazard mitigation plan evaluates the risk of natural hazards prevalent in the planning area and meets requirements of the DMA (44 CFR, Section 201.6(c)(2)).

3.1 Identified Hazards of Concern

For this plan, the Steering Committee considered the full range of natural hazards that could impact the planning area and then listed hazards that present the greatest concern. The process incorporated review of state and local hazard planning documents, as well as information on the frequency, magnitude, and costs associated with hazards that have impacted or could impact the planning area. Anecdotal information regarding natural hazards and the perceived vulnerability of the planning area's assets to them was also used. Based on the review, this plan addresses the following hazards of concern:

- Dam/levee failure
    - Dam Failure
    - Levee Failure
- Drought
- Earthquake
- Flood
    - Riverine Flooding
    - Urban Flooding
    - Coastal Flooding
        - Seiche
        - Coastal Erosion
- Severe Summer Storms
    - Extreme Heat
    - Lightning
    - Hail
    - Fog
    - High Winds
- Severe Winter Storms
    - Snow
    - Blizzards
    - Ice Storms
    - Extreme Cold and Wind Chill

- Tornado
- Wildfire

3.2 Other Hazards of Interest (Human-caused and Technological Hazards)

Although FEMA does not require non-natural hazards for inclusion in a hazard mitigation plan, Cook County wishes to rank and mitigate against a comprehensive list of hazard events that could impact the county. Due to the nature of non-natural hazards and the discretionary status regarding their inclusion, the following hazards of interest have been briefly and qualitatively assessed for public education and informing their inclusion within the hazard ranking and mitigation process:

- Epidemic or Pandemic
- Nuclear Power Plant Incidents
- Secondary Impacts from Incoming Evacuees
- Widespread Power Outage
- Hazardous Material Incident
  - Fixed Site
  - Transportation
  - Nuclear
- Civil Disturbance
- Active Shooter/Active Assailant
- Hostage Situation
- Terrorism & WMD Incident
- Sabotage
- Cyber Attacks
- Fire or Explosion
- Utility Failure: Electrical, Gas, Telecommunications (includes internet), Sewer, Water, and Pipeline
- Commercial/Industrial Transportation Accidents
  - Air
  - Rail
  - Road
- Waterway
- Structural Collapse
- Infrastructure Failure
- Space Weather

Per FEMA's mandate to address all natural hazards, the following natural hazards were not included because these hazards do not directly impact Cook County due to geographic location:

- Avalanche
- Landslide
- Mine Subsidence
- Hurricane
- Sea Level Rise
- Storm Surge
- Tsunami

3.3 Presidential Disaster (DR) & Emergency Declarations (EM) in Cook County

Presidential disaster declarations are typically issued for hazard events that cause more damage than state and local governments can handle without assistance from the federal government, although no specific dollar loss threshold has been established for these declarations. A presidential disaster declaration puts federal recovery programs into motion to help disaster victims, businesses, and public entities. Some of the programs are matched by state programs. Cook County has experienced 22 events since 1967 for which presidential disaster declarations were issued. These events are listed below in the table.

TABLE: FEDERAL DISASTER DECLARATIONS FOR EVENTS IN THE PLANNING AREA		
Type of Event	**Disaster Declaration Number**	**Declaration Date**
Tornado	DR*-227	4/25/1967
Flood	DR-351	9/4/1972
Flood	DR-373	4/26/1973
Severe Storm	DR-509	6/18/1976
Snow	EM*-3068	1/16/1979
Severe Storm	DR-643	6/30/1981
Flood	DR-776	10/7/1986
Flood	DR-798	8/21/1987
Flood	DR-997	7/9/1993
Severe Storm	DR-1129	7/25/1996
Severe Storm	DR-1188	9/17/1997
Snow	EM-3134	1/8/1999
Snow	EM-3161	1/17/2001
Hurricane	EM-3230	9/7/2005
Severe Storm	DR-1729	9/25/2007
Severe Storm	DR-1800	10/3/2008
Severe Storm	DR-1935	8/19/2010

TABLE: FEDERAL DISASTER DECLARATIONS FOR EVENTS IN THE PLANNING AREA		
Type of Event	**Disaster Declaration Number**	**Declaration Date**
Snow	DR-1960	3/17/2011
Flood	DR-4116	5/10/2013
Biological	ER-3435-IL	3/13/2020
Biological	DR-4489-IL	3/26/2020
Severe Storm	DR-4728-IL	8/15/2023
Flood	DR-4749	11/20/2023

**DR indicates “major disaster declaration.” EM indicates “emergency declaration”*
Source: FEMA, 2019

TABLE: STATE DISASTER DECLARATIONS FOR EVENTS IN THE PLANNING AREA	
Date Declared	**Event**
7/26/2010	Severe Storms, High Winds, Torrential Rain
1/31/2011	Winter Weather
4/25/2011 5/25/2011	High Wind, Tornadoes, Torrential Rain
4/18/2013 4/20/2013 4/21/2013 4/25/2013 4/30/2013	Severe Storms, Heavy Rainfall, Flooding, Straight-line Winds
1/6/2014	Heavy Snowfall, Frigid Temperatures
7/12/2017 7/14/2017	Thunderstorms, Heavy Rainfall, Flooding
1/29/2019	Winter Storm
2/6/2020	Severe Storms
3/12/2020	COVID-19
2/16/2021	Winter Storms
2/1/2022	Winter Storms
8/1/2022	Monkeypox

The National Oceanic and Atmospheric Administration (NOAA) data is the primary source utilized in the Hazard Mitigation Plan. Below is a summary of all the hazards that were counted by NOAA. Further analysis of the data set is available for each hazard under the "Past Events" sections. NOAA does not collect data on Earthquakes and Dam and Levee Failures. Additional data was utilized and is analyzed in the hazard profiles.

TABLE: SUMMARY OF EXTENT OF NATURAL HAZARDS					
Hazard	**Total Events 1950-2023**	**Total Property Damage**	**Total Crop Damage**	**Total Deaths (Direct)**	**Total Injuries (Direct)**
Drought	19	$0	$0	0	0
Extreme Cold/Wind Chill	18	$0	$0	34	5
Extreme Heat	18	$750,000	$0	36	0
Flood: Riverine	168	$7.2M	$0	2	0
Flood: Urban	160	$1.052B	$0	1	0
Flood: Costal	2	$0	$0	0	0
Fog	0	$0	$0	0	0
Hail	577	$18.839M	$0	0	0
High Winds	68	$1.303M	$0	4	15
Ice Storm	3	$0	$0	0	0
Lightning	56	$6.537M	$0	3	18
Tornado	67	$118.338M	$0	39	771
Winter Storm	46	$0	$0	5	0
TOTAL	**1,202**	**$1,204,967,000**	**$0**	**124**	**809**

**Crop damage would only include what has been reported (typically reported to USDA for insurance or grant purposes). Sources: NOAA*

Additionally, NOAA data illustrated two natural hazard incidents resulting death or significant financial loss between 2014 and 2023:

- **Flash Flooding - April 2014:** Scattered thunderstorms produced heavy rain and severe winds across northeastern Illinois during the early evening hours. Additional thunderstorms developed overnight producing heavy rain that resulted in flooding. Several locations reported storm total rains of over four inches, including 4.53 inches by the co-op observer near Midway Airport. Much of this precipitation fell within a short time period. During the storm, the co-op observer near Midway measured several times reporting 1.80 inches at 17 minutes, 2.75 inches at 27 minutes, and 3.60 inches at the 40-minute mark.
    - Major flooding impacted portions of the southwest suburbs of Chicago. Numerous streets were flooded and impassable with several feet of water in Burbank and Oak

Lawn. Numerous cars stalled in the flooded streets and many basements were inundated with water. Multiple lanes and the shoulder were flooded and closed on I-294 at Route 171. Over three feet of water was reported in the viaduct at Kedzie Avenue and 79th Street where a fire truck stalled trying to pass through.

  - **Total Loss:** $50 Million
- **Extreme Cold / Wind Chill – January 2014**: An extremely cold arctic airmass settled over northern Illinois with minimum observed wind chills falling into the -40F to -50F range area-wide. Some of the coldest wind chill reports include Steward at -50F; Aurora at -47F; Rochelle at -47F; DuPage at -46F; Romeoville at -46F; Rockford at -46F; and O'Hare airport at -42F.
  - **Total Loss:** Four deaths were reported in Cook County, with hypothermia due to cold exposure being a contributing factor in each.
- **Extreme Cold / Wind Chill – January 2014:** Following a strong arctic front, temperatures plummeted across northern Illinois with breezy conditions leading to wind chill values falling into the -30F to -35F range.
  - **Total Loss:** An elderly woman died due to complications of hypothermia and cold exposure.

Review of the declared disaster events and loss-causing hazard events helps identify targets for risk reduction and ways to increase a community's capability to avoid large-scale events in the future.

3.4 Risk Assessment Methodology

3.4.1 Probability of Occurrence

The probability of occurrence of a hazard is indicated by a probability factor based on the likelihood of annual occurrence:

- **High**—Significant hazard event is likely to occur annually (Probability Factor = 3)
- **Medium**—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)
- **Low**—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)
- **Unlikely**—There is little to no probability of significant occurrence, or the recurrence interval is greater than every 100 years (Probability Factor = 0)

The assessment of hazard frequency is generally based on past hazard events in the area.

3.4.2 Extent

Extent was assessed in two categories: extent/intensity and catastrophic potential of the hazard. Numerical impact factors were assigned as follows:

Extent/Intensity—Extent is defined as the range of anticipated intensities of the identified hazards. Extent is most commonly expressed using various scientific scales, such as the Enhanced Fujita scale.

- **High**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a high-intensity incident (Extent Factor = 3)
- **Medium**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a medium-intensity incident (Extent Factor = 2)
- **Low**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a low-intensity incident (Extent Factor = 1)

- **Unlikely**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of little to no intensity (Extent Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic.

- **High**—High potential that this hazard could be catastrophic (Extent Factor = 3)
- **Medium**—Medium potential that this hazard could be catastrophic (Extent Factor = 2)
- **Low**—Low potential that this hazard could be catastrophic (Extent Factor = 1)
- **Unlikely**—Virtually no potential that this hazard could be catastrophic (Extent Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *Extent/Intensity* and its potential for *Catastrophe*.

3.4.3 Vulnerability

Vulnerabilities were assessed in three categories: population exposure, property exposure, and exposure based on changes in development. Numerical impact factors were assigned as follows:

People—Values were assigned based on the percentage of the total population exposed to the hazard event.

- **High**—30% or more of the population is exposed to this hazard (Vulnerability Factor = 3)
- **Medium**—15% to 29% of the population is exposed to this hazard (Vulnerability Factor = 2)
- **Low**—14% or less of the population is exposed to this hazard (Vulnerability Factor =1)
- **No Vulnerability**—None of the population is exposed to this hazard (Vulnerability Factor = 0)

Property Exposed—Values were assigned based on the percentage of the total property value exposed to the hazard event.

- **High**—25% or more of the total assessed property value is exposed to the hazard (Vulnerability Factor = 3)
- **Medium**—10% to 24% of the total assessed property value is exposed to the hazard (Vulnerability Factor = 2)
- **Low**—9% or less of the total assessed property value is exposed to the hazard (Vulnerability Factor = 1)
- **No Vulnerability**—None of the total assessed property value is exposed to the hazard (Vulnerability Factor = 0)

Changes in Development Factor—Changes in development since the previous plan was approved have increased or decreased the community's vulnerability/exposure to this hazard.

- **High**—Changes in development have significantly increased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 3)
- **Medium**—Changes in development have increased the vulnerability/exposure of the community to this hazard, but not significantly (Vulnerability Factor = 2)
- **Low**—Changes in development have minimally increased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 1)

- **No Vulnerability**—Changes in development have had no effect and/or have decreased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *People*, and a weighting factor of 1 was assigned for *Property Exposed* and *Changes in Development*.

3.4.4 Impact

Hazard impacts were assessed in eight categories: population and life/safety, underserved/equity, property damages, economic, environmental, essential operations, future development, and climate change. Numerical impact factors were assigned as follows:

Population and Life/Safety—Values were 1). assigned based on best available data (historical and probabilistic) for populations vulnerable to the hazard event, and 2). are likely to experience adverse impacts from the hazard incident.

- **High**—Populations exposed to this hazard are likely to experience significant adverse impacts (Impact Factor = 3)
- **Medium**—Populations exposed to this hazard are likely to experience some adverse impacts (Impact Factor = 2)
- **Low**—Populations exposed to this hazard are likely to experience minimal adverse impacts (Impact Factor = 1)
- **No impact**—Populations exposed to this hazard are not likely to experience significant adverse impacts (Impact Factor = 0)

Underserved/Equity—Values were 1). assigned based on best available data for underserved populations vulnerable to the hazard event, and 2). are likely to experience adverse/disproportionate impacts from the hazard incident resulting in greater disparity in equity.

- **High**—Underserved populations exposed to this hazard are likely to experience significant adverse/disproportionate impacts (Impact Factor = 3)
- **Medium**—Underserved populations exposed to this hazard are likely to experience some adverse/disproportionate impacts (Impact Factor = 2)
- **Low**—Underserved populations exposed to this hazard are likely to experience minimal adverse/disproportionate impacts (Impact Factor = 1)
- **No impact**—Underserved populations exposed to this hazard are not likely to experience significant adverse/disproportionate impacts (Impact Factor = 0)

Property Damages—Values were assigned based on the expected total property damages incurred from a hazard incident. It is important to note that values represent estimates of the loss from a major incident based on historical data or probabilistic models/studies.

- **High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)

- **Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- **Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- **No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, crops, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).

- **High**—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
- **Medium**—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
- **Low**—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
- **No Impact**—Virtually no significant economic impact (Impact Factor = 0)

Environmental Factor—Environmental impact from a single major hazard event requiring outside resources and support; and/or repair, clean-up, restoration, and/or preservation work.

- **High**— Environmental impact from a single major hazard event is likely to be significant, requiring extensive outside resources and support; and/or repair, clean-up, restoration, and/or preservation work (Impact Factor = 3)
- **Medium**—Environmental impact from a single major hazard event is likely to be localized, requiring some outside resources and support; and/or repair, clean-up, restoration, or preservation work (Impact Factor = 2)
- **Low**— Environmental impact from a single major hazard event is likely to be minimal, requiring little to no outside resources and support; and/or minimal repair, clean-up, restoration, or preservation work (Impact Factor = 1)
- **No impact**— No environmental impacts from a single major hazard event is likely (Impact Factor = 0)

Essential Operations Factor—Impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event.

- **High**—Significant impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 3)
- **Medium**—Some impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 2)
- **Low**—Minimal impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 1)

- **No Impact—**No impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 0)

Future Development Factor—The potential that future development will have on increasing or decreasing the impact/consequence of this hazard.

- **High—**Future development trends will significantly increase the impact/consequence of this hazard (Impact Factor = 3)
- **Medium—**Future development trends will increase the impact/consequence of this hazard, but not significantly (Impact Factor = 2)
- **Low—**Future development trends will minimally increase impact/consequence of this hazard (Impact Factor = 1)
- **No Impact—**Future development trends will not increase the impact/consequence of this hazard, and/or may even decrease the impact/consequence of this hazard (Impact Factor = 0)

Climate Change Factor—The potential that Climate Change will increase the risk of this hazard (i.e., type, location, and range of anticipated intensities of the identified hazard and impacts).

- **High—**Climate Change trends will significantly increase the risk of this hazard and its impacts (Impact Factor = 3)
- **Medium—**Climate Change trends will increase the risk of this hazard and its impacts, but not significantly (Impact Factor = 2)
- **Low—**Climate Change trends will minimally increase the risk of this hazard and its impacts (Impact Factor = 1)
- **No Impact—**Climate Change trends will not increase the risk of this hazard and its impacts (Impact Factor = 0)

Public Confidence Factor— The impact public confidence and trust will have on the community's ability to effectively manage an incident.

- **High Impact—**The public lacks significance confidence in their local community's ability to manage an incident, increasing the risk of this hazard and its impacts (Impact Factor = 3)
- **Medium Impact—** The public, or segments of the public, lack some confidence in their local community's ability manage an incident, slightly increasing the risk of this hazard and its impacts (Impact Factor = 2)
- **Low Impact—** The public has a fair level of confidence in their local community's ability manage an incident related to this hazard (Impact Factor = 1)
- **No Impact—** The public has a high level of confidence in their local community's ability manage an incident related to this hazard (Impact Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *Population and Life Safety* and *Underserved/Equity*, and a weighting factor of 2 was assigned for *Property Damages*. A weighting factor of 1 was assigned for *Economic*, *Environmental, Essential Operations*, *Future Development, Climate Change,* and *Public Confidence*.

3.4.5 FEMA NRI Risk Scores

The National Risk Index (NRI) is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather. Because not all hazards are applicable to the County, only those hazards with a defined risk to the County are included.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

3.4.6 Social Vulnerability

Social Vulnerability measures the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

Per the FEMA National Risk Index, Cook County has a Social Vulnerability Rating of: **Very High**

The "Social Vulnerability Score” and “Rating” represent the relative level of a community’s social vulnerability compared to all other communities at the same level. A community’s Social Vulnerability Score is also proportional to a community’s risk. A higher Social Vulnerability Score results in a higher Risk Index Score (FEMA, 2024).

Social vulnerability is also one of five components included in the formulation of the “National Risk Index Score”, in addition to community resilience, estimated annual loss (EAL) based on exposure, annualized frequency, and historic Loss Ratio (HLR) factors (FEMA, 2024).

Table: Social Vulnerability FEMA NRI Score

Social Vulnerability for Cook County, IL FEMA NRI SOCIAL VULNERABILITY SCORE	
Social Vulnerability Score	**Social Vulnerability Rating**
80.0	Very High
Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).	
Source: hazards.fema.gov/nri/social-vulnerability	

3.4.7 Community Resilience

Community Resilience measures a community's ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

Table: Community Resilience FEMA NRI Score

Community Resilience for Cook County, IL FEMA NRI COMMUNITY RESILIENCE SCORE	
Community Resilience Score	**Community Resilience Rating**
72.57	Relatively High
Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).	
Source: hazards.fema.gov/nri/community-resilience	

3.4.8 Expected Annual Loss

Table: Expected Annual Loss FEMA NRI Score (All Natural Hazards)

Expected Annual Loss for Cook County, IL FEMA NRI EXPECTED ANNUAL LOSS SCORE	
Expected Annual Loss Score	**Expected Annual Loss Rating**
99.6	Very High
Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio).	
Source: hazards.fema.gov/nri/expected-annual-loss	

3.4.9 FEMA National Risk Index Score

Table: Overall FEMA NRI Score

FEMA Overall NRI Score for Cook County, IL FEMA OVERALL NRI SCORE	
FEMA Overall NRI Score	**FEMA Overall NRI Rating**
99.6	Very High
Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. (Expected Annual Loss X Social Vulnerability / Community Resilience = Risk Index).	
Source: hazards.fema.gov/nri/determining-risk	

3.5 Overall Risk Scores

The following tables represent the new overall risk scores for Cook County based on the methodology described above. Following a data-driven quantitative assessment, the planning team utilized subject matter knowledge and expertise and further refined the scores. FEMA NRI Scores, as appropriate and applicable, were used to inform the analysis.

3.5.1 Cook County Overall Risk Scores

	Probability	Consequence				Total Risk
Hazard Event	**Probability Factor**	**Sum of Weighted Extent Factors**	**Sum of Weighted Vulnerability Factors**	**Sum of Weighted Impact Factors**	**Consequence Score**	**Total Risk Score** (Probability x Consequence)
Flood (Urban/Flash Flood)	3	15	12	30	57	79
Severe Winter Weather: Blizzards	3	15	16	24	55	77
Severe Winter Weather: Snow	3	12	16	21	49	70
Severe Weather: High Winds	3	9	16	16	41	60
Flood (Riverine/Creek)	2	15	11	31	57	56
Severe Winter Weather: Ice Storms	2	15	16	25	56	55
Severe Weather: Extreme Heat	2	12	12	30	54	54
Tornado	2	15	6	30	51	51
Severe Winter Weather: Extreme Cold	2	12	12	20	44	45
Drought	2	12	12	18	42	43
Coastal/Shoreline Flooding	2	12	6	23	41	42
Earthquake	2	9	16	16	41	42
Severe Weather: Lightning	3	6	6	14	26	41
Severe Weather: Hail	2	9	11	16	36	38
Severe Weather: Fog	2	9	6	14	29	32
Wildfire	2	6	6	15	27	30
Dam and levee failure	1	15	6	27	48	27

3.5.2 Hazard Risk Scores Legend

Probability Factor		**Sum of Weighted Extent Factors**		**Sum of Weighted Vulnerability Factors**		**Sum of Weighted Impact Factors**		**Consequence Score**		**Total Risk Score**	
1	Low (L)	0–6	Low (L)	0–6	Low (L)	0–12	Low (L)	0–25	Low (L)	0–24	Low (L)
2	Medium (M)	7–12	Medium (M)	7–12	Medium (M)	13–26	Medium (M)	26–50	Medium (M)	25–59	Medium (M)
3	High (H)	13–18	High (H)	13–18	High (H)	27–39	High (H)	51–75	High (H)	60–100	High (H)

** The **Legend** – specifically the assignment of low, medium, and high—provides an additional means to qualitatively assess the probability factor, sum of weighted factors, and the total risk scores for each hazard.*
** The **Consequence Score** represents the sum of the Extent, Vulnerability, and Impact Factors.*
** The **Total Risk Score** is a measure of Probability and Consequence.*

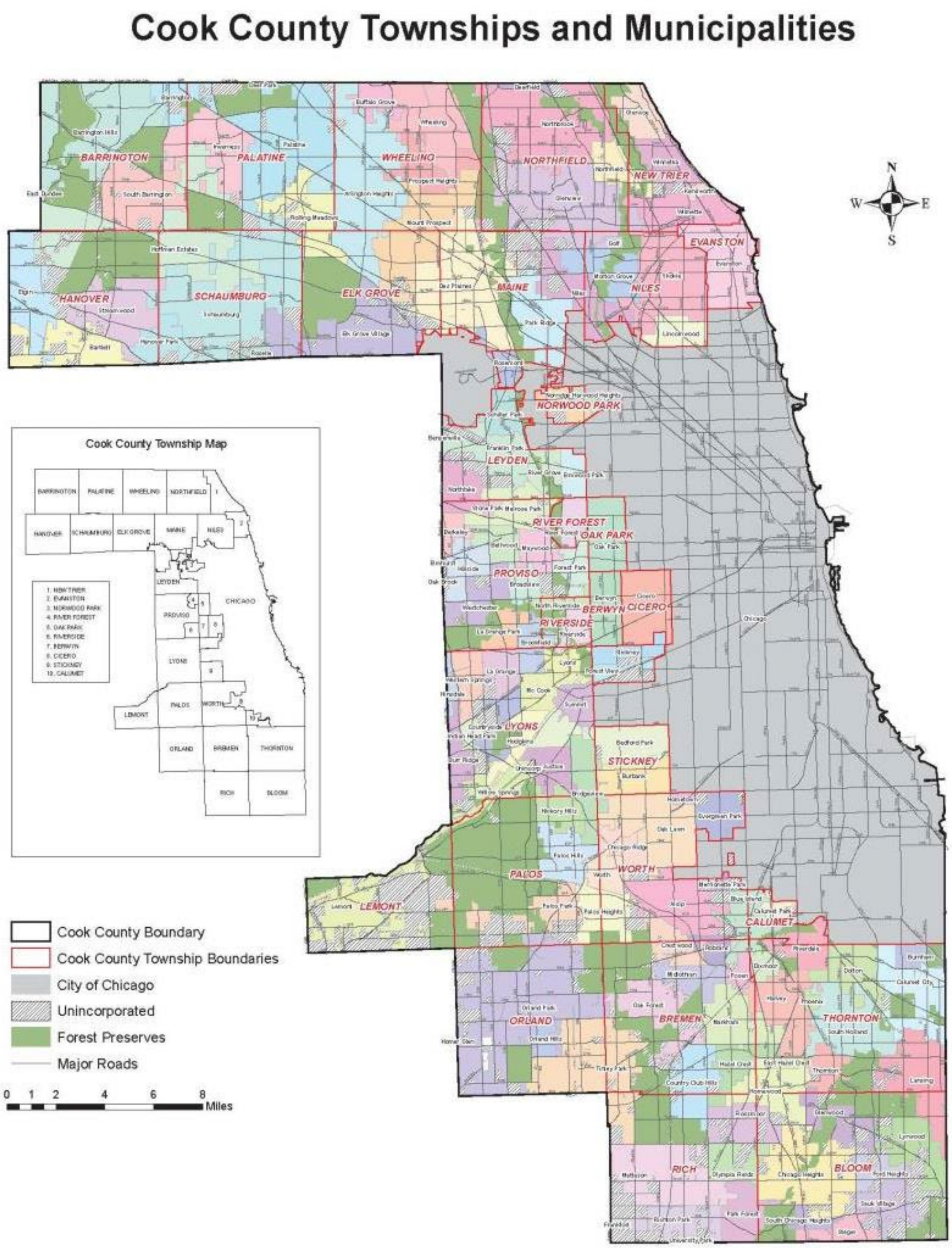
Chapter 4 Cook County Profile

Cook County was created on January 15, 1831. The County is located in the upper northeastern section of the State of Illinois and has more than 800 local governmental units (Cook County Website).

Cook County is located in northeast Illinois on the western shore of Lake Michigan. It is the most populous of Illinois' 102 counties, with a 2013 estimated population of 5.24 million, 2018 estimate of 5.18 million, and 2023 estimate of 5.08 million, according to the U.S. Census Bureau and World Population Review. It is the sixth largest county in the state by area, covering 946 square miles. Cook County makes up approximately 40 percent of the population of Illinois. The surrounding counties are Lake and McHenry to the north, Kane, and DuPage to the west, and Will to the southwest. Lake Michigan is the county's eastern border.

Cook County is the second most populous county in the United States, after Los Angeles County (World Population Review). According to the Cook County Government Website, the County contains 135 municipalities, covering about 85 percent of the area of the county. The remaining unincorporated areas are under the jurisdiction of the Cook County Board of Commissioners, a 17-member board elected by district (Cook County Website).

Figure: Cook County with Municipalities



4.1 Jurisdiction and Attractions

The City of Chicago is the county seat. Based on Census Data, the 2023 estimated population size of Chicago is over 2.6 million. Given that the 2023 population estimate for the entire County was 5.08 million, the City of Chicago makes up more than half of the entire County's population. The land area of the City of Chicago covers roughly 24 percent of the county's area and is one the nation's top ten most populous cities, currently following only New York City and Los Angeles (US Census). The 135 municipalities in the county range in size from Chicago with over 2.6 million residents to small communities such as Thornton, Kenilworth, East Hazel Crest, East Dundee, and Phoenix with fewer than 3,000 residents. The most populous jurisdictions after Chicago are Elgin, Cicero, Arlington Heights, Evanston, Schaumburg, Palatine, and Skokie (Cook County Government Website Open Data).

In 1914, Cook County was the first place to create a forest preserve. The Forest Preserve District of Cook County, with nearly 70,000 acres, is the largest forest preserve district in the United States and receives an estimated 62 million visitors each year (Forest Preserve District of Cook County, 2019). Other major attractions in the Cook County area include the Lincoln Park Zoo, Brookfield Zoo, Lake Michigan beaches, Chicago's Museum Campus, and the Chicago Botanic Garden.

4.2 Historical Overview

Cook County was established as Illinois' 54th county on January 15, 1831, around the site of the Fort Dearborn settlement at the mouth of the Chicago River. The county was named after Daniel Pope Cook, an early Illinois political figure. Cook County elected its first officials on May 7, 1831. (Cook County, 2013). The following history of subsequent county growth is summarized from the Chicago Historical Society (Chicago Historical Society, 2013):

When the county was organized in 1831 with approximately 100 residents in 2,464 square miles, it encompassed much of today's Lake, DuPage, Will, McHenry, and Cook counties. By 1839, it had reduced in area to its current boundaries and had expanded to a population of over 4,000.

The 1830s and 1840s were dominated in the county by agriculture. Chicago, Wheeling, Gross Point, Lyons, Summit, Brighton, Willow Springs, Calumet, Blue Island, and Thornton were agricultural centers, serving farmers with stores, churches, and schools.

In 1848, Cook County was subdivided into 27 townships, which took on some of the county responsibilities: collecting taxes, running schools, supervising elections, and maintaining local roads.

Urban development spread from 1860 through 1890. Chicago's 1889 annexation shifted more than 225,000 county residents to within the city and expanded the city's physical size from 43 to 169 square miles. About 90 percent of the county's population lived in the city at that time.

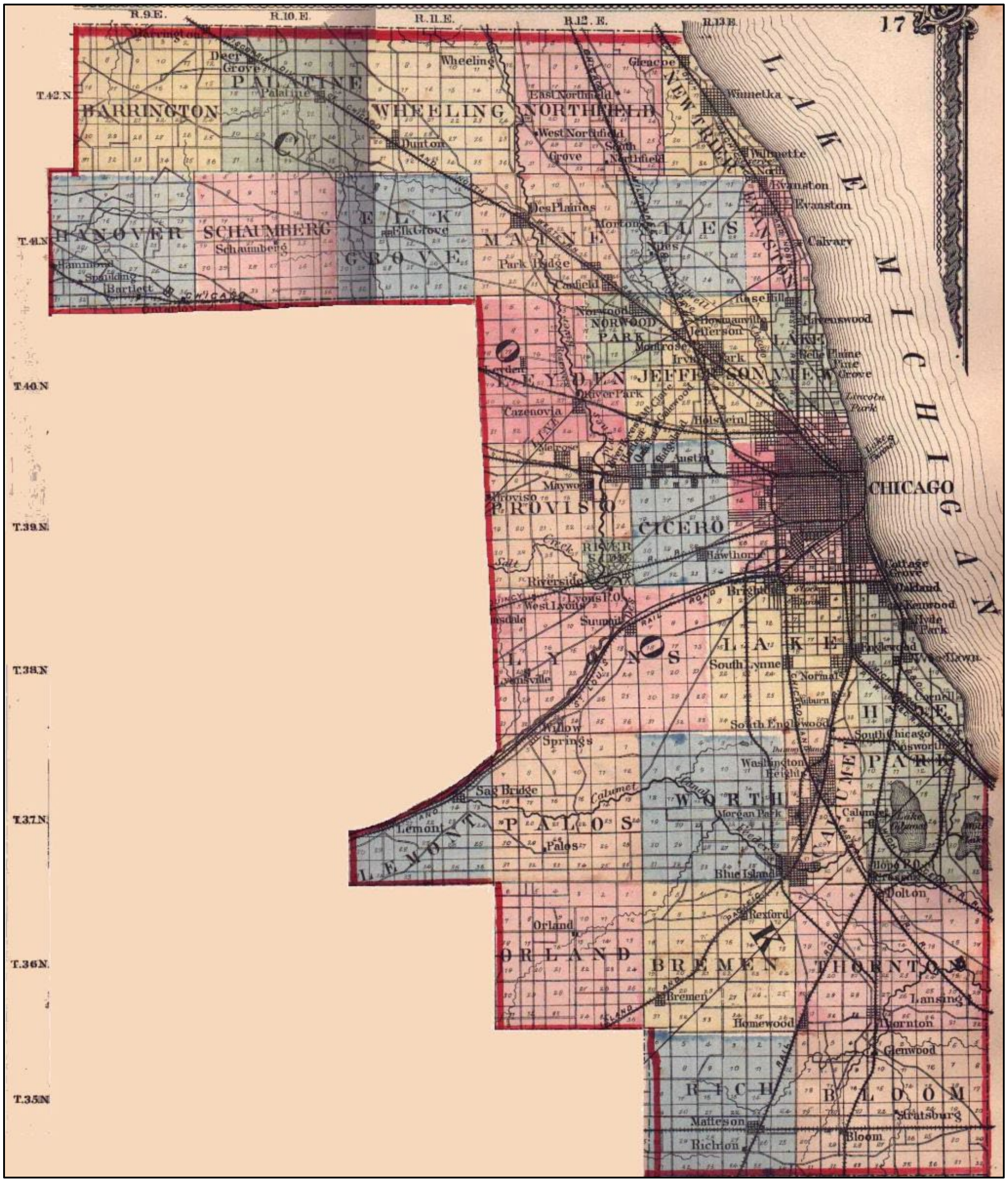
Farming in Cook County did not disappear, but outlying growth by 1900 was largely suburban.

With the spread of the population to suburban communities, the proportion of the county's population living in Chicago dropped to 83 percent by the 1940s. Skokie and Oak Lawn were among the most quickly growing suburbs during the 1950s and 1960s.

The 1970s and 1980s saw the development of most of the remaining farmland in the county. By then, contiguous urban growth had engulfed both the remaining farms and the suburban residential and industrial areas that had once been distinct from the city center.

No further annexation by the city took place, however, and by 1990 Chicago accounted for only 55 percent of the county's population.

Figure: 1870 Cook County Township Map



4.3 Physical Setting

This section addresses the geology of Cook County and climate.

4.3.1 Geology

The landforms of Cook County are mostly the result of glacial processes. Significant topographic features include broad level plains that were once lake beds, ridges formed as moraines marking the outer margins of glaciers, and elongated sandy spits, bars, and beach ridges formed along the shores of the ancestor lakes of present-day Lake Michigan. The highest point in Cook County is almost 1,000 feet above sea level, at the northwest corner of the county. Land over most of the county slopes gradually toward Lake Michigan to the east, intersected by north-south trending stream-cut valleys. Most of the central and southeastern portion of Cook County is a low flat plain (ISGS, 2004).

Upper-level soils are mostly the result of glacial processes. Locally, layers of sand and gravel supply residential users with good quality groundwater. According to the USDA Natural Resource Conservation Service's Web Soil Survey, there are nearly 140 distinct soil types throughout Cook County.

The greatest risk for the groundwater resources in these areas is from surface contamination of relatively shallow aquifers. More than half of Cook County is underlain by glacial till. The low flat plain in the east-central part of the county is mostly silt and clay. These sediments were deposited in the former glacial lake, are composed of silt and clay, and are not considered aquifers (ISGS, 2004).

The top of the bedrock in Cook County consists mainly of pure to silty dolomite, forming a bedrock aquifer. These rocks range in thickness from zero in small areas in the northwestern part of the county to more than 300 feet on the far eastern side along the lakeshore. The porosity and permeability of the rocks are mainly the results of fractures and dissolution cavities in the dolomite. The rock itself has no porosity. The water is recharged locally from precipitation and, where the overlying glacial materials are thin, the upper bedrock aquifer is susceptible to groundwater contamination. Greater groundwater yields are available in deeper sandstone layers (ISGS, 2004).

The Des Plaines Disturbance is in north-central Cook County. It is a roughly circular area of about 25 square miles that is intensely faulted. Some of these faults may have as much as 600 feet of vertical movement. The faulted bedrock is beneath 75 to 200 feet of glacial drift. The disturbance has been indicated as a probable meteorite-impact structure. Seismic reflection data suggest that there are numerous other faults within the bedrock of Cook County, but none are currently active (ISGS, 2004).

Cook County has large deposits of stone, gravel, sand, and clay used as building materials. The Thornton Quarry, located near Thornton in Cook County, is the largest limestone quarry in the world. The County relies on these resources as they provide jobs and millions of dollars in state revenue (USDA, 2012).

4.3.2 Climate

According to the Forest Preserves of Cook County, Illinois has faced a 1 ˚F increase in average annual temperature since the start of the 20th century. Recent climate projections predict further increases in annual temperatures and an increased frequency of extreme weather events (Sustainability and Climate Resiliency Plan). In the City of Chicago, as well as other highly paved urban areas in Cook

County, the "urban heat island" effect can raise temperatures from 4-10˚F on hot summer days (Chicago Climate Action Plan).

Typically, the Cook County area can be described as a humid continental climate with hot summers and cold winters. Generally, cold dry air from Canada dominates the area in winter, warm humid air from the Gulf of Mexico dominates in summer, and dry warm air from the Pacific Ocean dominates in the fall. High temperatures average 84°F in July and often reach 100ºF or more in summer. Low temperatures average 18°F in January and have been recorded as low as the –20s. Humidity in the summer and wind in the winter intensify the problems of extreme temperatures that endanger the population. Average rainfall for the area is 38 inches and average snowfall is 34 inches. The last spring frost typically occurs around May 1 and the first fall frost around October 15. Annually, 13.4 days reach temperatures above 90°F, which is cooler than most places in Illinois, and 113.3 reach nighttime temperatures below freezing, which is still warmer than most places in Illinois. Also on average, 5.4 days of the year, temperatures at nighttime fall below 0°F. August is the wettest month and May is the rainiest. February is both the driest month in terms of inches of rainfall and days with rain. Annually, Cook receives 123.6 days of rain.

Cook County does receive more rain and snowfall than most places in Illinois; however, the County is considered drier than most of Illinois. Typically, 6 months of the year have significant snowfall with January having 10.8 inches of snow on average (NCDC-NOAA cross-referenced to Sperling).

4.4 Land Use

Chicago Metropolitan Agency for Planning (CMAP) produced a “Lands in Transition” paper which highlighted transitioning land use. Out of the regions measured in the report, Cook County had the highest acreage of protected lands.

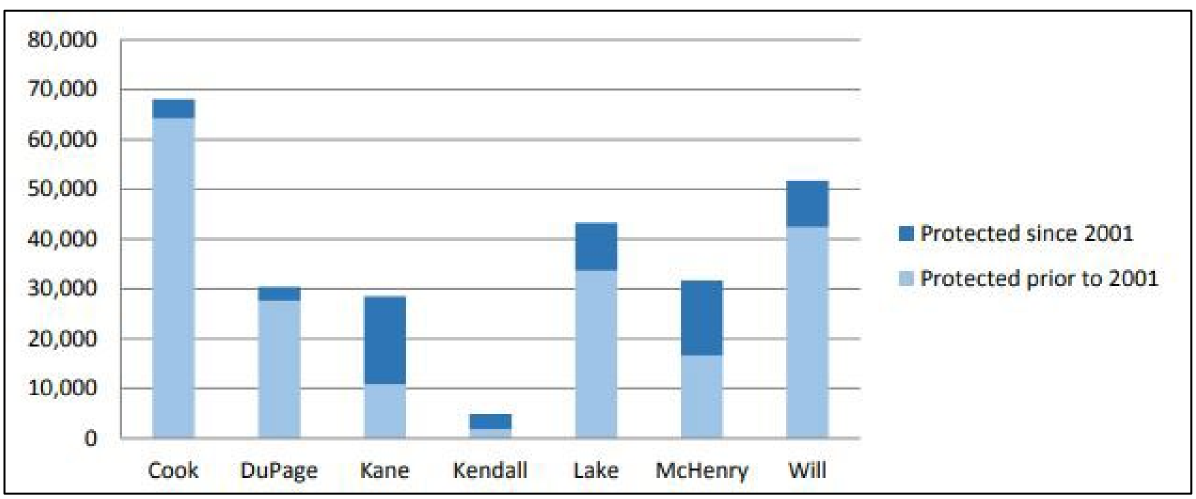


Figure: Protected land by county, in acres

Sources: CMAP Land Use Inventory, Illinois Department of Natural Resources, County Forest Preserves or Conservation Districts, Kendall County Forest Preserve District Master Plan, and I-View: Prairie State Conservation Coalition’s database of Illinois protected natural lands.

For northeastern Illinois (including Cook County), agricultural, natural, and open lands continue to transition in land use. Land use is important to hazard mitigation because combined, land development and protection decisions have impacts on the market viability of area farms, habitat connectivity of our natural areas, and the costs associated with constructing and maintaining new infrastructure and services. In turn, these decisions have ramifications not only for new residents and businesses in growing areas but also for their existing neighbors, nearby municipalities, and the region as a whole. From 2001 to 2015, nearly 140,000 acres of agricultural and natural lands were developed while 61,500 acres of land were permanently protected. The majority of this development was in DuPage and Kane County; however, development did occur in Cook County. Important to note is the previously already high development on lands in Cook County, particularly in Chicago. In Cook County, from 2011 to 2015, over 10,000 acres of natural land was developed, and 5,000 acres of agricultural land were developed. Since 2001, three-quarters of greenfield development occurred on agricultural lands, leading to a reduction of over 100,000 acres of land involved with agricultural production. While the economic impact of the loss of 100,000 acres of agricultural lands in the region is not known, it is assumed to include not only the loss of production revenues but also cascading effects on the processing and distribution-related industries in the region.

Important to hazard mitigation is understanding the impacts of development. At the watershed scale, impervious cover can lead to water pollution, erosion, and degraded stream health. The majority of Cook County exceeds 10% impervious cover threshold which impacts the health of the streams.

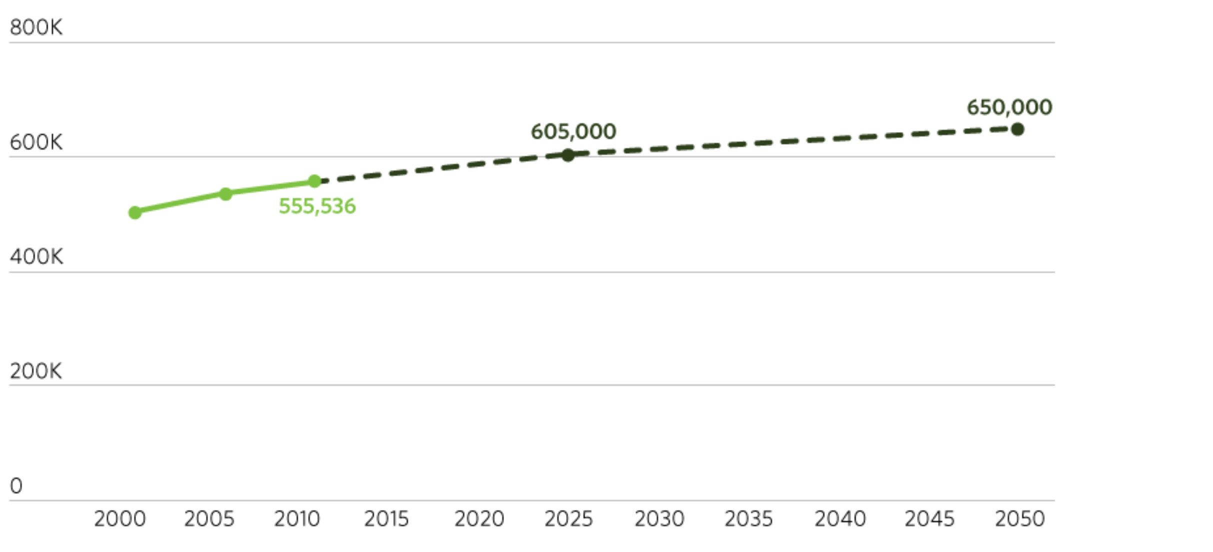


Figure: Acres of impervious area
Source: CMAP analysis of data from the United States Geological Survey (USGS) National Land Cover Database (NLCD)

4.5 Population Data and Characteristics

Information about population is a critical part of planning because it directly relates to land needs such as housing, industry, stores, public facilities and services, and transportation. A detailed population chart is found at the end of this section and the table below highlights general population characteristics.

TABLE: COOK COUNTY POPULATION ESTIMATES, JULY 1, 2023	
Population Characteristic	**Estimate / Percentage**
Population Estimate	5,087,072
Households, 2018-2022	2,066,248
Average Household Size	2.49
% Population Change, April 1, 2020, to July 1, 2023	- 3.6%
% Population Change, April 1, 2020, to July 1, 2022	- 3.1%

Sources: US Census Bureau

As noted in the table above, the U.S. Census Bureau estimates the planning area's population at 5,087,072 as of July 1, 2023 (Census). Cook County is the largest of Illinois' 102 counties by population and has the highest population density in the state, at over 5,495.1 people per square mile in 2010 and 5,583 in 2020. The graph below illustrates that population density in Cook County has been steadily declining between 2017-2023 (Open Data Network).

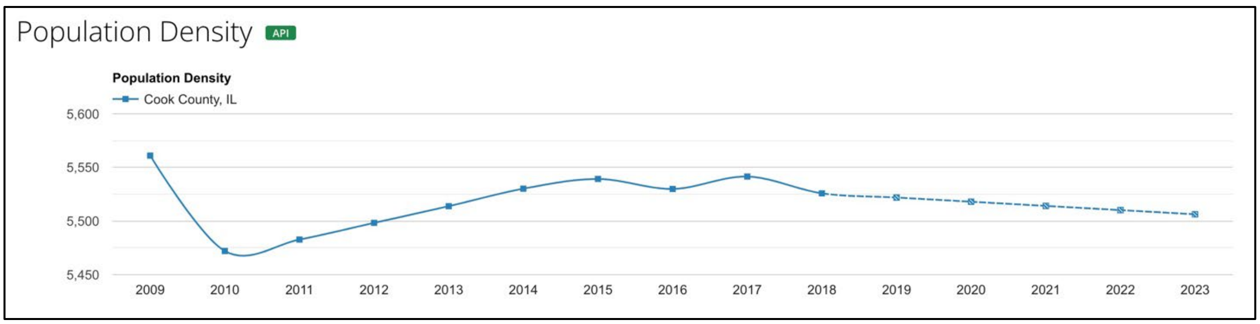
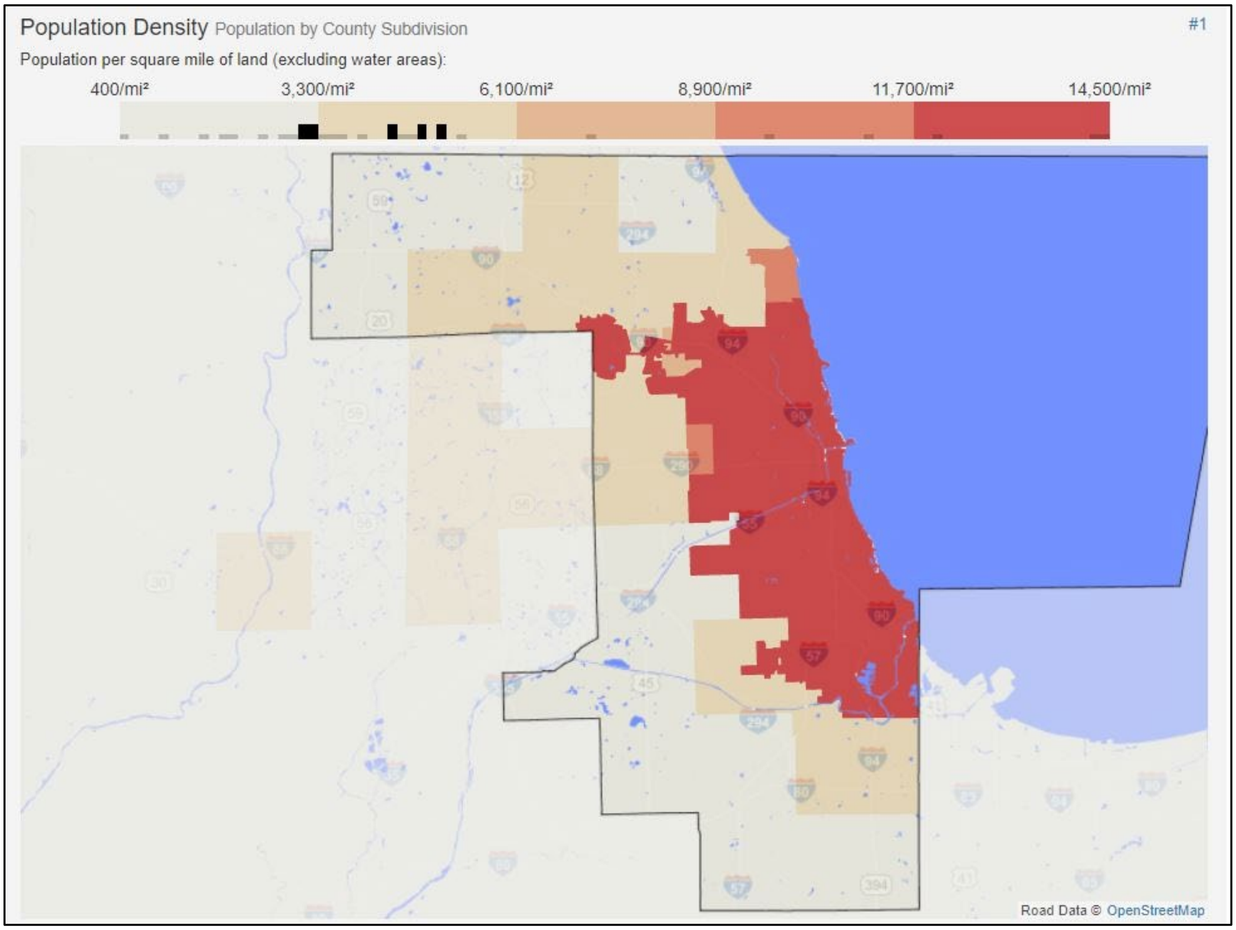


Chart: Population Density Projects
Source: Open Data Network from US Census American Community Survey, ODN Network, and API

As of July 1, 2023, the number of households was estimated to be 2,271,070 with an average of 2.49 persons per household (Census). Homeownership was 57.5% between 2018-2022, which was a slight increase from 2016 value of 56% and slightly below the US average of 57.5% in 2021 (Data USA).

In general, the population per square mile was 5,583.0 (Census, 2020). Population and population density vary drastically across the County and are highlighted in the table and map below. The map shows that the areas in red have the highest population density (11,700 to 14,500 population per square mile of land excluding water areas) and the light beige as the lowest population density (less than 3,3300 population per square mile of land excluding water areas) (Statistical Atlas).



Map: Population Density by County Subdivision

Source: Statistical Atlas *- go to site for an interactive map with population density by subdivision*

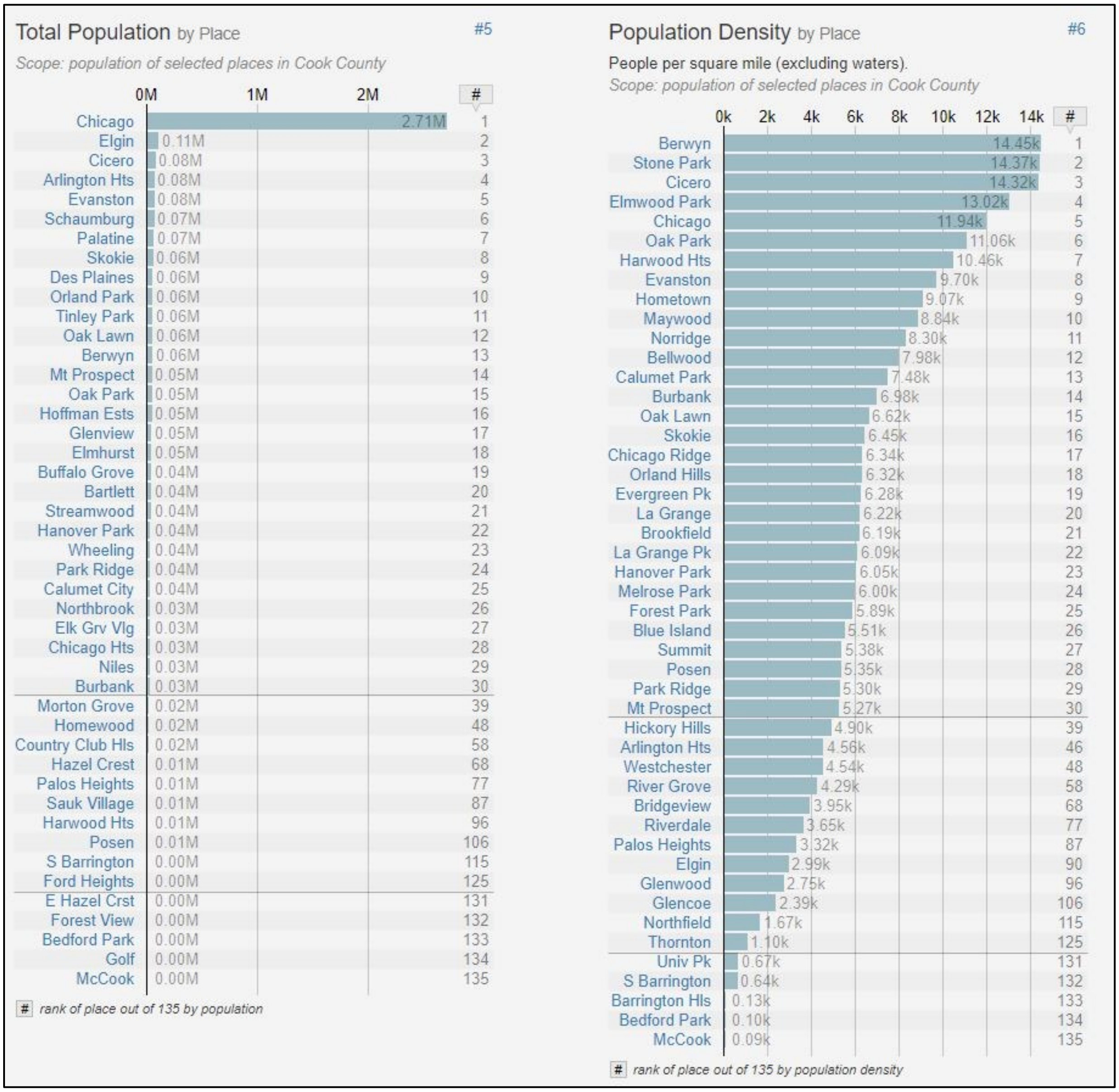


Chart: Population Total Density by County Place
Source: Statistical Atlas

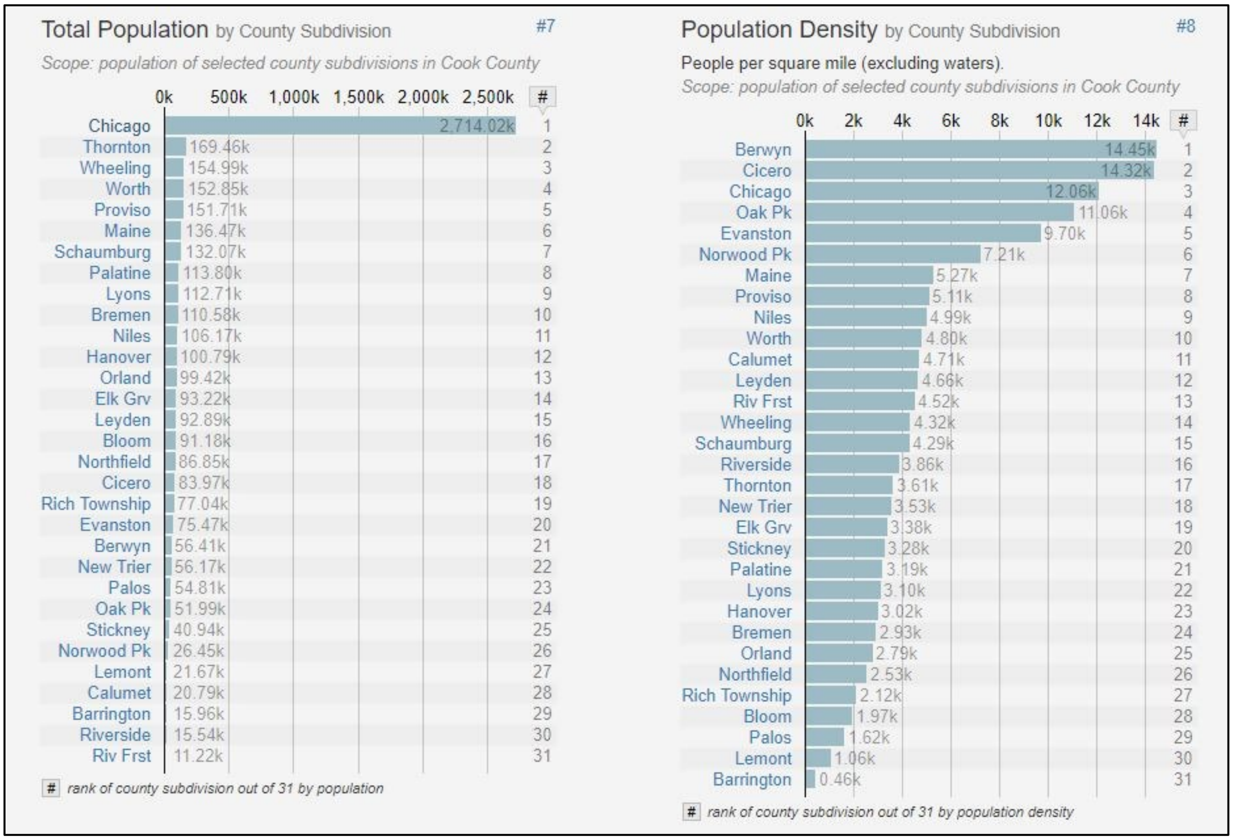


Chart: Population Total Density by County Subdivision
Source: [Statistical Atlas]

TABLE: HISTORICAL POPULATION DATA			
	Population		
	2000	**2010**	**2022**
Alsip	19,725	19,277	18,357
Arlington Heights	76,031	75,101	75,196
Barrington	10,168	—	10,545
Bartlett	36,706	—	40,154
Bedford Park	574	580	589
Bellwood	20,535	19,071	18,081
Berkeley	5,245	5,209	5,145
Berwyn	54,016	56,657	55,051
Blue Island	23,463	23,706	21,714
Bridgeview	15,335	16,446	16,467

TABLE: HISTORICAL POPULATION DATA			
	Population		
	2000	2010	2022
Broadview	8,264	7,932	7,847
Brookfield	19,085	18,978	18,776
Burbank	27,902	28,925	28,443
Burnham	4,170	4,206	4,046
Burr Ridge	10,408	—	11,192
Calumet City	39,071	37,042	34,709
Calumet Park	8,516	7,835	6,755
Chicago	2,896,016	2,695,598	2,665,039
Chicago Ridge	14,127	14,305	13,971
Cicero	85,616	83,891	81,919
Country Club Hills	16,169	16,541	16,170
Countryside	5,991	5,895	6,205
Crestwood	11,251	10,950	10,483
Des Plaines	58,720	58,364	58,594
Dixmoor	3,934	3,644	3,017
Dolton	25,614	23,153	20,621
East Hazel Crest	1,607	1,543	1,297
Elk Grove Village	34,727	—	31,659
Elmwood Park	25,405	24,883	23,604
Evanston	74,239	74,486	75,544
Evergreen Park	20,821	19,852	19,211
Flossmoor	9,301	9,464	9,339
Ford Heights	3,456	2,763	1,618
Forest Park	15,688	14,167	13,802
Forest View	778	698	792
Franklin Park	19,434	18,333	18,059
Glencoe	8,762	8,723	8,612
Glenview	41,847	44,692	47,258
Glenwood	9,000	8,969	8,662

TABLE: HISTORICAL POPULATION DATA			
	Population		
	2000	2010	2022
Golf	451	500	514
Hanover Park	38,278	—	36,376
Harvey	30,000	25,282	19,590
Harwood Heights	8,297	8,612	8,722
Hazel Crest	14,816	14,100	12,897
Hoffman Estates	13,926	51,895	50,682
Hickory Hills	8,155	14,049	14,007
Hillside	2,134	8,157	8,005
Hodgkins	49,495	1,897	1,714
Hometown	4,467	4,349	4,343
Homewood	19,543	19,323	18,735
Indian Head Park	3,685	3,809	4,059
Inverness	6,749	—	7,362
Justice	12,193	12,926	12,199
Kenilworth	2,494	2,513	2,537
La Grange	15,608	15,550	15,821
La Grange Park	13,295	13,579	13,009
Lansing	28,332	28,331	28,000
Lincolnwood	12,359	12,590	12,989
Lynwood	7,377	9,007	9,005
Lyons	10,255	10,729	10,411
Markham	12,620	12,508	11,241
Matteson	12,928	19,009	18,439
Maywood	26,987	24,090	22,932
McCook	254	228	299
Melrose Park	23,171	25,411	23,897
Merrionette Park	1,999	1,900	1,969
Midlothian	14,315	14,819	13,815
Morton Grove	22,451	23,270	24,371

TABLE: HISTORICAL POPULATION DATA			
	Population		
	2000	2010	2022
Mount Prospect	56,265	54,167	54,843
Niles	30,068	29,803	29,805
Norridge	14,582	14,572	14,769
North Riverside	6,688	6,672	7,147
Northbrook	33,435	33,170	34,182
Northfield	—	5,420	5,578
Northlake	11,878	12,323	12,401
Oak Forest	28,051	27,962	26,460
Oak Lawn	55,245	56,690	56,286
Oak Park	52,524	51,878	52,553
Olympia Fields	4,732	4,988	4,922
Palos Heights	11,260	12,515	11,632
Palos Hills	17,665	17,484	17,883
Park Forest	23,462	—	20,954
Park Ridge	37,775	37,480	38,278
Phoenix	2,157	1,964	1,708
Posen	4,730	5,987	5,386
Prospect Heights	17,081	16,256	15,486
Richton Park	12,533	13,646	12,441
River Forest	15,055	11,172	11,327
River Grove	11,635	10,227	10,612
Riverdale	10,668	13,549	10,266
Riverside	8,895	8,875	8,940
Robbins	6,635	5,337	4,804
Rolling Meadows	24,604	24,099	23,564
Rosemont	4,224	4,202	3,864
Sauk Village	10,411	10,506	9,578
Schaumburg	75,386	74,227	76,225
Schiller Park	11,850	11,793	11,283

TABLE: HISTORICAL POPULATION DATA			
	Population		
	2000	**2010**	**2022**
Skokie	63,348	64,784	65,497
South Chicago Heights	3,970	4,139	4,026
South Holland	22,147	22,030	20,685
Stickney	6,148	6,786	6,873
Stone Park	5,127	4,946	4,576
Streamwood	36,407	39,858	38,151
Summit	10,637	11,054	10,732
Thornton	2,582	2,338	2,216
Tinley Park	48,401	—	54,287
Westchester	16,824	16,718	16,262
Western Springs	12,493	12,975	13,313
Wheeling	34,496	—	37,936
Willow Springs	5,027	5,524	5,745
Wilmette	27,651	27,087	27,264
Winnetka	12,419	12,187	12,370
Worth	11,047	10,789	10,590
Cook County Total	**5,376,741**	**5,194,675**	
Note: Municipalities with primary area in another county are not shown			

4.5.1 Population Age Cohorts Over Time

TABLE: COOK COUNTY AGE COHORTS, OVER TIME		
Age Cohorts, Over Time	**2007-2011 Percent**	**2017-2021 Percent**
19 and under	26.6	24.2
20 to 34	23.1	22.3
35 to 49	20.8	20.1
50 to 64	17.6	18.6
65 and Over	11.9	14.7
Median Age	**35.2**	**37.3**

Source: CMAP

Many factors in addition to age must be used to make fully informed plans that include the whole community. Within the age demographics, the Census highlights some socioeconomic and disability factors that are key to understanding the needs of vulnerable population members.

Based on 2023 U.S. Census data estimates, 16.2% of the planning area's population is 65 or older.

4.5.2 Race, Ethnicity and Language

Race, ethnicity, primary language, and class are factors that help explain social vulnerability. Planners need to not only look at the natural environment in the development of mitigation programs but also the social environment. The interaction between nature and society produces vulnerability of places. Census data provides a snapshot of the community for a particular timeframe and often lacks information on the most vulnerable community members, such as residents that do not have legal status or the homeless population. To truly provide equitable disaster planning and relief, disaster planners need to understand the community beyond Census data. For an entire community to be prepared for a disaster, planners need to move beyond assessing the aggregate need of a population and understand the resources and vulnerabilities that exist within the community.

TABLE: 2023 POPULATION ESTIMATES

Race and Hispanic Origin, 2023	Percent
White alone	65.1
Black or African American alone	23.6
American Indian and Alaska Native alone	0.80
Asian alone	8.30
Native Hawaiian and Other Pacific Islander alone	0.10
Two or More Races	2.20
Hispanic or Latino	26.3
White alone, not Hispanic or Latino	41.1

Source: Census

The table below highlights the percentage of changes in race and ethnicity in Cook County.

TABLE: RACE AND ETHNICITY OF COOK COUNTY, OVER TIME

Race and Ethnicity, Over Time	2007-2011 Percent	2017-2021 Percent
White (non-Hispanic)	44.1%	41.6%
Hispanic or Latino	23.6%	25.6%
Black non-Hispanic	24.6%	22.6%
Asian non-Hispanic	6.1%	7.5%
Other/Multiple Races (Non-Hispanic)	1.5%	2.7%

Source: CMAP

4.5.3 Languages Spoken at Home

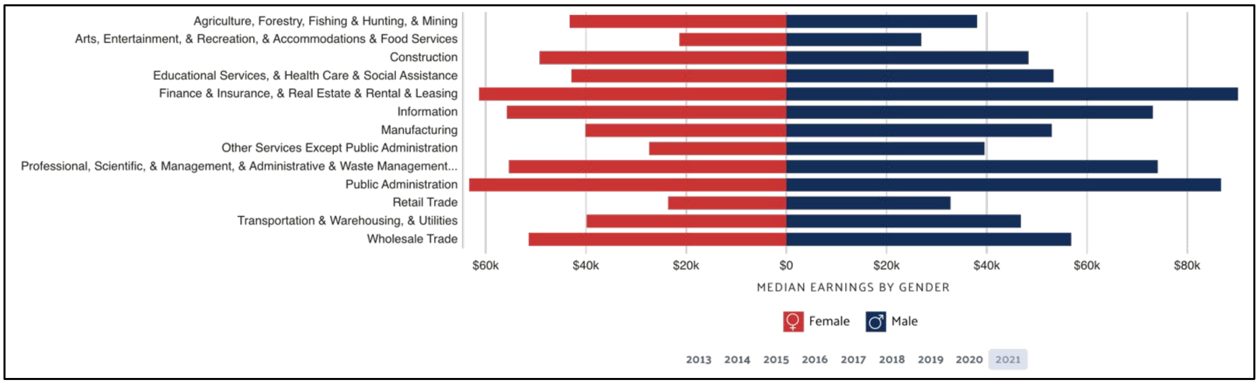
TABLE: LANGUAGE SPOKEN AT HOME, 2017-2021		
Language	**Count**	**Percent**
English	3,215,963	64.9
Spanish	1,020,049	20.6
Slavic Languages	212,400	4.3
Chinese	66,455	1.3
Tagalog	47,051	0.9
Arabic	48,750	1.0
Korean	26,946	0.5
Other Asian Languages	66,005	1.3
Other Indo-European Languages	203,120	4.1
Other/Unspecified Languages	46,521	0.9
TOTAL NON-ENGLISH	1,737,297	35.1
Speak English Less than "Very Well" *	673,502	13.6
**For people who speak a language other than English at home, the ACS asks whether they speak English "very well," "well," "not well," or "not at all."*		

4.5.4 Income

In the United States, individual households are expected to use private resources to prepare for, respond to, and recover from disasters to some extent. This means that households living in poverty are automatically disadvantaged when confronting hazards. Additionally, people lacking adequate resources are also typically living in older structures and inadequately maintained housing. Mobile or modular homes, for example, are more susceptible to damage in earthquakes and floods than other types of housing. In urban areas, the poor often live in older houses and apartment complexes, which are more likely to be made of unreinforced masonry, a building type that is particularly susceptible to damage during earthquakes. Furthermore, residents below the poverty level are less likely to have insurance to compensate for losses incurred from natural disasters. This means that residents below the poverty level have a great deal to lose during an event and are the least prepared to deal with potential losses. The events following Hurricane Katrina in 2005 illustrated that personal household economics significantly impact people's decisions on evacuation. Individuals who cannot afford gas for their cars will likely not have the means to evacuate.

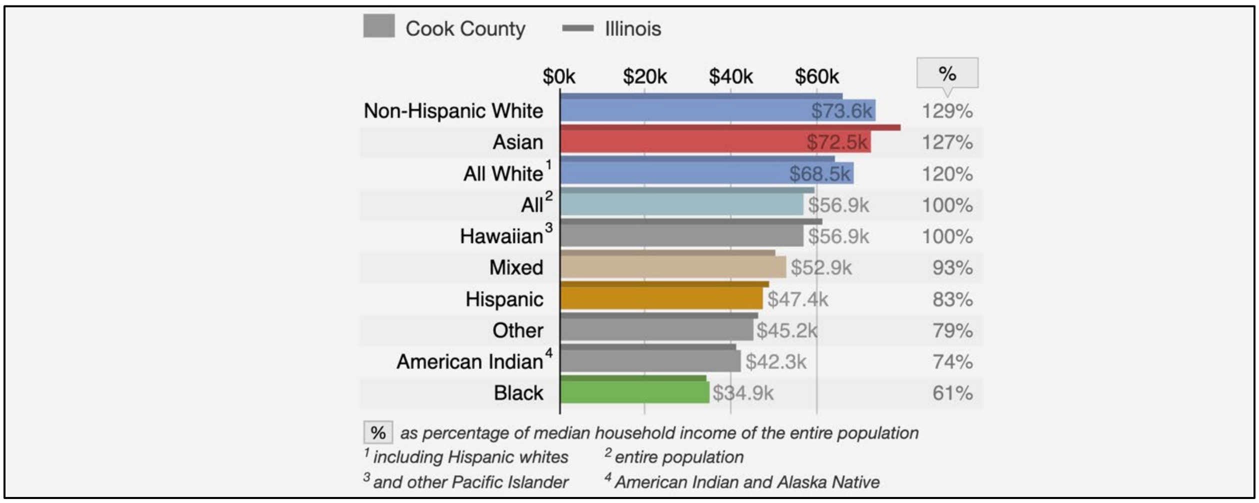
Based on U.S. Census Bureau estimates, per capita income in the planning area in 2018 was $32,722 and has increased to $45,646 (in 2022 dollars) based on the ACS 2018-22. The median household income (in 2022 dollars) is $78,304 based on the ACS 2022.

A graph showing median sector earnings in 2021 by gender is shown below:



Source: (Data USA)

A graph showing median household income by race is shown below:

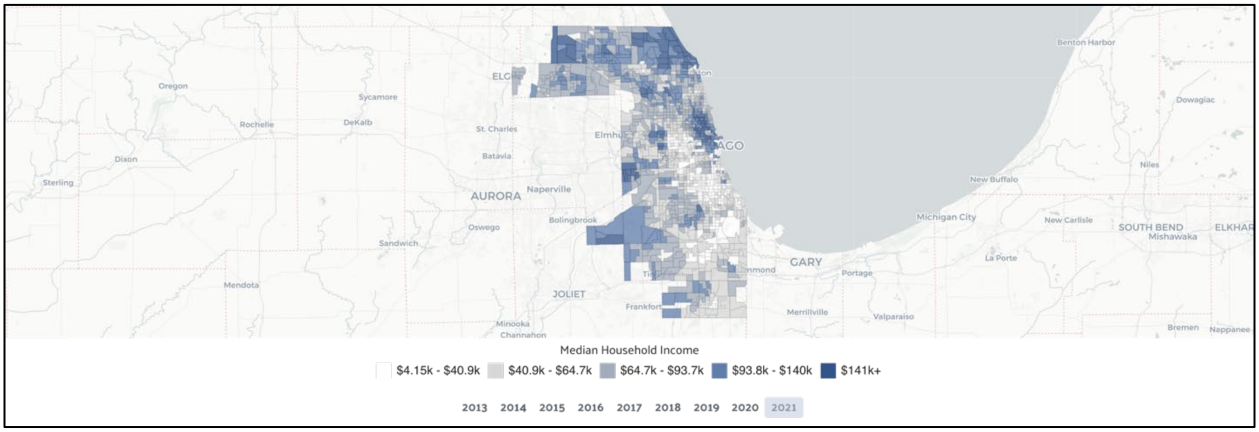


Source: (Statistical Atlas)

TABLE: HOUSEHOLD INCOME, 2017-2021		
Household Income, 2017-2021	**Count**	**Percent**
Less than $25,000	370,516	18.1
$25,000 to $49,999	368,765	18.0
$50,000 to $74,999	317,344	15.5
$75,000 to $99,999	252,760	12.4
$100,000 to $149,999	330,041	16.1
$150,000 and Over	405,232	19.8
Median Household Income, 2017-2021	**$72,121**	**–**

Source: CMAP

Similar to population size, median household income varies widely across Cook County.



Map: Income by Location
Source: Data USA

4.5.5 Poverty

13.5% of the population for whom poverty status is determined in Cook County, IL (698k out of 5.18M people) live below the poverty line, a number that is higher than the national average of 12.6%. The largest demographic living in poverty are Females 25 - 34, followed by Females 18 - 24 and then Females 35 – 44 (Data USA).

The most common racial or ethnic group living below the poverty line in Cook County, IL is Black, followed by White and Hispanic (Data USA).

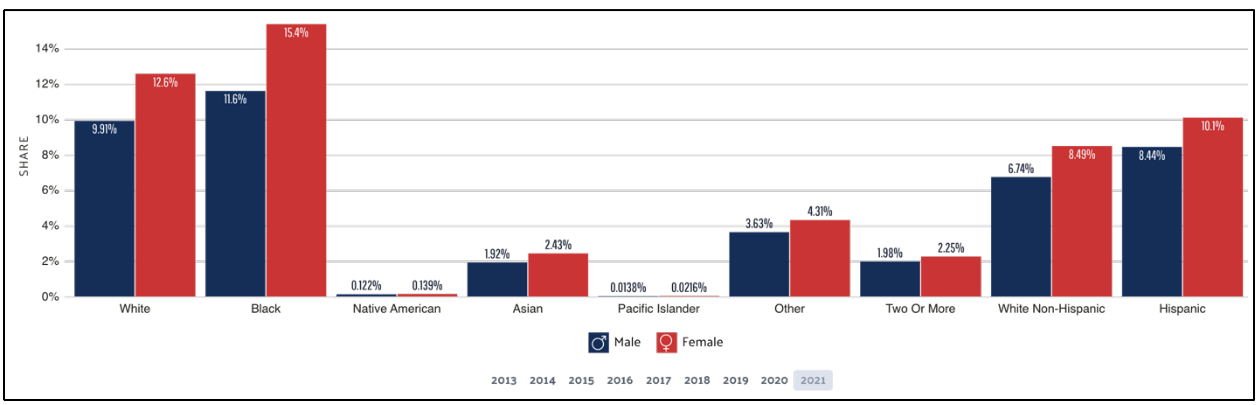


Chart: Poverty by Age, Gender, Ethnicity
Source: Data USA

In total,13.5% of the population for whom poverty status is determined in Cook County, IL (698k out of 5.18M people) live below the poverty line, a number that is higher than the national average of 12.6%. The largest demographic living in poverty are Females 25 - 34, followed by Females 18 - 24 and then Females 35 – 44 (Data USA).

The most common racial or ethnic group living below the poverty line in Cook County, IL is Black, followed by White and Hispanic (Data USA).

An image of a graph below illustrates poverty by race and diversity in Cook County:

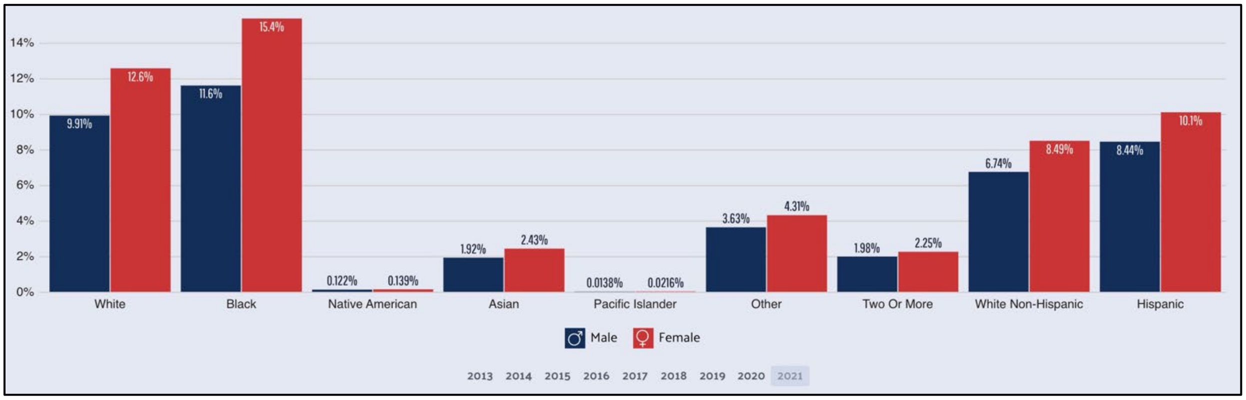


Chart: Poverty by Race and Diversity of Cook County
Source: Data USA

4.5.6 Homelessness

According to the Illinois Office to Prevent & End Homelessness, of the 10,431 Illinoisans experiencing homelessness in 2020, 60 percent reside in Cook County. In Cook County, half of those in deep poverty are under 25 years of age. 3% of all children, and 15% of Black children, spend at least half of their childhoods in deep poverty. Those who are Black or Latinx are most likely to be in deep poverty, with poverty rates of 10.8 and 7.6 respectively.

According to 2019 American Community Survey estimates, some 47.5 percent of renters were housing cost burdened, that is, paying more than 30 percent of their incomes in monthly rent. At the regional level, the highest concentrations of rent burdened households were in Cook County (49.2%).

4.5.7 FEMA Community Risk Index

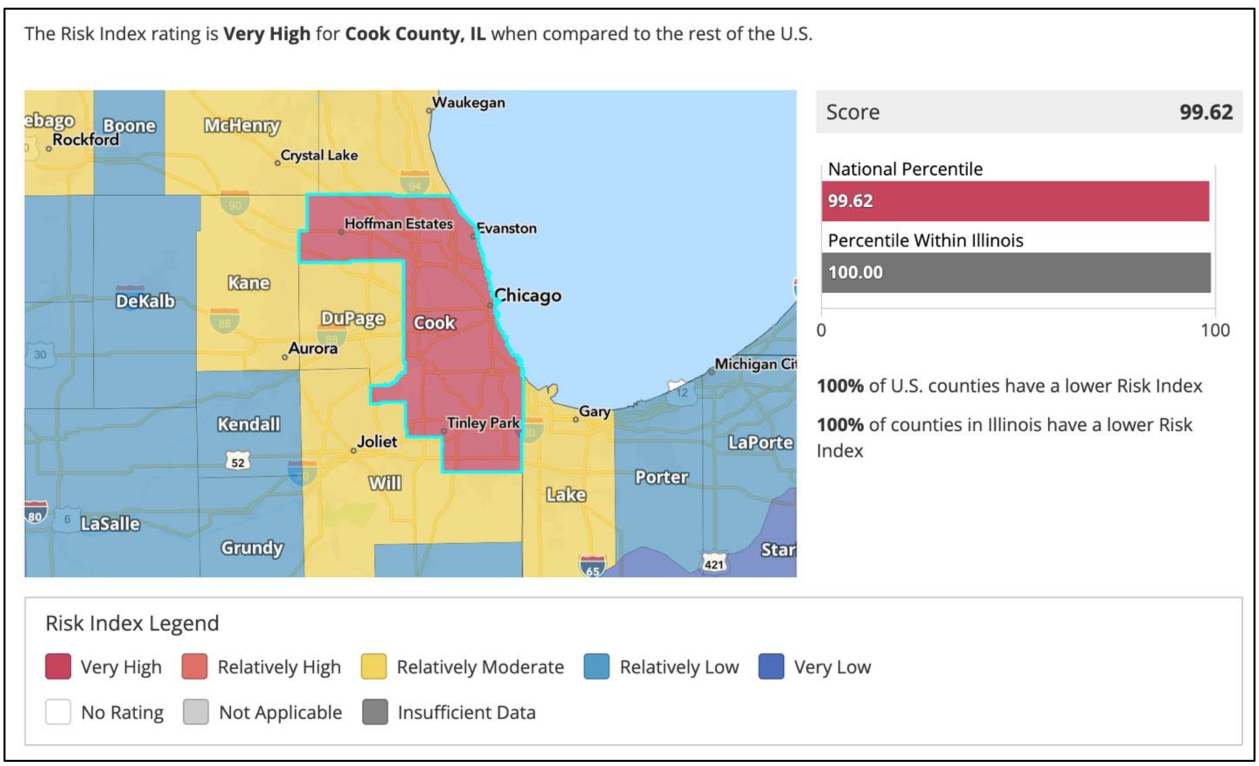
Cook County has a FEMA Community Risk Index Score of **99.62**.

The Risk Index score is based on the following components: Social Vulnerability, Community Resilience, and Estimate Annual Loss (EAL), with EAL based on Exposure, Annualized Frequency, and Historic Loss Ratio (HLR) factors, for a total of five risk factors (FEMA NRI).

Each risk factor contributes to either the likelihood or consequence aspect of risk and can be classified as one of two risk types: risk based on geographic location or risk based on the nature and historical occurrences of natural hazards. The five risk factors are summarized in the table below. (FEMA NRI).

FEMA NATIONAL RISK INDEX				
RISK COMPONENTS & FACTORS				
Risk Component	***Risk Factors***	***Risk Factor Description***	***Risk Contribution***	***Risk Type Assignment***
Social Vulnerability	Social Vulnerability	Consequence Enhancer	Consequence	Geographic Risk
Community Resilience	Community Resilience	Consequence Reducer	Consequence	Geographic Risk
Expected Annual Loss	Exposure	Expected Consequence	Consequence	Natural Hazard Risk
Expected Annual Loss	Annualized Frequency	Probability of Occurrence	Likelihood	Natural Hazard Risk
Expected Annual Loss	Historic Loss Ratio	Expected Consequence	Consequence	Natural Hazard Risk

An image showing the Cook County FEMA Community Risk Index Score is shown below:



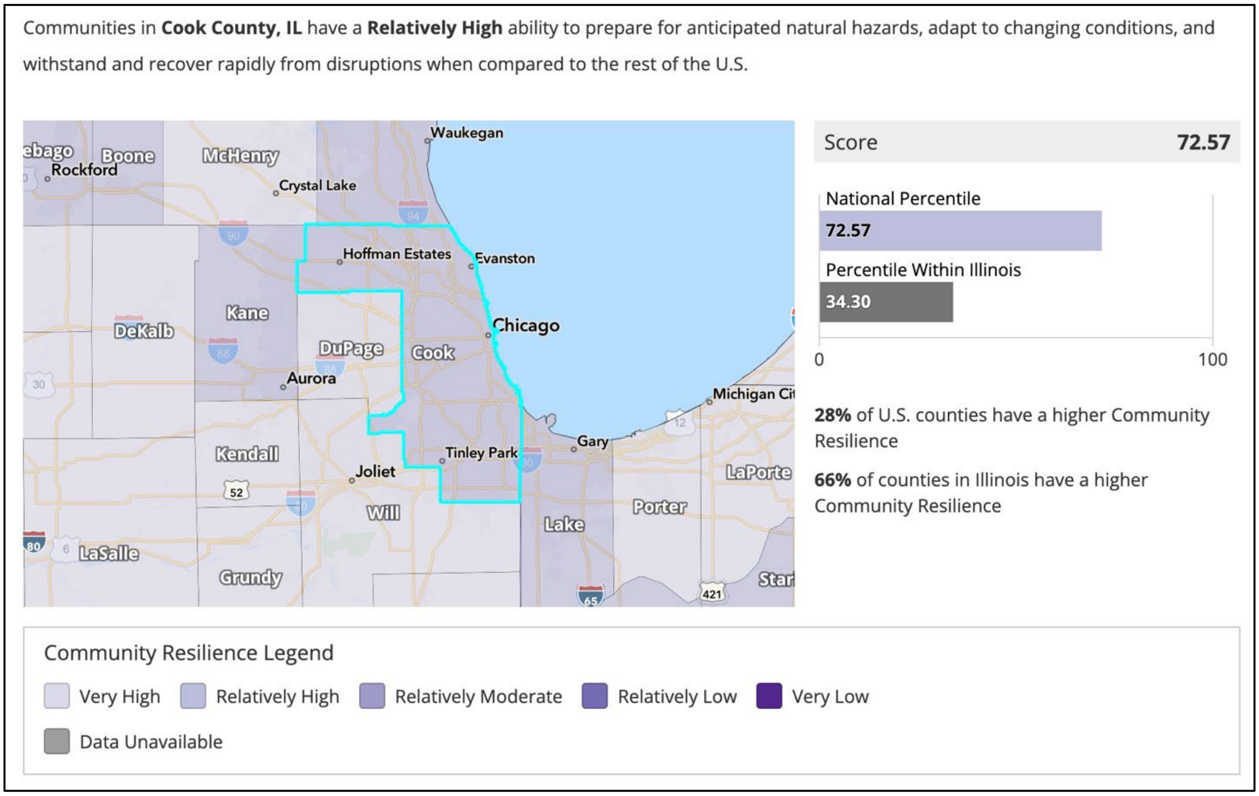
4.5.8 FEMA Community Resilience

Cook County has a FEMA Community Resilience Score of **72.57**.

Community resilience is defined as the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions (FEMA NRI).

The “Community Resilience Score” and “Community Resilience Rating” represent the relative level of a community’s resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community’s risk. A higher Community Resilience Score results in a lower Risk Index Score (FEMA NRI).

An image showing the Cook County FEMA Community Resilience is shown below:



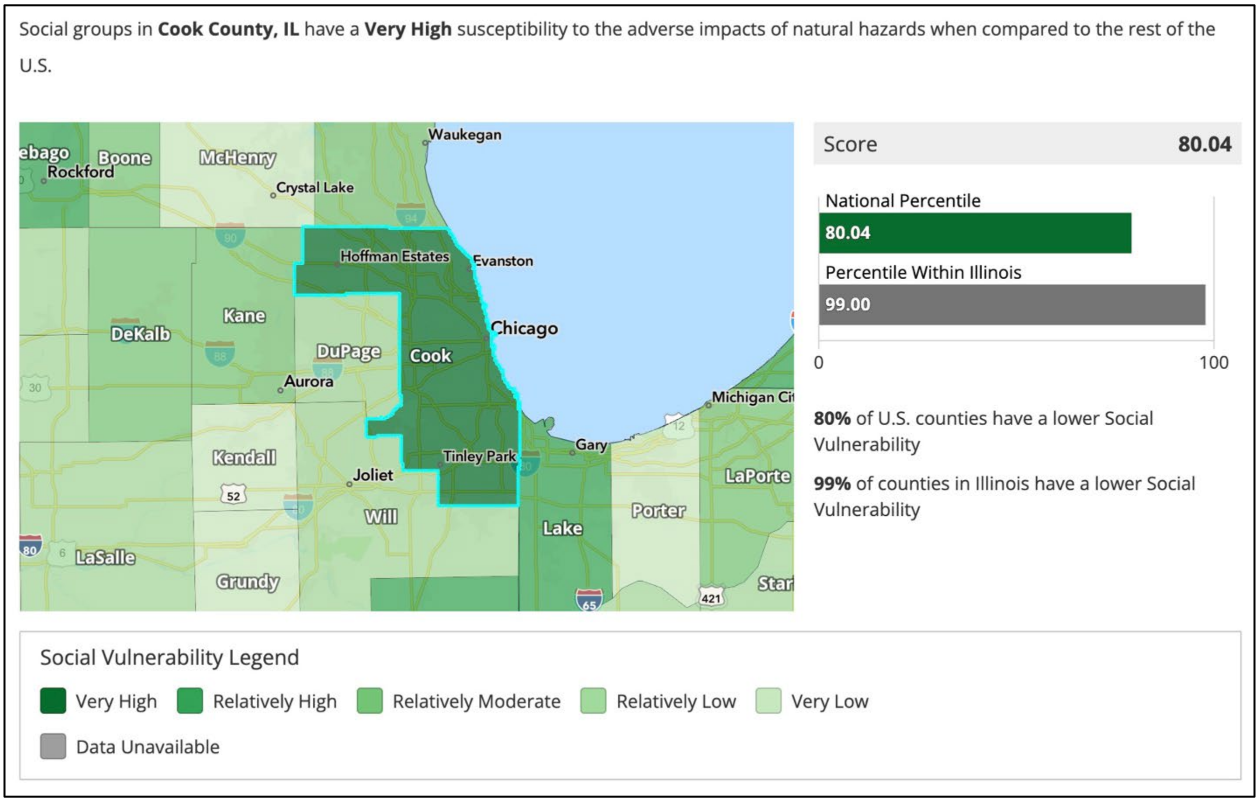
4.5.9 FEMA Social Vulnerability

Cook County has a FEMA Community Resilience Score of **80.04**.

Social vulnerability is defined as the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood (FEMA NRI).

The "Social Vulnerability Score” and “Rating” represent the relative level of a community’s social vulnerability compared to all other communities at the same level. A community’s Social Vulnerability Score is also proportional to a community’s risk. A higher Social Vulnerability Score results in a higher Risk Index Score (FEMA NRI).

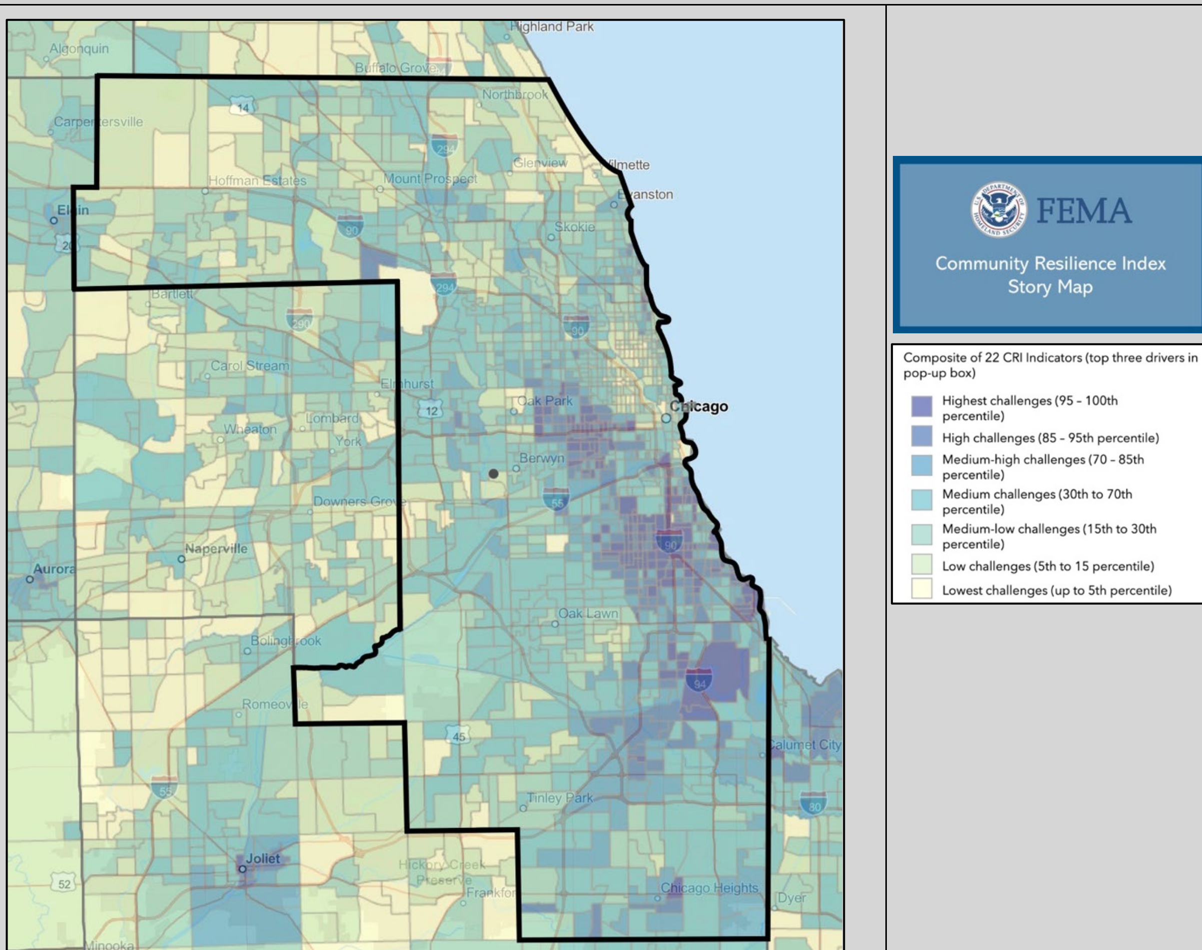
Social vulnerability is also one of five components included in the formulation of the “National Risk Index Score” in addition to Community Resilience, Estimated Annual Loss (EAL) based on Exposure, Annualized Frequency, and Historic Loss Ratio (HLR) factors (FEMA NRI).
An image showing the Cook County FEMA Social Vulnerability is shown below:



4.5.10 Underserved Communities

The figure below illustrates the Cook County Community Resilience Index Story Map. This map utilizes density mapping to illustrate community areas that can be overburdened by 22 challenges identified by the FEMA Community Resilience Challenges Index.

COOK COUNTY, ILLINOIS
FEMA COMMUNITY RESILIENCE INDEX STORY MAP



22 CHALLENGE VARIABLES			
Population, Household, Housing Characteristics	**Economic**	**Healthcare**	**Connection to Community**
Population without a High School Diploma Population 65 and Older Population with a Disability Households without a Vehicle Households with Limited English Single-parent Households Households without a Smartphone Mobile Homes as Percentage of Housing Owner-Occupied Housing	Population Below Poverty Level Median Household Income Unemployed Labor Force Unemployed Women Labor Force Income Inequality Workforce in Predominant Sector	Number of Hospitals Medical Professional Capacity Population without Health Insurance	Presence of Civic and Social Organizations Population without Religious Affiliation Percent of Inactive Voters Population Change
Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024			

4.6 Critical Facilities and Infrastructure

Critical facilities and infrastructure are any facility, whether publicly or privately owned, that is vital to the Cook County planning area's ability to provide essential services and protect life and property. Damage to such facilities and infrastructure that causes a short or long-term loss of their function would likely result in severe health and welfare, life-sustainment, economic, or other catastrophic impacts. The Steering Committee developed a definition for critical facilities to be used in this plan. Critical facilities are facilities that meet the following criteria:

- Facilities that are essential to the ability to respond to, mitigate and recover from the impacts of natural hazards
- Facilities that need an early warning to enable them to prepare for and respond to the impacts of natural hazards
- Facilities that by the nature of their operations, produce, manufacture or store materials that create exposure to secondary hazards of concern.

Critical facilities may include but are not limited to the following:

- **Essential facilities** for the health and welfare of the whole population (e.g., hospitals, police and fire stations, emergency operations centers, evacuation shelters, schools, and universities)
- **Transportation systems**, including airways, highways, railways, and waterways
- **Lifeline utility systems**, such as potable water, wastewater, oil, natural gas, electric power, and communication systems
- **High potential loss facilities**, such as nuclear power plants, dams, and military installations
- **Hazardous material facilities**, producing industrial/hazardous materials (e.g., corrosives, explosives, flammable materials, radioactive materials, and toxins)
- **Community gathering places**, such as parks, museums, libraries, community centers, senior centers, daycare centers, and veterans' halls
- **Facilities housing special needs populations**, such as nursing homes, continuing care retirement facilities, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a hazard event.

By identifying critical facilities before a natural disaster occurs, communities can make better decisions about how to expend resources to protect these key facilities. A detailed inventory of critical facilities and infrastructure was developed for this plan using GIS applications. The starting point for this process was the HAZUS-MH default database. An interactive, secure web portal was created to facilitate the update of this inventory. Over 6,000 facilities were inventoried and uploaded into the HAZUS-MH model to support this plan.

In addition to the facilities and infrastructure listed, Cook County maintains 1,426 miles of paved roadways, 132 bridges, 360 traffic signals, and seven pumping stations from four maintenance facilities (Cook County Transportation and Highways). In 2018, the Department of Transportation and Highways completed the Cook County Freight Plan, Lincoln Highway Logistics Corridor Strategic Plan, and over $23 million in construction projects including pavement preservation and rehabilitation activities at 13 locations, interim bridge repairs at Quentin Road over Salt Creek and East Lake Avenue over the North Branch of the Chicago River, major intersection improvements at Roselle Road and Schaumburg Road, and major improvements to Central Road (2018-23 Improved Transportation Program).

There are approximately 13,000 miles of water lines, 7,850 miles of wastewater lines, 5,200 miles of gas lines, 20 operating pipelines, and nine oil facilities.

Collectively these critical facilities and infrastructure need to be considered in emergency planning, emergency response, and mitigation of impacts from emergencies. For example, in 2018, the newly built $1 billion flood-control reservoir, the largest section of the Deep Tunnel project, was inundated with rain and melting snow. After the 5.1-billion-gallon system swelled to capacity, leftovers from the storm surge began backing up in basements and pouring out of overflow pipes into the Chicago River and other area streams during the next two days (Chicago Tribune). Another report highlights a million gallons being reversed from Chicago Area Waterways to Lake Michigan. While this report highlights a decrease due to the onset of TERP, one 2017 event reversed 2,746.20 million gallons (Reversals to Lake Michigan).

4.7 Economy

The economy of Cook County, IL employs 2.6M people. The largest industries in Cook County, IL are Health Care & Social Assistance (365,461 people), Professional, Scientific, & Technical Services (278,012 people), and Manufacturing (244,952 people), and the highest paying industries are Utilities ($86,405), Finance & Insurance ($82,016), and Professional, Scientific, & Technical Services ($80,988).

Males in Illinois have an average income that is 1.34 times higher than the average income of females, which is $61,278. The income inequality in Illinois (measured using the Gini index) is 0.478, which is higher than the national average.

TABLE: ECONOMY, COOK COUNTY

Economy	Total
In civilian labor force, total, percent of population age 16 years+, 2018-2022	66.1%
In civilian labor force, female, percent of population age 16 years+, 2018-2022	61.4%
Total accommodation and food service sales, 2017 ($1,000)	19,615,953
Total health care and social assistance receipts/revenue, 2017 ($1,000)	45,827,390
Total transportation and warehousing receipts/revenue, 2017 ($1,000)	30,567,885
Total retail sales, 2017 ($1,000)	66,513,549
Total retail sales per capita, 2017	$12,792

Source: Census

4.7.1 Employment and Industries

This chart below shows the share breakdown of the primary industries for residents of Cook County, IL, though some of these residents may live in Cook County, IL and work somewhere else. It should be noted that census data is tagged to a residential address, not a work address.

TABLE: EMPLOYMENT BY INDUSTRY	
Industry Description	**Number of Employees**
Health Care & Social Assistance	365,461
Professional, Scientific, & Technical Services	278,012
Manufacturing	244,952
Educational Services	243,920
Retail Trade	238,801
Transportation and Warehousing	180,889
Accommodation & Food Services	178,582
Finance & Insurance	159,954
Other Services Except Public Administration	125,725
Construction	123,815
Administrative & Support & Waste Management Services	116,333
Public Administration	94,619
Wholesale Trade	66,739
Arts, Entertainment, & Recreation	56,456
Real Estate & Rental & Leasing	55,381
Information	52,587
Utilities	12,198
Agriculture, Forestry, Fishing & Hunting	3,841
Management of Companies & Enterprises	4,517
Mining, Quarrying, & Oil & Gas Extraction	985

TABLE: EMPLOYMENT BY INDUSTRY	
Industry Description	**Number of Employees**
Total Employment	**2,603,767**

Source: *Data USA*

4.7.2 Employment Trends and Occupations

As shown in the table above, Cook County benefits from a variety of business activities. Major businesses include City Garden, Waldorf School, Walgreens, McDonald's, ArcelorMittal, Boeing, Power Construction, Hyatt Hotels, and Alliance Boots (Zippia).

From 2020 to 2021, employment in Cook County, IL grew at a rate of 1.67%, from 2.56M employees to 2.6M employees.

The most common employment sectors for those who live in Cook County, IL, are Health Care & Social Assistance (365,461 people), Professional, Scientific, & Technical Services (278,012 people), and Manufacturing (244,952 people).

4.7.3 Employment Status

TABLE: EMPLOYMENT STATUS, 2017-2021		
Employment Status	**Count**	**Percent**
In Labor Force	2,809,310	66.2
Employed (1)*	2,603,767	92.7
Unemployed*	203,970	9.7
Not In Labor Force	1,434,949	33.8

Source: *CMAP*

4.7.4 Businesses

An overview of total businesses in Cook County are shown in the table below.

TABLE: BUSINESSES, COOK COUNTY	
Businesses	**Total/Percent**
Total employer establishments, 2021	134,715
Total employment, 2021	2,292,825
Total annual payroll, 2021 ($1,000)	178,172,447
Total employment, percent change, 2020-2021	-6.4%
Total non-employer establishments, 2021	516,494
All employer firms, Reference year 2017	107,113

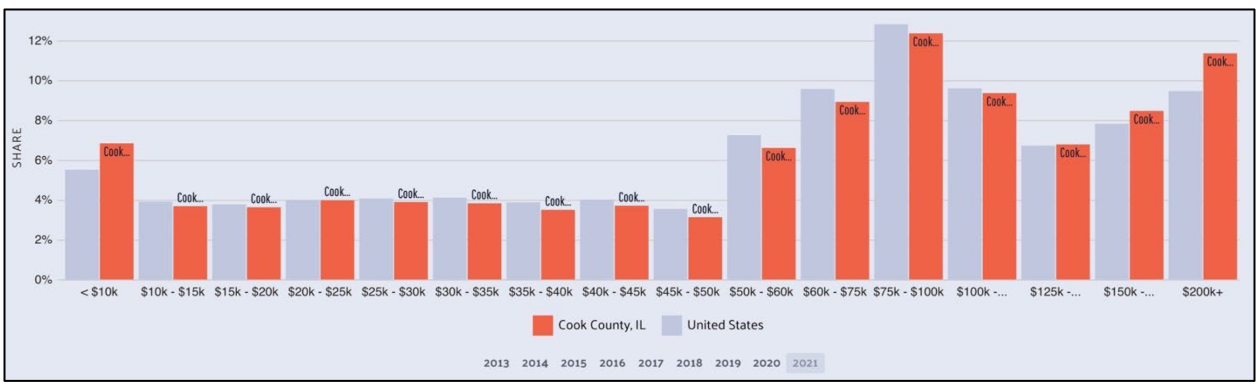
TABLE: BUSINESSES, COOK COUNTY	
Businesses	**Total/Percent**
Men-owned employer firms, Reference year 2017	67,266
Woman-owned employer firms, Reference year 2017	22,204
Minority-owned employer firms, Reference year 2017	22,452
Nonminority-owned employer firms, Reference year 2017	75,768
Veteran-owned employer firms, Reference year 2017	4,412
Nonveteran-owned employer firms, Reference year 2017	93,219

Source: Census

4.7.5 Household Income

In 2021, the median household income of the 2.04M households in Cook County, IL grew to $72,121 from the previous year's value of $67,886.

The following chart displays the households in Cook County, IL distributed between a series of income buckets compared to the national averages for each bucket. The largest share of households have an income in the $75k - $100k range(Data USA).



4.8 Higher Education

In 2021, universities in Cook County, IL awarded 81,319 degrees. The student population of Cook County, IL in 2021 is skewed towards women, with 111,766 male students and 161,008 female students. Most students graduating from Universities in Cook County, IL are White (32,020 and 43.7%), followed by Hispanic or Latino (17,787 and 24.3%), Black or African American (9,677 and 13.2%), and Asian (8,075 and 11%).

The largest universities in Cook County, IL by number of degrees awarded are Northwestern University (9,290 and 11.4%), University of Illinois Chicago (8,910 and 11%), and University of Chicago (6,805 and 8.37%). The most popular majors in Cook County, IL are Liberal Arts & Sciences (8,451 and 10.4%), Management Science (3,472 and 4.27%), and General Business Administration & Management (2,794 and 3.44%).

The median tuition costs in Cook County, IL are $30,661 for private four year colleges, and $10,091 and $20,182 respectively, for public four year colleges for in-state students and out-of-state students (Data USA).

The graph below shows the evolution of awarded higher degrees (shown by degree) in Cook County.

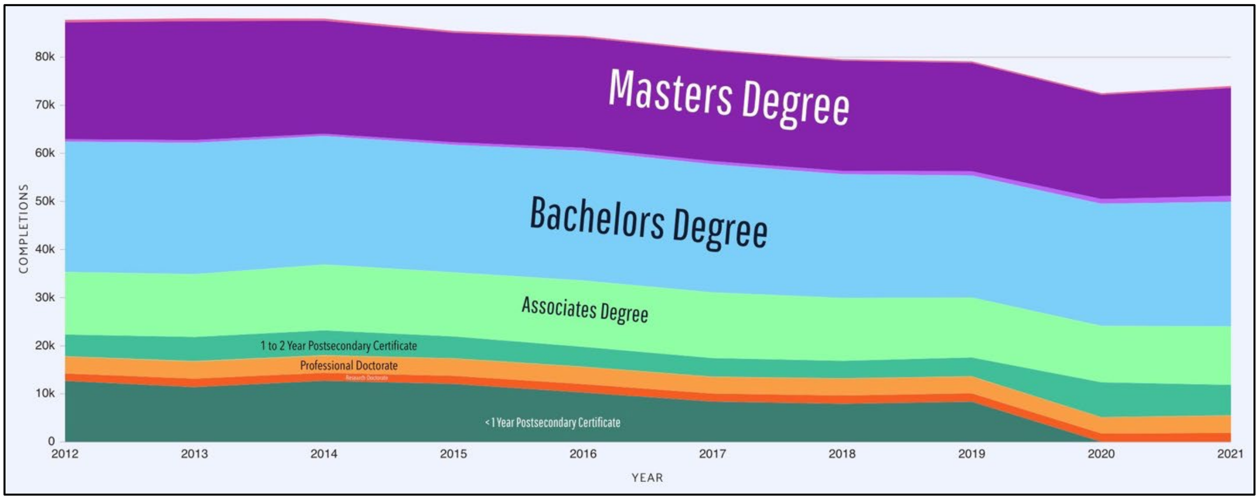
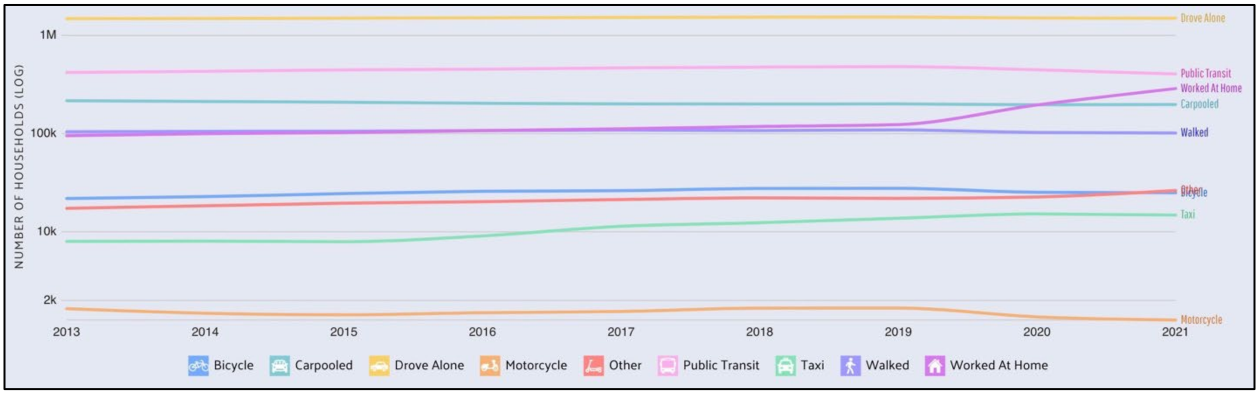


Chart: Awarded Degrees over Time in Cook County
Source: Data USA

4.9 Transportation

In 2021, 58.5% of workers in Cook County, IL drove alone to work, followed by those who used public transit to get to work (15.8%) and those who worked at home (11.3%).

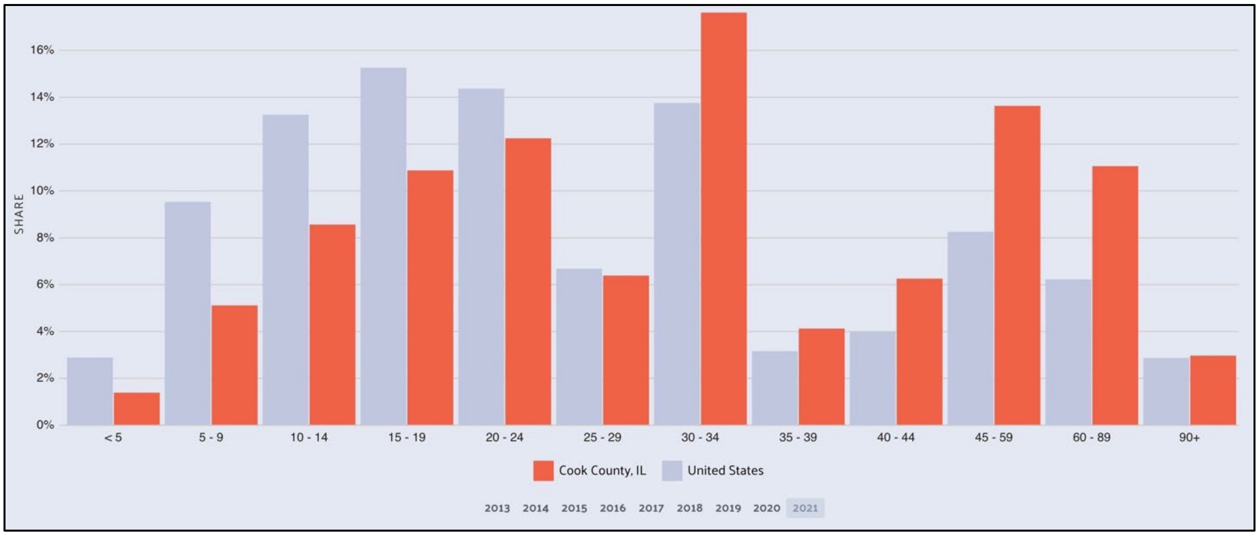
The following chart shows the number of households using each mode of transportation over time, using a logarithmic scale on the y-axis to help better show variations in the smaller means of commuting (Data USA).



4.9.1 Commute Trains

Using averages, employees in Cook County, IL have a longer commute time (32.7 minutes) than the normal US worker (26.8 minutes). Additionally, 2.95% of the workforce in Cook County, IL have "super commutes" in excess of more than 90 minutes.

Commute times in Cook County (shown in minutes) are illustrated in the chart below as compared to United States averages (Data USA).



4.10 Housing and Living

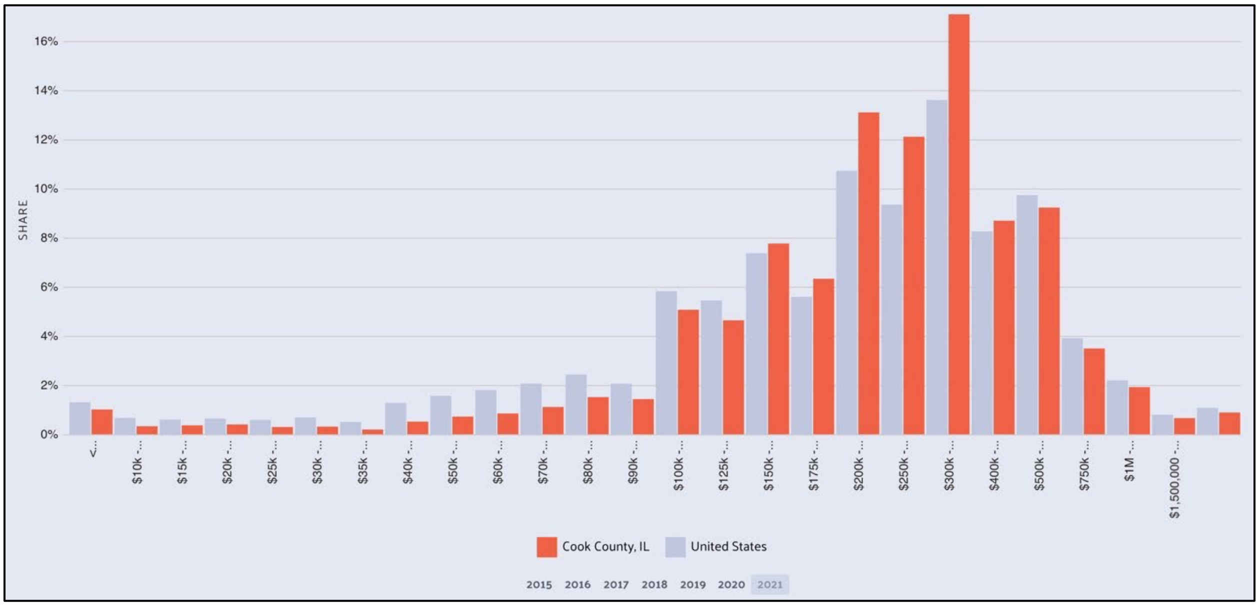
The median property value in Cook County, IL was $266,800 in 2021, which is 1.09 times larger than the national average of $244,900. Between 2020 and 2021 the median property value increased from $255,500 to $266,800, a 4.42% increase. The homeownership rate in Cook County, IL is 57.5%, which is approximately the same as the national average of 64.6%.

People in Cook County, IL have an average commute time of 32.7 minutes, and they drive alone to work. Car ownership in Cook County, IL is approximately the same as the national average, with an average of two cars per household.

Median household income in Cook County, IL is $72,121. In 2021, the tract with the highest Median Household Income in Cook County, IL was Census Tract 706 with a value of $250,001, followed by Census Tract 8004 and Census Tract 8005, with respective values of $250,001 and $250,001.

In 2022, 21% of the population was living with severe housing problems in Cook County, IL. From 2014 to 2022, the indicator declined 2.79%.

The following chart displays the households distributed between a series of property value buckets compared to the national averages for each bucket. In Cook County, IL the largest share of households have a property value in the $300k - $400k range (Data USA).



4.11 Future Trends in Development

According to the 2024-2027 Cook County Policy Roadmap, Cook County marked a substantial achievement in sustainability with the first power purchase agreement for renewable energy, in partnership with Constellation and Swift Current Energy. Starting in March 2025, County-managed buildings will source approximately 24% of electricity from a new, off-site solar project in Illinois. This 12-year agreement will significantly reduce Illinois' greenhouse gas emissions and meet several Clean Energy Plan Goals and create jobs and opportunities, including $432,000 in support for local solar and energy job training programs. The addition of native plants and habitat restoration at the solar site will support pollinators and increase local biodiversity.

4.11.1 Incorporation of the HMP

The municipal planning partners use plans, codes, and ordinances to govern land use decision-making and policymaking within their jurisdictions. All municipal planning partners will incorporate this hazard mitigation plan in their land use plans and programs by reference. This will ensure that future development trends can be established with the benefits of the information on risk and vulnerability to natural hazards identified in this plan.

4.12 Laws, Ordinances, Programs, and Plans

Existing laws, ordinances, and plans at the federal, state, and local level can support or impact hazard mitigation actions identified in this plan. Hazard mitigation plans are required to include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process (44 CFR, Section 201.6(b)(3)). Pertinent federal and state laws are described below. Each planning partner has individually reviewed existing local plans, studies, reports, and technical information in its jurisdictional annex, presented in Volume 2.

4.12.1 Federal

Disaster Mitigation Act of 2000

The DMA is the current federal legislation addressing hazard mitigation planning. It emphasizes the importance of strong state and local planning processes and program management in planning for disasters before they occur. It specifically addresses planning at the local level, requiring plans to be in place before Hazard Mitigation Grant Program funds are available to communities. This plan is designed to meet the requirements of DMA, improving the planning partners' eligibility for future hazard mitigation funds.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) provides federally backed flood insurance in exchange for communities enacting floodplain regulations. Participation and good standing under NFIP are prerequisites to grant funding eligibility under the Robert T. Stafford Act. The County and most of the partner cities for this plan participate in the NFIP and have adopted regulations that meet the NFIP requirements. At the time of this plan's preparation, all participating jurisdictions in the partnership were in good standing with NFIP requirements.

The Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

The evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues is addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

Endangered Species Act

The federal Endangered Species Act (ESA) was enacted in 1973 to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires the conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species and contains exceptions and exemptions. It is the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Criminal and civil penalties are provided for violations of the ESA and the Convention.

Federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes. The ESA defines three fundamental terms:

- **Endangered** means that a species of fish, animal, or plant is "in danger of extinction throughout all or a significant portion of its range." (For salmon and other vertebrate species, this may include subspecies and distinct population segments.)
- **Threatened** means that a species "is likely to become endangered within the foreseeable future." Regulations may be less restrictive for threatened species than for endangered species.
- **Critical habitat** means "specific geographical areas that are…essential for the conservation and management of a listed species, whether occupied by the species or not."

Five sections of the ESA are of critical importance to understanding it:

- **Section 4: Listing of a Species**—The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) is responsible for listing marine species; the U.S. Fish and Wildlife Service is responsible for listing terrestrial and freshwater aquatic species. The agencies may initiate reviews for listings, or citizens may petition for them. A listing must be made "solely on the basis of the best scientific and commercial data available." After a listing has been proposed, agencies receive comment and conduct further scientific reviews for 12 to 18 months, after which they must decide if the listing is warranted. Economic impacts cannot be considered in this decision, but it may include an evaluation of the adequacy of local and state protections. Critical habitat for the species may be designated at the time of listing.
- **Section 7: Consultation**—Federal agencies must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed or proposed species or adversely modify its critical habitat. This includes private and public actions that require a federal permit. Once a final listing is made, non-federal actions are subject to the same review, termed a "consultation." If the listing agency finds that an action will "take" a species, it must propose mitigations or "reasonable and prudent" alternatives to the action; if the proponent rejects these, the action cannot proceed.
- **Section 9: Prohibition of Take—**It is unlawful to "take" an endangered species, including killing or injuring it or modifying its habitat in a way that interferes with essential behavioral patterns, including breeding, feeding or sheltering.
- **Section 10: Permitted Take**—Through voluntary agreements with the federal government that provide protections to an endangered species, a non-federal applicant may commit a take that would otherwise be prohibited as long as it is incidental to an otherwise lawful activity (such as developing land or building a road). These agreements often take the form of a "Habitat Conservation Plan."
- **Section 11: Citizen Lawsuits**—Civil actions initiated by any citizen can require the listing agency to enforce the ESA's prohibition of taking or to meet the requirements of the consultation process.

With the listing of salmon and trout species as threatened or endangered, the ESA has impacted most of the Pacific Coast states. Although some of these areas have been more impacted by the ESA than others due to the known presence of listed species, the entire region has been impacted by mandates, programs and policies based on the presumption of the presence of listed species. Most West Coast jurisdictions must now consider the impact of their programs on habitat.

FEMA Administered Grant Programs

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) program is a cost-share program through which communities can receive grants to develop a comprehensive flood mitigation plan and implement flood mitigation projects. To be eligible for FMA funds, communities must participate in the NFIP and have an approved flood mitigation plan. The goals of FMA program are as follows:

- Fund measures that reduce or eliminate the long-term risk of flood damage to NFIP-insured buildings, manufactured homes, and other structures.
- Reduce the number of repetitively or substantially damaged structures and the associated claims on the NFIP.
- Encourage long-term, comprehensive mitigation planning.
- Respond to the needs of communities participating in the NFIP.

The Hazard Mitigation Grant Program

The Illinois Emergency Management Agency (IEMA) administers the Hazard Mitigation Grant Program (HMGP), making grants available to state and local governments as well as eligible private, non-profit organizations to implement cost-effective and long-term mitigation measures following a major disaster declaration. In order to receive HMGP funds, a community must be participating in and in good standing with the NFIP and have an approved hazard mitigation plan. Projects can protect public and/or private property.

Building Resilient Infrastructure and Communities (BRIC) Program

The Building Resilient Infrastructure and Communities program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. Examples of BRIC projects are ones that demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design.

For example, an innovative project may bring multiple funding sources or in-kind resources from a range of private and public sector partners. Or an innovative project may offer multiple benefits to a community in addition to the benefit of risk reduction.

Through BRIC, FEMA continues to invest in a variety of mitigation activities with an added focus on infrastructure projects benefitting disadvantaged communities, nature-based solutions, climate resilience and adaption and adopting hazard resistant building codes.

Flood Mitigation Grant Program

The Flood Mitigation Grant Program provides funding to reduce or eliminate the long-term risk of flood damage to NFIP-insured properties, including but not limited to FEMA-identified repetitive loss and severe repetitive loss properties. The Flood Mitigation Grant Program is a federal cost-share program with states, territories, or federally recognized Indian tribes that have FEMA-approved mitigation plans.

4.12.2 State

2023 Illinois Natural Hazard Mitigation Plan

The Illinois Natural Hazard Mitigation Plan approved by FEMA in 2023 establishes a process for identifying and mitigating the effects of natural hazards in the State of Illinois as required under the Disaster Mitigation Act of 2000 and further provides guidance for hazard mitigation throughout the state. The plan identifies hazard mitigation goals, objectives, and actions for state government to reduce injury and damage from natural hazards. By meeting federal requirements for an enhanced state plan (44 CFR parts 201.4 and 201.5), the plan allows the state to seek significantly higher funding from the Hazard Mitigation Grant Program following presidential declared disasters.

The Illinois Emergency Management Agency Act

The Illinois Emergency Management Agency Act (20 ILCS 3305/5 and 29 ILCS 301) created IEMA and its authority to develop, plan, analyze, conduct, provide, implement and maintain programs for disaster mitigation, preparedness, response and recovery. IEMA is further mandated under 29 Illinois Administrative Code 301 to prepare the State of Illinois to deal with disasters, preserve the lives and property of the people of the state, and protect health and safety in the event of a disaster.

Building and Residential Codes

Illinois communities historically have lacked standardized building codes, which presents challenges in securing funding for many mitigation programs, including BRIC. Recent legislative efforts have been successful in passing a bill that requires jurisdictions to adopt the International Residential Code, and the International Existing Building Code. In 2023, the Illinois Legislature passed a bill (SB2368) to adopt all three codes, paving the way for Illinois access to BRIC Funds.

Illinois Residential Real Property Disclosure Act

The Illinois Residential Real Property Disclosure Act requires home sellers to disclose whether the following are true, to the best of their knowledge:

- I am aware of flooding or recurring leakage problems in the crawl space or basement.
- I am aware that the property is located in a floodplain and that I currently have flood hazard insurance on the property.

Illinois State Floodway Standard

Illinois Administrative Code prohibits development in designated floodways unless the developed is considered an “appropriate use.” The floodway rules, administered by the Illinois Department of Natural Resources, Office of Water Resources also mandates a standard of a 0.10-foot allowable surcharge to delineate the floodway (Title 17, Chapter 1, Subchapter h, Part 3700, Sections 3700.60, 3700.70 and 3700.75; Construction in Floodways and Rivers, Lakes and Streams).

Illinois Mobile Home Tiedown Act

(210 ILCS 120/) Illinois Mobile Home Tiedown Act (from Ch. 111 1/2, par. 4405): Section 5 of the Illinois Mobile Home Tiedown Act indicates that the owner of each mobile home installed in Illinois on or after January 1, 1980, or which is moved from one lot to another after that date, shall be responsible to insure that approved tiedown equipment is obtained and used to secure the mobile home to the surface upon which it is to rest when occupied. After January 1, 1990, the owner of each mobile home park shall make available to the owner of any mobile home moved within or into their mobile home park with a copy of the Mobile Homeowner's Tiedown Guide pamphlet prepared by the Department. This pamphlet shall be made available to the homeowner prior to the installation of the home. The Department shall be responsible for providing these pamphlets to each mobile home park owner. The installer of such equipment shall secure the mobile home in accordance with this Act and all rules and regulations promulgated under the authority of this Act. (Source: P.A. 86-595).

Urban Flood Awareness Act

(PA 098-0858) Urban Flood Awareness Act: This act, effective, 08/04/2014, called for the creation of a report regarding urban flooding in Illinois. It also defines "Urban Flooding" primarily as flooding not mapped by FEMA NFIP floodplain maps. The act outlines requests for information to be addressed in the report and specifies funding from the Capital Development Board and FEMA to fund the studies necessary for the report. (Source PA 098-0858)

4.12.3 Local Programs

Each planning partner has prepared a jurisdiction-specific annex to this plan (see Volume 2). In preparing these annexes, each partner completed a capability assessment that looked at its regulatory, technical, and financial capability to carry out proactive hazard mitigation. Refer to these annexes for a review of regulatory codes and ordinances applicable to each planning partner. This section provides an overview of countywide programs that can support or enhance the actions identified in this plan.

Metropolitan Water Reclamation District of Greater Chicago

The Metropolitan Water Reclamation District of Greater Chicago (District) is located primarily within the boundaries of Cook County, Illinois. The District's corporate limits encompass an area of 883.1 square miles which includes the City of Chicago and 128 suburban communities. The District also has authority for Stormwater Management for all of Cook County, including areas that lie outside the District's corporate limits, but within Cook County. The District's corporate limits are shown in the District's annex section in Volume 2. The mission of the District is to protect the health and safety of the public in its service area, protect the quality of the water supply source (Lake Michigan), improve the quality of water in water courses in its service area, protect businesses and homes from flood damage, and manage water as a vital resource for its service area.

In the separate sewered area, stormwater is controlled by a number of stormwater detention reservoirs to reduce flood damage. In the combined sewer area, the District's tunnel and reservoir project reduces basement backup and overflows to local waterways. While exercising no direct control over wastewater collection systems owned and maintained by cities, villages, sewer districts and utilities, the District does control municipal sewer construction by permits outside the City of Chicago. It also owns a network of intercepting sewers to convey wastewater from local collection systems to water reclamation plants.

The District is governed by a nine-member Board of Commissioners. Commissioners are elected at large and serve on a salaried part-time basis. Three Commissioners are elected every two years for six-year terms. Biannually, the board elects from its membership a president, vice president, and chairman of the committee on finance. An executive director who reports directly to the board manages the District's day-to-day operations. Eight appointed department heads report to the executive director. General administration, management & budget, public affairs, and affirmative action are direct staff and support units reporting to the executive director. The treasurer of the District, its chief financial officer, is appointed by and reports directly to the board.

Stormwater Management Program and Cook County Stormwater Management Plan

The District's Board of Commissioners adopted the Cook County Stormwater Management Plan (CCSMP) by ordinance in February 2007, and the CCSMP was amended in July 2014. The Stormwater Management Plan is not a regulatory ordinance and does not set forth any rules, regulations, or standards that a municipality will be held to or be required to enforce. It is a high-level organizational plan wherein the overall framework for the countywide program is established. The District adopted the plan as a first step in establishing the District's countywide stormwater management program. The mission of the countywide stormwater management program is to provide Cook County with rules, regulations, and projects to reduce the potential for stormwater damage to life, public health, safety, property and the environment. Nineteen stormwater management goals have been developed by the District. The goals extend from protecting new and existing developments from flooding to preventing the loss of water quality and habitat.

Cook County Watershed Management Ordinance

The District's Board of Commissioners adopted the Watershed Management Ordinance (WMO) on October 3, 2013, and it became effective on May 1, 2014. The WMO was amended in May 2019. The WMO establishes uniform, minimum, countywide stormwater management regulations throughout Cook County. Components that are regulated under the ordinance include drainage and detention, volume control, floodplain management, isolated wetland protection, riparian environment protection, and soil erosion and sediment control.

The Cook County Consolidated Plan

Each year, Cook County receives Community Development Block Grant, Emergency Solutions Grant, and HOME Investment Partnerships Program funds from the U.S. Department of Housing and Urban Development (HUD). These funds are used to support community development, affordable housing, and economic development in suburban Cook County, primarily for the benefit of low- and moderate-income households. Past initiatives have included housing rehabilitation, down payment assistance, social services, infrastructure, and workforce development. The County must submit a consolidated plan for this funding to HUD every five years, assessing local assets, resources, needs, market conditions, and opportunities. A new plan for 2015 – 2019 must be submitted to HUD by August 2015.

Chapter 5 Risk Assessment

5.1 High Hazard Dams and Levees

5.1.1 Hazard Description

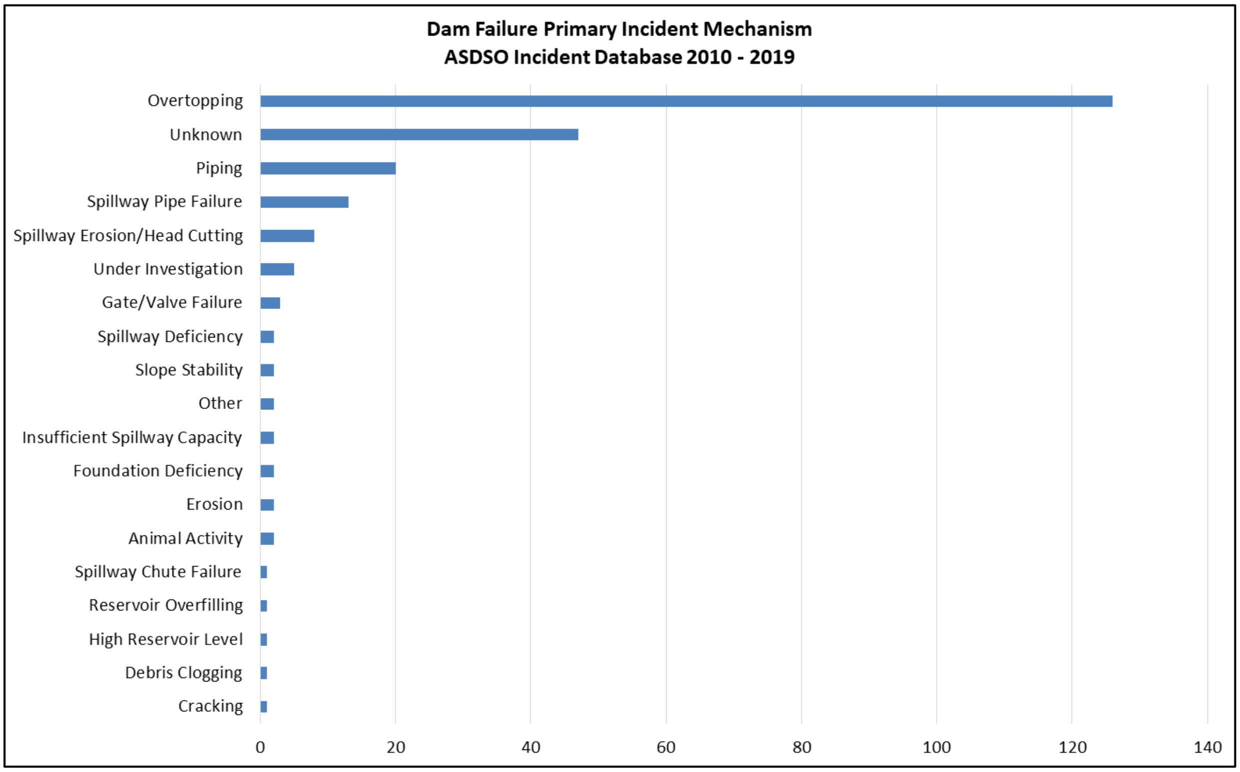
Dam: A barrier constructed across a watercourse for storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings.

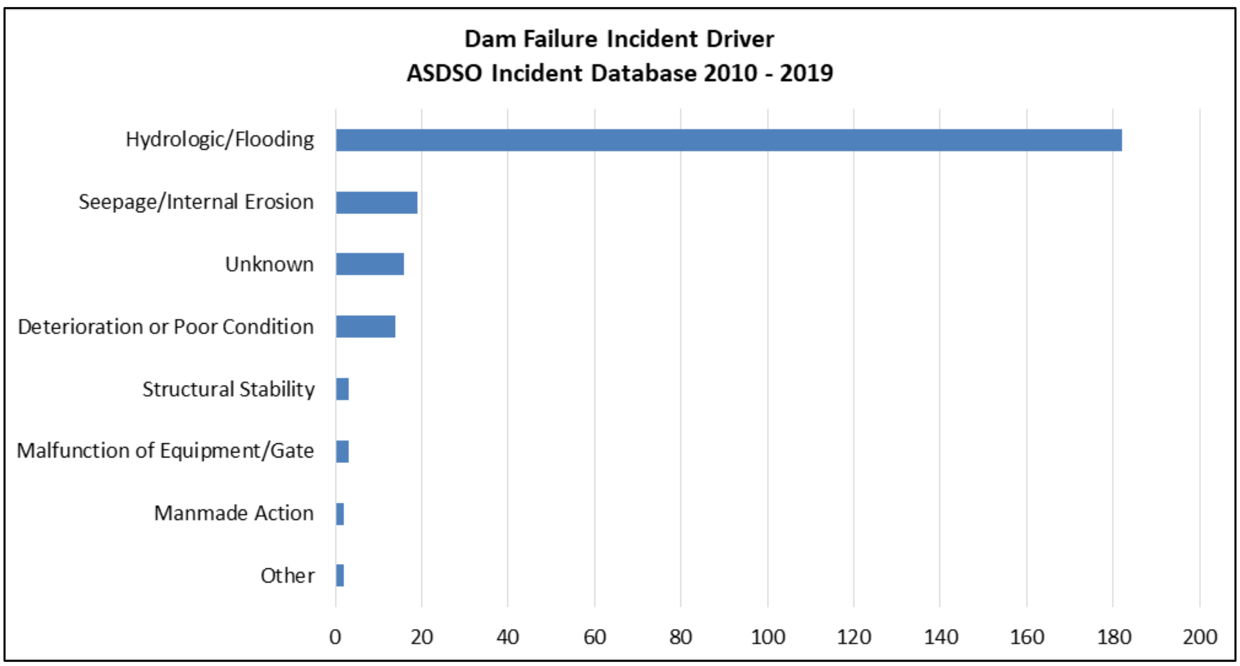
Dam Failure: Failure characterized by the sudden rapid and uncontrolled release of impounded water or liquid-borne solids. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water could be considered a failure.

The Causes of Dam Failure: Dam failures are most likely to happen for one of five reasons (ASDO).

1. Overtopping caused by water spilling over the top of a dam. Overtopping of a dam is often a precursor of dam failure. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for approximately 34% of all U.S. dam failures.
2. Foundation defects, including settlement and slope instability, cause about 30% of all dam failures.
3. Cracking caused by movements like the natural settling of a dam.
4. Inadequate maintenance and upkeep.
5. Piping is when seepage through a dam is not properly filtered, and soil particles continue to progress, and form sink holes in the dam. Another 20% of U.S. dam failures have been caused by piping (internal erosion caused by seepage). Seepage often occurs around hydraulic structures, such as pipes and spillways; through animal burrows; around roots of woody vegetation; and through cracks in dams, dam appurtenances, and dam foundations.

From the ASDSO Dam Incident Database, the images below illustrate dam failure incidents for the years 2010 through 2019. Incident data is mostly obtained from the state dam safety programs and/or media reports. The incident data is not inclusive of all dam safety incidents.





Levees: A man-made structure, typically an earthen embankment, designed and constructed according to sound engineering practices to contain, control, or divert the flow of water in order to provide protection from temporary flooding. Levees are often built alongside rivers and are used to prevent high water levels from flooding adjacent land. The primary function of a levee is to provide flood risk reduction; however, they may also serve other purposes such as water conservation, irrigation, or to support a roadway or railway.

Levees can vary in size and complexity, from simple mounds of earth to large-scale systems incorporating elements such as floodwalls, gates, and pumps. The effectiveness of a levee can be influenced by its design, construction, and maintenance, as well as by natural factors like river flow and sedimentation.

Causes of Levee Failure: The definition of a "levee failure" according to the National Levee Database (NLD) generally encompasses the following:

1. **Breach:** The most severe form of failure, a breach occurs when a levee fails completely, resulting in an opening that allows water to flow through uncontrolled. This can lead to significant flooding and damage to areas that the levee was intended to protect.
2. **Overtopping:** Occurs when water levels rise above the height of the levee, leading to spillover on the protected side. While technically an overtopping may not be a structural failure of the levee itself, it represents a failure to contain the water as designed.
3. **Structural Damage:** This includes any form of damage that compromises the integrity of the levee, such as erosion, seepage, or structural weakening. These issues may not immediately lead to a breach or overtopping but indicate that the levee is at risk of failing.

Inadequate Performance: This refers to situations where the levee does not perform as designed, even if there's no visible structural damage. This could be due to design flaws or unforeseen environmental conditions.

5.1.2 Hazard Location

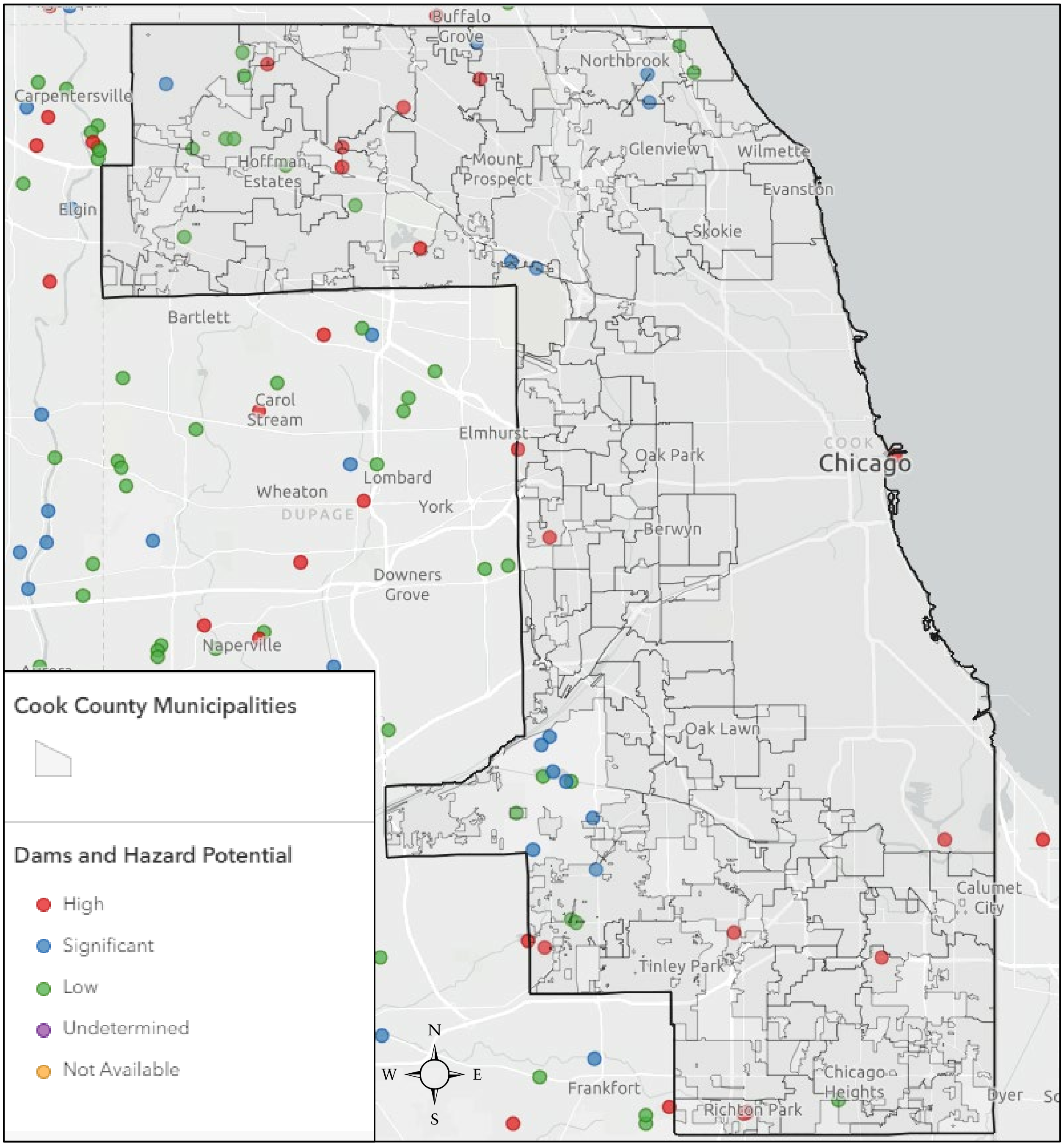
According to the National Inventory of Dams, there are 44 Dams located in Cook County (National Inventory of Dams). The table below lists the location and the details of each dam.

DAMS LOCATED IN COOK COUNTY, IL								
Name	**National ID#**	**Location**	**Owner**	**Year Built**	**Primary Purpose**	**Height (feet)**	**Storage Capacity (acre-feet)**	**Max Discharge (cubic feet/sec)**
Thorton Quarry Gap Dam	IL55136	Cook County	Metropolitan Water Reclamation District	2013	Flood Risk Reduction	116	9,900	-
Thomas J. O'Brien Lock and Controlling Works	IL01013	Cook County	USACE - Chicago District	1960	Navigation, Other, Flood Risk Reduction	37	9,700	2,200
Chicago River and Harbor Controlling Works	IL55094	Cook County	USACE - Chicago District	1938	Navigation, Other, Flood Risk Reduction	31	1,000,000	-
Upper Salt Creek Structure 3 Dam	IL50045	Cook County	Metropolitan Water Reclamation District	1985	Flood Risk Reduction	26	1,584	13,948
Busse Woods	IL01231	Cook County	Illinois Department	1977	Flood Risk Reduction, Recreation	23	17,621	24,272

DAMS LOCATED IN COOK COUNTY, IL								
Name	**National ID#**	**Location**	**Owner**	**Year Built**	**Primary Purpose**	**Height (feet)**	**Storage Capacity (acre-feet)**	**Max Discharge (cubic feet/sec)**
Reservoir South Dam			of Natural Resources					
Upper Salt Creek Structure 2 Dam	IL50021	Cook County	Metropolitan Water Reclamation District	1984	Flood Risk Reduction	23	985	9,582
Midlothian Creek Dam	IL01002	Cook County	Illinois Department of Natural Resources	1975	Flood Risk Reduction, Recreation	22	1,279	8,031
Lake George Dam	IL01083	Cook County	Village of Richton Park	1969	Flood Risk Reduction, Other	20	539	870
Richton Crossing Dam	IL01084	Cook County	Borg Warner Equity Corp	1976	Flood Risk Reduction	16	53	920
Lower Elmhurst Dam	IL50304	Cook County	City of Elmhurst	1994	Flood Risk Reduction	15	93	-
Brentwood Townhome Dam	IL55180	Cook County	Brentwood Townhome Owners Association	1960	Flood Risk Reduction	14	6	164
Upper Salt Creek Structure 4 Dam	IL50054	Cook County	Metropolitan Water Reclamation District	1987	Flood Risk Reduction, Recreation	14	775	1,300
Grasslands Basin Dam	IL55173	Cook County	Village of Orland Park	-	-	10	22	-
Cornell Avenue Dam	IL55079	Cook County	Village of Wheeling	1977	Flood Risk Reduction	8.5	-	-
Maple Lake Dam	IL00878	Cook County	Forest Preserve District of Cook County	1918	Recreation	25	765	-
Bullfrog Lake Dam	IL00869	Cook County	Forest Preserve District of Cook County	1958	Recreation	17	144	-
Saganashkee Slough 1 Dam	IL00870	Cook County	Forest Preserve District of Cook County	1948	Recreation	14	2,379	-
White Pine Ditch Dam	IL01227	Cook County	Metropolitan Water Reclamation District	1975	Flood Risk Reduction	13	5	-
Papoose Lake Dam	IL00867	Cook County	Forest Preserve District of Cook County	1956	Recreation	12	143	-
Willow Higgins	IL55035	Cook County	City of Chicago	-	Flood Risk Reduction	12	32	-

DAMS LOCATED IN COOK COUNTY, IL								
Name	**National ID#**	**Location**	**Owner**	**Year Built**	**Primary Purpose**	**Height (feet)**	**Storage Capacity (acre-feet)**	**Max Discharge (cubic feet/sec)**
Reservoir Dam								
Techny Reservoir Dam	IL01228	Cook County	Metropolitan Water Reclamation District	1979	Flood Risk Reduction	11	350	-
Touhy Avenue Reservoir Dam	IL55104	Cook County	City of Chicago/ Metropolitan Water Reclamation District	2004	Flood Risk Reduction	10	740	-
Galvins Lake Dam	IL00862	Cook County	Marvin Duntemen	1938	Recreation	10	120	-
Tampier Lake Dam	IL00866	Cook County	Forest Preserve District of Cook County	1964	Recreation	9	859	-
Main Street Triangle Dam	IL55123	Cook County	Village of Orland Park	-	Flood Risk Reduction	9	0	-
Saganashkee Slough 6 Dam	IL01216	Cook County	Forest Preserve District of Cook County	1948	Recreation	7	2,375	-
Annets Woods West Basin Dam	IL55179	Cook County	Annets Woods, LLC	-	Flood Risk Reduction	-	-	-
Sauk Trail Lake Dam	IL00868	Cook County	Forest Preserve District of Cook County	1923	Recreation	18	376	-
Skokie Lagoons Dredge Disposal Dam	IL50273	Cook County	Forest Preserve District of Cook County	1990	Debris Control	16	360	6
South Lake of The Coves Dam	IL01130	Cook County	Village of South Barrington	1969	Recreation	16	117	-
Chicago Botanical Gardens South Inlet Dam	IL55082	Cook County	Chicago Botanical Gardens	1970	Flood Risk Reduction, Recreation	15	961	825
Wetfoot Lake Dam	IL55027	Cook County	Forest Preserve District of Cook County	-	Fish and Wildlife Pond	13	633	-
Holy Family Villa Lake Dam	IL00865	Cook County	Holy Family Villa	1927	Recreation	12	84	-

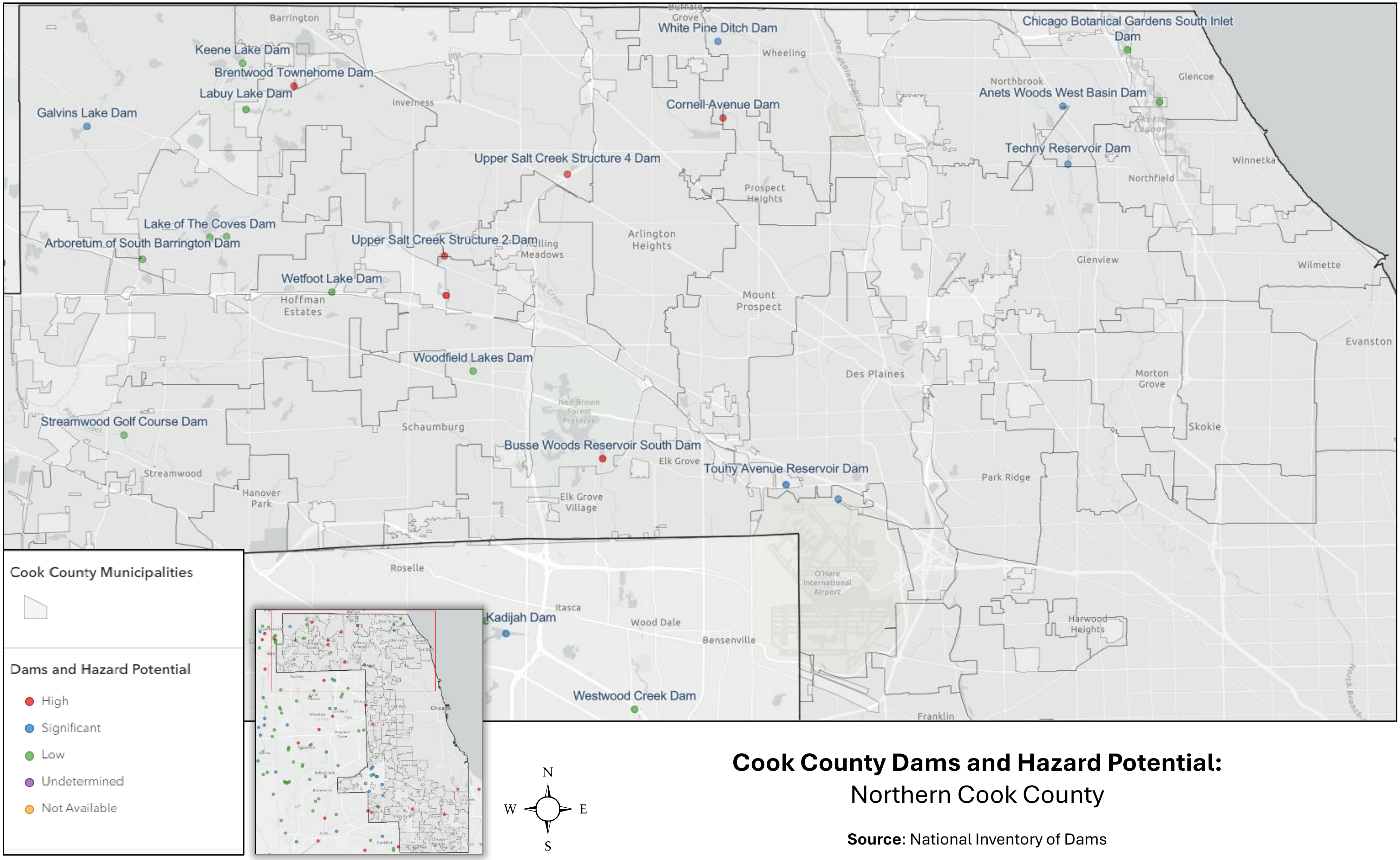
DAMS LOCATED IN COOK COUNTY, IL								
Name	**National ID#**	**Location**	**Owner**	**Year Built**	**Primary Purpose**	**Height (feet)**	**Storage Capacity (acre-feet)**	**Max Discharge (cubic feet/sec)**
Lake of The Coves Dam	IL00863	Cook County	Village of South Barrington	1969	Recreation	10	404	-
Colette Highlands Dam	IL55092	Cook County	Village of Orland Park	-	Flood Risk Reduction	10	84	-
Saganashkee Slough 7 Dam	IL01217	Cook County	Forest Preserve District of Cook County	1948	Recreation	9	2,375	-
Mayfair Reservoir Dam	IL55169	Cook County	Metropolitan Water Reclamation District	1977	Flood Risk Reduction	9	100	-
Saganashkee Slough 2 Dam	IL01212	Cook County	Forest Preserve District of Cook County	1948	Recreation	8	2,375	-
Arboretum of South Barrington Dam	IL55125	Cook County	Arboretum of South Barrington LLC	-	Flood Risk Reduction	8	88	299
Woodfield Lakes Dam	IL50311	Cook County	Woodfield Lake Campus Association	1977	Recreation	8	61	500
Keene Lake Dam	IL00877	Cook County	Unknown	1944	Recreation	8	113	-
Streamwood Golf Course Dam	IL50158	Cook County	Village of Streamwood	1989	Flood Risk Reduction	8	145	390
Labuy Lake Dam	IL55126	Cook County	Forest Preserve District of Cook County	-	Recreation	7	150	380
Orland Park Basin Dam	IL50144	Cook County	Village of Orland Park	1992	Flood Risk Reduction	7	220	476
Source: National Inventory of Dams (2024)								



Cook County Dams

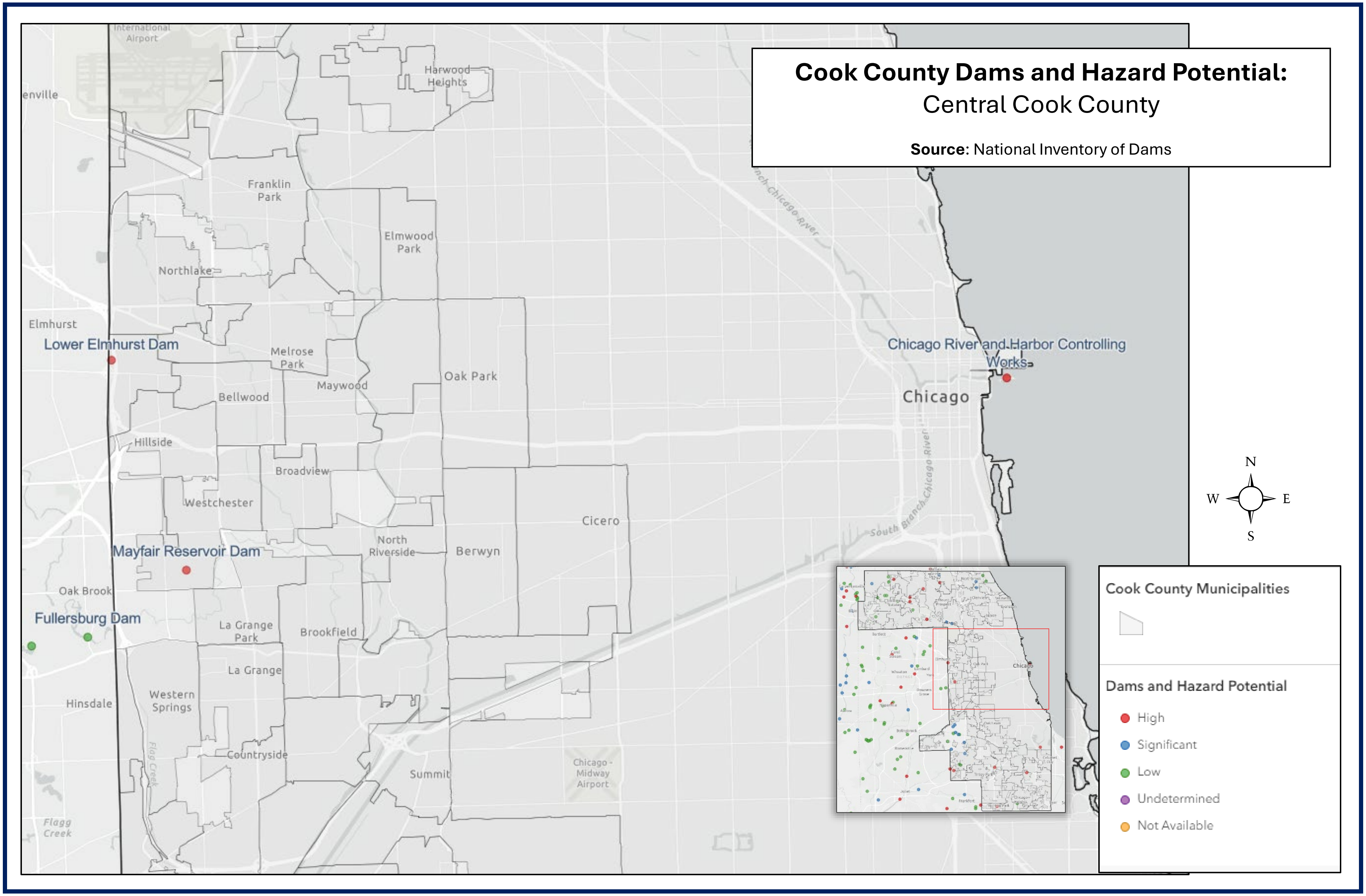
Hazard Potential

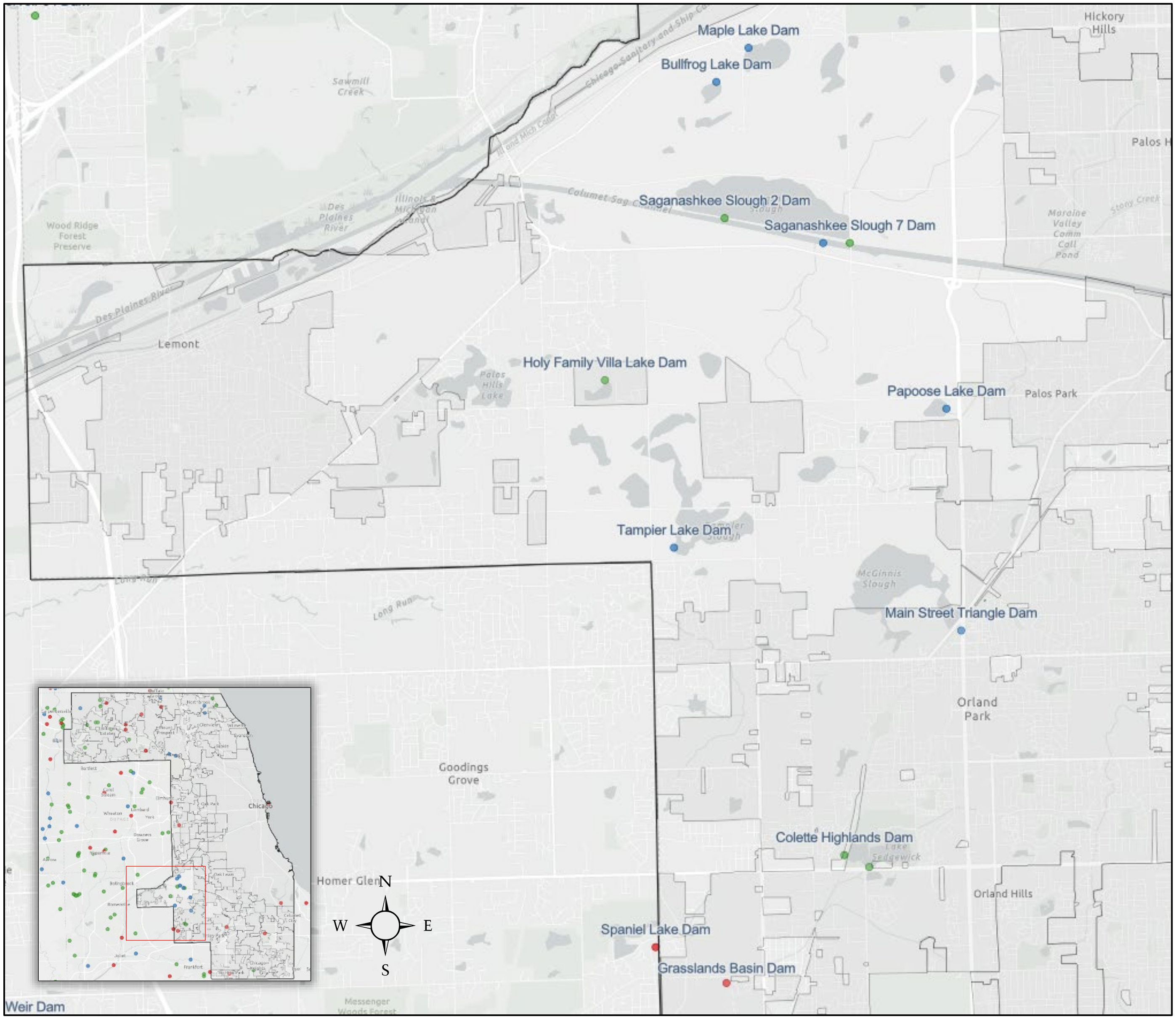
Source: National Inventory of Dams



Cook County Dams and Hazard Potential:
Northern Cook County

Source: National Inventory of Dams


Cook County Dams and Hazard Potential:
Central Cook County
Source: National Inventory of Dams
Lower Elmhurst Dam
Mayfair Reservoir Dam
Fullersburg Dam
Chicago River and Harbor Controlling Works
Chicago
Franklin Park
Elmwood Park
Northlake
Melrose Park
Maywood
Oak Park
Bellwood
Hillside
Broadview
Westchester
North Riverside
Berwyn
Cicero
La Grange Park
La Grange
Brookfield
Western Springs
Countryside
Summit
Hinsdale
Oak Brook
Elmhurst
Harwood Heights
Chicago - Midway Airport
N
S
W
E
Cook County Municipalities
Dams and Hazard Potential
High
Significant
Low
Undetermined
Not Available



Cook County Dams and Hazard Potential:

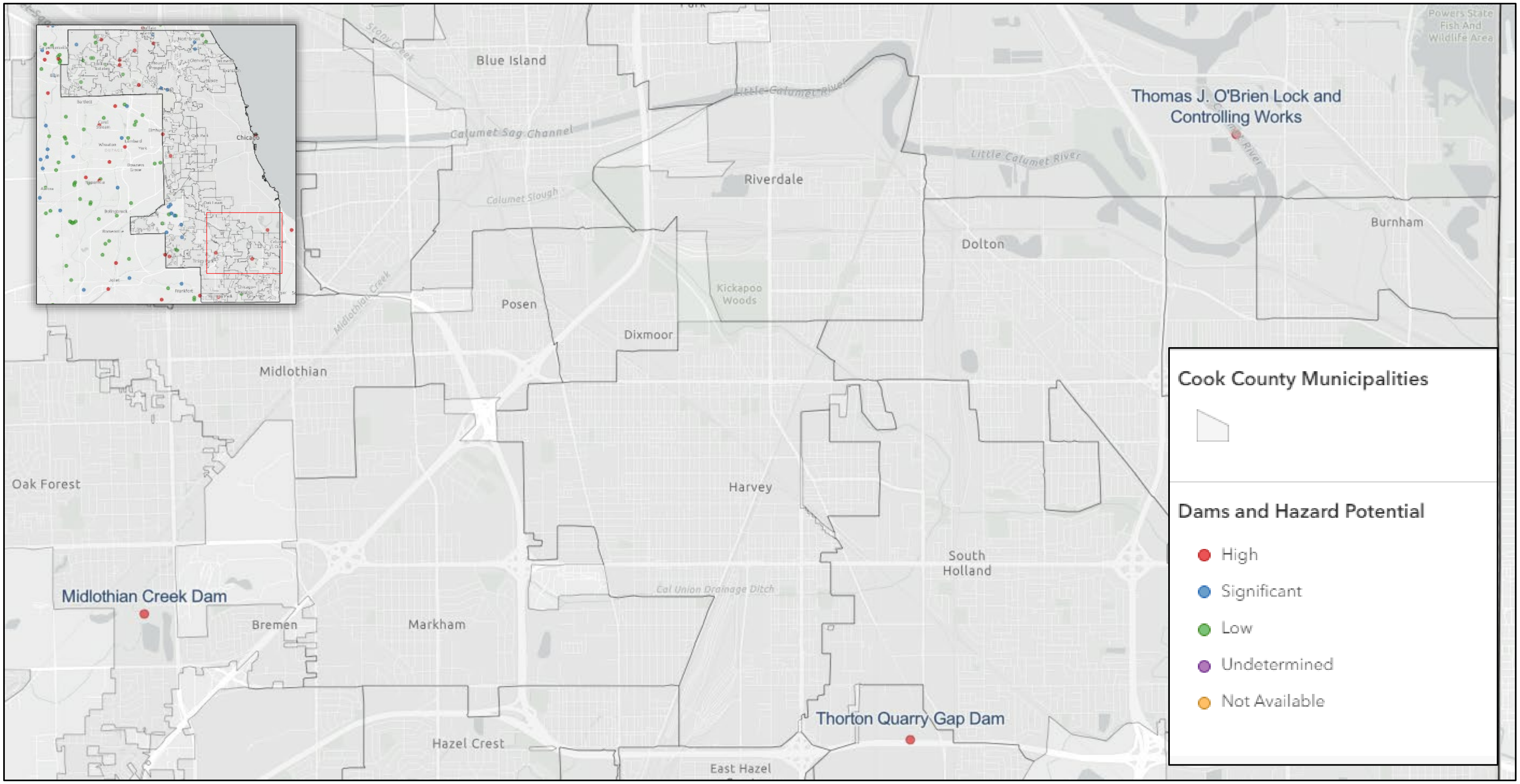
Southwest Cook County

Source: National Inventory of Dams

Cook County Municipalities

Dams and Hazard Potential

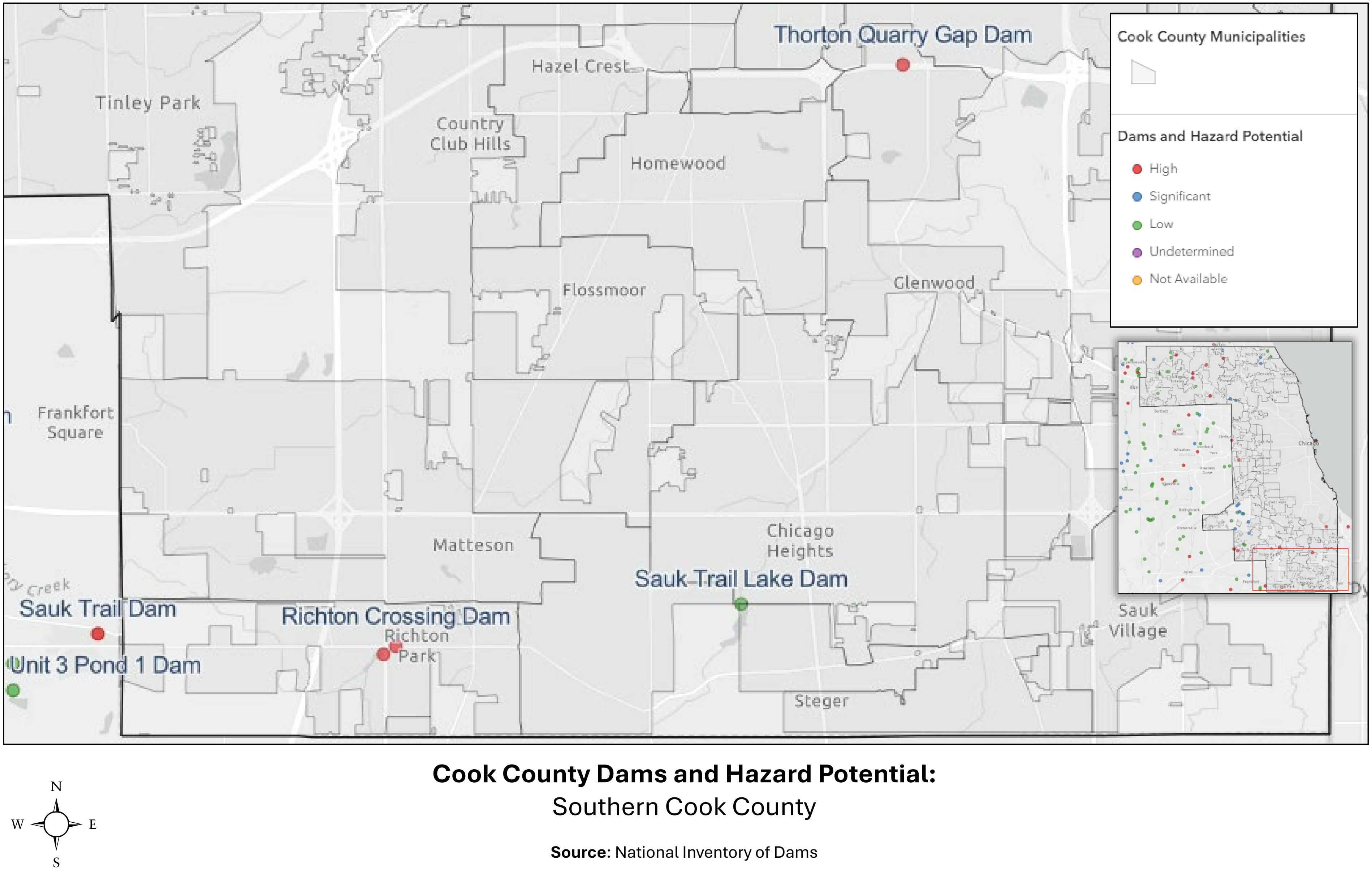
- High
- Significant
- Low
- Undetermined
- Not Available



Cook County Dams and Hazard Potential:

Southeast Cook County

Source: National Inventory of Dams



Cook County Dams and Hazard Potential:
Southern Cook County

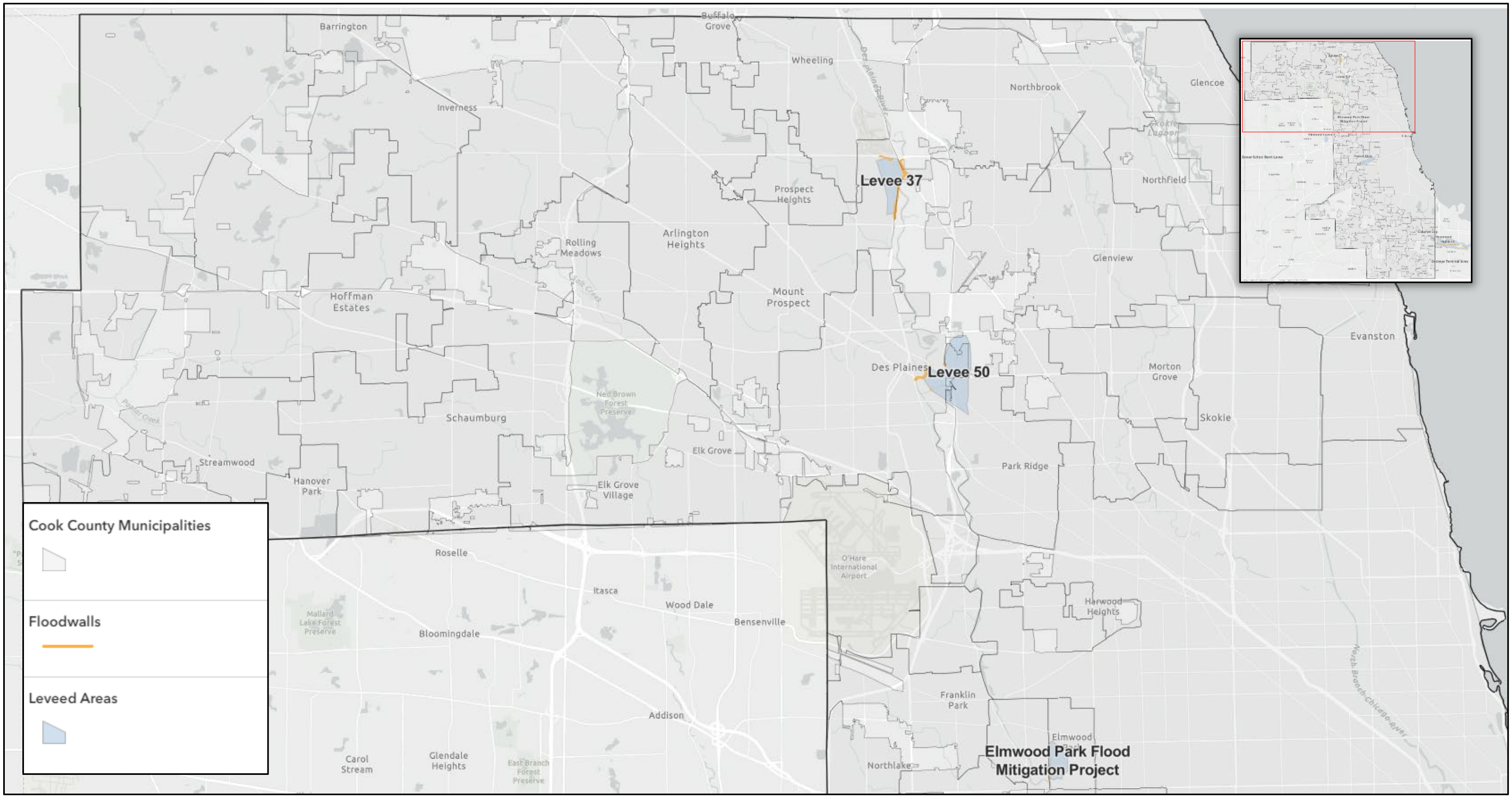
Source: National Inventory of Dams

HIGH HAZARD DAMS IN COOK COUNTY											
Dam Name	**Other Names**	**Owner Names**	**Owner Types**	**Primary Purpose**	**City**	**Distance to Nearest City (Miles)**	**Primary Dam Type**	**Max Storage (Acre-Ft)**	**Drainage Area (Sq Miles)**	**Max Discharge (Cubic Ft/Second)**	**Hazard Potential Classification**
Busse Woods Reservoir South Dam	Busse Woods Reservoir(South Dam On Salt Cr)	ILLINOIS DEPARTMENT OF NATURAL RESOURCES	State	Flood Risk Reduction	ELK GROVE		Earth	17621	52.8	24272	High
Midlothian Creek Dam	Twin Lakes	ILLINOIS DEPARTMENT OF NATURAL RESOURCES	Local Government	Flood Risk Reduction	OAK FOREST	1	Earth	1279	10.7	8031	High
Richton Crossing Dam	Richton Crossing Detention Reservoir	BORG WARNER EQUITY CORP.	Private	Flood Risk Reduction	MATTESON	1	Earth	53	1.7	920	High
Cornell Avenue Dam	Lake of The Winds Detention Basin Dam	VILLAGE OF WHEELING	Private	Flood Risk Reduction	WHEELING	0.1	Earth				High
Upper Salt Creek Structure 4 Dam	Twin Lakes Reservoir	METROPOLITAN WATER RECLAMATION DISTRICT	Local Government	Flood Risk Reduction	PALATINE		Earth	775		1300	High
Lake George Dam	Lake George	VILLAGE OF RICHTON PARK	State	Flood Risk Reduction	MATTESON	1	Earth	539	1.6	870	High
Brentwood Townehome Dam		BRENTWOOD TOWNHOME OWNERS ASSOCIATION	Private	Flood Risk Reduction	BARRINGTON	0.1	Earth	1	11	164	High

Grasslands Basin Dam		VILLAGE OF ORLAND PARK	Local Government	Flood Risk Reduction		0	Earth	22	0.1		High
Upper Salt Creek Structure 2 Dam	Plum Grove Reservoir	METROPOLITAN WATER RECLAMATION DISTRICT	Local Government	Flood Risk Reduction	PALATINE		Earth	985	1.9	9582	High
Lower Elmhurst Dam	Lower Elmhurst Reservoir	CITY OF ELMHURST	Local Government	Flood Risk Reduction	ELMHURST	0.1	Earth	93			High
Upper Salt Creek Structure 3 Dam	St. Michael Reservoir	METROPOLITAN WATER RECLAMATION DISTRICT	Local Government	Flood Risk Reduction	ROLLING MEADOWS		Earth	1584		13948	High
Thorton Quarry Gap Dam		METROPOLITAN WATER RECLAMATION DISTRICT	Private	Flood Risk Reduction	THORNTON	0.1	Concrete	9900	0.1		High
Thomas J. O'Brien Lock and Controlling Works	Lake Calumet	USACE - Chicago District	Federal	Navigation	CHICAGO		Concrete	9700	250	2200	High
Chicago River and Harbor Controlling Works	Chicago Lock	USACE - Chicago District	Federal	Navigation	CHICAGO		Other	1000000	0	0	High

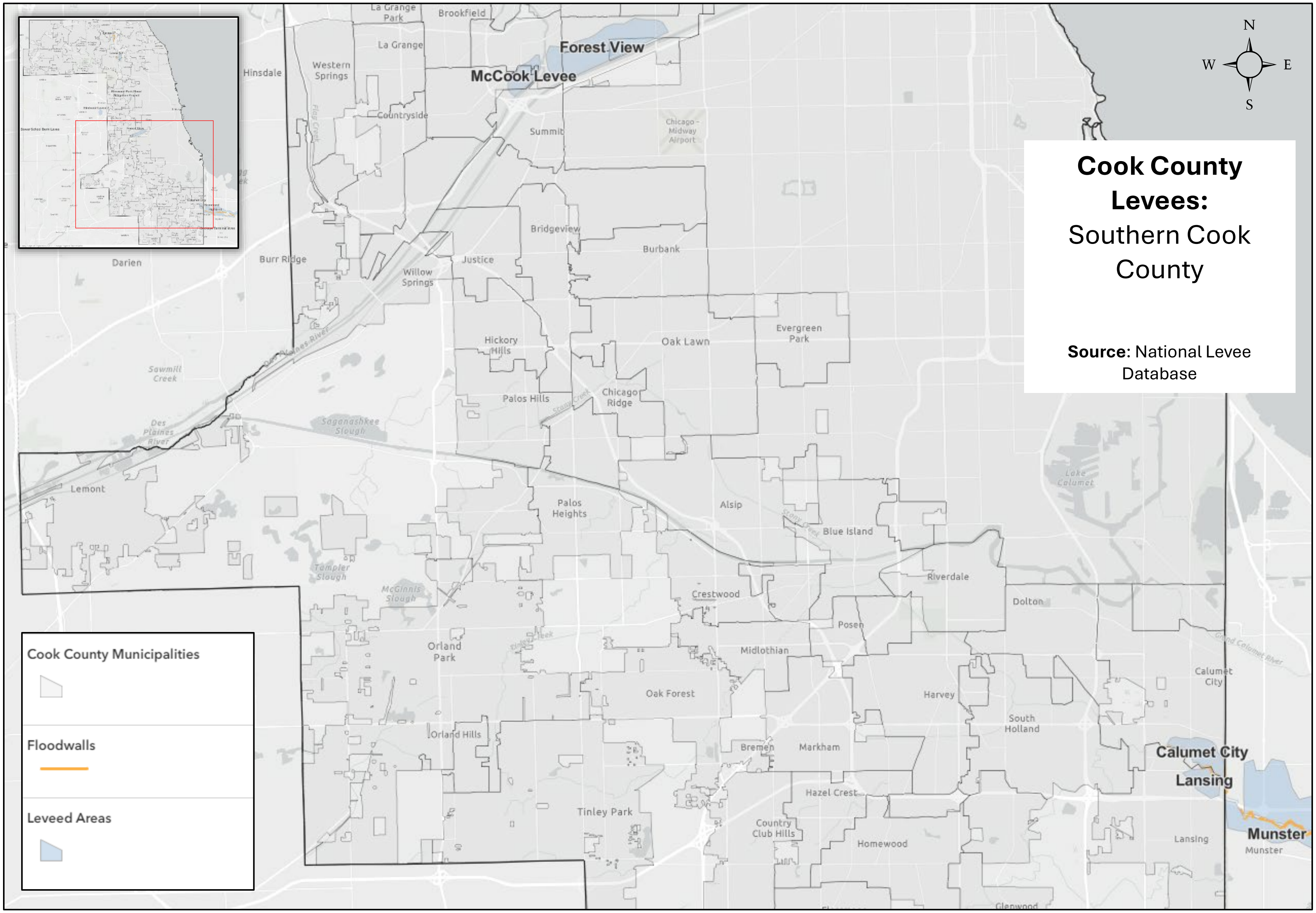
According to the National Inventory of Levees, there are seven major levee systems located in Cook County (National Inventory of Levees). Munster Levee is included due to its proximity to the Cook County border. The table below lists the location and the details of both levees.

LEVEES IN COOK COUNTY					
Levee	**State**	**County**	**Community**	**Lead Organization**	**Flood Source, if available**
Calumet City	Illinois, Indiana	Cook, Lake	Calumet City, IL; Lansing, IL; Munster, IN	Calumet City	Little Calumet River
Elmwood Park Flood Mitigation Project	Illinois	Cook	River Grove, IL	Elmwood Park Village, River Grove Village	
Forest View	Illinois	Cook	Cook County, IL; Lyons, IL	Metropolitan Water Reclamation District of Greater Chicago	
Lansing	Illinois	Cook	Lansing, IL	Village of Lansing, IL	
Levee 37	Illinois	Cook	Cook County, IL; Prospect Heights, IL	Illinois Department of Natural Resources, Illinois Department of Transportation	Des Plaines River
Levee 50	Illinois	Cook	Des Plaines, IL	Illinois Department of Natural Resources, Illinois Department of Transportation, Union Pacific Railroad	Des Plaines River
McCook Levee	Illinois	Cook	Lyons, IL; McCook, IL; Summit, IL		
Munster*	Indiana	Cook, Lake	Hammond, IN; Munster, IN	INDOT, Little Calumet River Basin Development Commission	Little Calumet River



Cook County Levees:
Northern Cook County

Source: National Levee Database


Cook County Levees:
Southern Cook County
Source: National Levee Database
N
W
E
S
Cook County Municipalities
Floodwalls
Leveed Areas
Forest View
McCook Levee
Calumet City
Lansing
Munster
La Grange Park
Brookfield
La Grange
Western Springs
Hinsdale
Countryside
Summit
Chicago - Midway Airport
Bridgeview
Burbank
Justice
Willow Springs
Burr Ridge
Darien
Hickory Hills
Oak Lawn
Evergreen Park
Palos Hills
Chicago Ridge
Sawmill Creek
Des Plaines River
Saganashkee Slough
Lemont
Palos Heights
Alsip
Blue Island
Lake Calumet
Riverdale
Dolton
Crestwood
Tampier Slough
McGinnis Slough
Orland Park
Posen
Midlothian
Calumet City
Oak Forest
Harvey
South Holland
Orland Hills
Bremen
Markham
Hazel Crest
Tinley Park
Country Club Hills
Homewood
Lansing
Munster
Glenwood

Calumet City

The Calumet City Levee System is located on the right (north) bank of the Little Calumet River in Calumet City, Illinois. It consists of two segments that reduce flood risk to Calumet City; Calumet City - East and Calumet City - West. This system relies on the Forest Ave Levee to the east, which was federally constructed and active in the PL 84-99 program. The west end of Calumet City - West connects to the Burnham Greenway, a former railroad embankment, now a bike path at the west end. Burnham Greenway is considered part of the Cal City West segment as it ties into high ground at the end. High ground along Burnham Ave divides the system into the East and West segments. The river runs east to west, with the Calumet City Levee - East starting near the Illinois-Indiana state border at State Line Ave. It continues generally northwest to Burnham Ave. The project starts as earthen embankment from the east (upstream) end for about 1,500 feet until a short ~140-ft long floodwall is present to Wentworth Ave. The embankment resumes west of Wentworth and goes about 3,700 feet to Burnham Ave, where it ties into high ground. According to the plans, the embankments have slopes of 3H:1V, although some slopes appear steeper than this in the field, particularly on the riverside. Similarly, the plans call out the crest as 10 feet wide, but the actual crest is about 5 feet wide. The Burnham Greenway portion of the segment is at least 3 feet taller and has a 20-ft wide asphalt-capped crest. There are 14 gated gravity structures with flap gates and/or sluice gates, as well as, 2 pump stations across the system.

Performance, Condition, and Risk:

The loss of life calculated by the LST is about 2-3 for the East Segment and 1 for the West Segment. When compared to the population in the leveed area (daytime East: 3,524; West: 1,068), is a relatively low percentage. This low rate can be attributed to the depth of the water, which is a maximum of around 5 feet with almost all of the structures subject to a potential of less than 2 ft. There is no Emergency Action Plan and no designated overtopping location. However, there are many evacuation routes that quickly lead to high ground out of the leveed area with a distance of at most, a 1/2 mile. Under a breach scenario, the inundation levels would not pose a great risk to a large number of individuals due to the relatively limited depth of flooding.

If overtopping or breach occurred in the east end near the state border, more overland flow would occur. If a breach occurred in the west end, the east end may not be inundated. There are no designated overflow locations. Any overtopping/breach would have the water spread out and decrease in depth due to the relatively flat and paved nature of the leveed area. The water would generally pond along the levee and on roadways, reducing the risk to homes and residents.

The consequences captured by the LST include monetary value on property within the leveed area. There are no Critical infrastructure identified in the tool or otherwise known that would have regional or national impacts. There are a couple of schools within the leveed area. There are no crops in this urban area.

Elmwood Park Flood Mitigation Project

For decades, flooding along the Des Plaines River and an undersized sewer system bedeviled the Village of Elmwood Park, Illinois. Incorporated in 1914, the Chicago suburb is home to almost 25,000 people living within 1.91 square miles. Until recently, the village was served by a single combined sewer system that lacked the capacity necessary to convey increased runoff generated by major storms. That changed with the adoption and implementation of a flood mitigation plan that required extensive coordination with public and private stakeholders.

The 250-acre project area provides backup protection in the form of a separate storm sewer system constructed at strategic locations throughout the village, a 14.6-acre-foot detention reservoir, a 150-cubic-feet-per-second pumping station, and a 1,500-foot flood wall. The new storm sewers vary in size from 12 inches in diameter to 3-foot-by-12-foot box culverts, totaling approximately 40,000 feet with a new 17-foot-by-13-foot outfall to the river. The flood wall keeps the river from inundating the southwest portion of the village.

Performance, Condition, and Risk: No data is available on the performance, condition and risk of the flood wall.

Forest View/Lyons
Lyons levee, located along the east bank of the Des Plaines River in the Ottawa Woods and Portage Woods Forest Preserves, provides a line of protection for the communities of Forest View and Stickney, IL.

Performance, Condition, and Risk:
Flood risk in the community is associated with overbank flooding from the Des Plaines River. The area at risk of flooding includes homes, businesses, and roadways. There are approximately 800 homes in the estimated inundation area and businesses include large industrial facilities used for storing fuels, a Commonwealth Edison power substation, and wastewater treatment facilities associated with the MWRDGC Stickney Water Reclamation Plant.

Lansing
The Lansing Levee System is located on the left (south) bank of the Little Calumet River in Lansing, Illinois. It is a single-segment system that ties into high ground at both ends. The river runs east to west, with the Lansing Levee starting near the Illinois-Indiana state border at Bernice Road, just north of I-80/94. It continues generally northwest to just west of Burnham Ave. The project starts as earthen embankment from the east (upstream) end for about 3,300 feet until Wentworth Ave. West of Wentworth, a floodwall is present for about 2,000 feet until it ties into high ground near the end of 169th Ct. The earthen embankment picks up about 300 feet later as the south rim of the reservoir, which goes for about 1,000 feet to Burnham Ave. West of Burnham Ave, the earthen embankment extends for another 500 feet or so until it reaches high ground. The embankment has slopes of 4H: 1V and a crest width of 10 feet. The floodwall is mostly concrete T-Wall, while a short part at the west end is sheetpile with concrete decorative panels. There are 10 gated gravity structures with flap gates and/or sluice gates, as well as, 2 pump stations on either side of Burnham Ave.

Performance, Condition, and Risk:
The loss of life calculated by the LST is low (about 2) and when compared to the population in the leveed area (daytime 1366), is a relatively low percentage. This low rate can be attributed to the height of the water compared to the leveed area, which is a max of around 5 feet with almost all of the structures subject to a potential of less than 2 ft. Although there is no Emergency Action Plan and no overtopping location, there are multiple roadways that lead to high ground out of the leveed area with a distance of, at most, a 1/2 mile. Even under a breach scenario, the inundation levels would not pose a great risk to a large number of individuals. With the condition of the levee and low flood height in occupied areas, the tool may be overestimating the loss of life.

If an overtopping or breach occurred in the east end near the state border, more overland flow would occur. If a breach occurred in the west end, the east end may not be inundated. There are no designated overflow locations. Any overtopping/breach would have the water spread out and decrease in depth due to the relatively flat and paved nature of the leveed area. The water would generally pond along the levee and on roadways, reducing the risk to homes and residents.

The consequences captured by the LST include monetary value on property within the leveed area. I 80/94 is a major thoroughfare that if flooded can cause national impacts to transportation, which is the only Critical Infrastructure identified that could cause these regional/national impacts. Locally, the Lansing Public Works yard and Reavis Elementary School are within the leveed area. There are no crops in this urban area.

Levee 37

Levee 37 is a three-segment system that was constructed along the west bank of the Des Plaines River. The levee is considered three segments because the levee spans two municipalities; Prospect Heights to the north and Mt. Prospect to the south, split at Old Willow Road and includes a non-project segment along the expressway. It reduces flood risk of the leveed area to over 600 structures. The levee was constructed in phases from 2008 to 2017 by the U.S. Army Corps of Engineers (Corps). It consists of almost 9,000 feet of concrete and sheetpile floodwall, with short portions of compacted clay embankment about 700 feet long to tie the wall into high ground. The Palatine Road embankment also acts as part of the levee. There is one road closure gate at Milwaukee Road north of Palatine Rd bridge, which is closed during more extreme events. Three pump stations reduce interior flooding, but do not eliminate nuisance ponding on the land side of the levee.

Performance, Condition, and Risk:

The Corps completed a risk assessment for each of the Levee 37 Segments in 2015. The levee has performed well, including in April 2013 when the local municipalities had to flood-fight the last gap left in the wall before it was finished the following year. The overall condition of Levee 37 is sufficient, but limitations for risk reduction remain. Any given year could result in a flood, which the levee is not designed to handle.

Levee 50

Levee 50 (Rand Park) is a single segment system that was constructed along the east bank of the Des Plaines River within the City of Des Plaines. It reduces flood risk of the leveed area within Des Plaines and Park Ridge, Illinois to over 1,000 structures. The levee was constructed in phases from 1999 to 2011 by IDNR with U.S. Army Corps of Engineers (Corps) review. It consists of a compacted clay embankment about 2,500 feet long near Rand Road, concrete floodwall about 2,100 feet long along the river, and clay blanket along a railroad about 3,800 feet long. The I-294 Tollway also acts as part of the levee. There are two road closure gates (Rand Rd & Ballard Rd) which are closed during more extreme events. One large pump station pumps forces drainage from Farmer's Creek into the Des Plaines River during high water, while two other pump stations help reduce interior flooding. Based on USACE economic analysis, Levee 50 has prevented significant damages in the previous two events; over $6 million in July 2017 and $18 million in April 2013.

Performance, Condition, and Risk:

The Corps completed a risk assessment of the Levee 50 System in 2015. The levee has performed well since completion in 2011, including April 2013 when the system was loaded to within 3.5 feet of the levee top. Part of the reason for successful operation of the levee is active local participation from the City of Des Plaines who operates and maintains the project features. The overall condition of Levee 50 is sufficient, but limitations for risk reduction remain. Any given year could result in a flood, which the levee is not designed to handle. Also, since the area is heavily urban with I-294 partially dividing the leveed area, heavy congestion could be realized if an evacuation were necessary.

McCook Levee

McCook Levee is located on the west bank of the Des Plaines River in western Cook County, about 12 miles southwest of Downtown Chicago. The surrounding area is mostly urbanized, with a strong industrial base.

Performance, Condition, and Risk: No data is available on the performance, condition and risk of the levee.

Munster

The Munster Levee System is part of the Little Calumet River Flood Reduction and Recreation Project. The Munster Levee extends from the Illinois-Indiana State Line to Hart Ditch and provides protection to residential and business areas in the Town of Munster (which is not in Cook County). It consists of two levee segments: the Munster and Borman Non-Project Segment (NPS). The Munster segment is operated and maintained by the Local Sponsor, the Little Calumet River Basin Development Commission (LCRBDC), and the Borman NPS is operated and maintained by the Indiana Department of Transportation (INDOT). The 4-mile levee system includes levees, floodwalls, gates, pump stations, and street closures.

Performance, Condition, and Risk:

USACE Chicago District conducted a risk assessment of the Munster Levee in 2014 and the Borman NPS in 2018. The overall risk was considered low. Munster experienced flooding prior to the construction of the federal levees during the 2008 flood of record due to a breach of existing spoil-bank levees. The federal levees have performed well since constructed. The potential flooding from overtopping and prior to overtopping are similar. There are minor performance issues, such as encroachments and vegetation. During the high-water event in 2018, excessive leakage was observed through a section of floodwall east of Calumet Ave. Evacuation effectiveness is good due to the community being very aware of the levee's role in flood risk reduction, good evacuation planning, and effective flood warning systems. However, traffic congestion can be an issue due to high density population. The two levee segments work together to protect over 4,600 people that live and work behind the levee. A breach could result in flooding depths up to 10 feet, loss of life, and $162 million in economic damages. The Borman NPS is a robust highway embankment with a wide crest that is much higher than the required design elevation. There would be regional impacts from flooding of the Frank Borman Expressway (I-80/94), which is one of the most heavily used truck routes in the United States.

5.1.3 Regulatory Oversight

The potential for catastrophic flooding due to dam failures led to the passage of the National Dam Safety Act (Public Law 92-367). The National Dam Safety Program requires a periodic engineering analysis of every major dam in the country. The goal of this FEMA-monitored effort is to identify and mitigate the risk of dam failure to protect the lives and property of the public.

The National Levee Safety Act of 2007 established the National Committee on Levee Safety, which recommended to Congress the establishment of a national levee safety program, but none currently exists. The recommended program is based on three core concepts (National Committee on Levee Safety, no date):

- National leadership via a national levee safety program that includes an inventory and assessment of all the nation's levees, development of national levee safety standards, comprehensive risk communication and education, and coordination of environmental and safety concerns.
- Strong state levee safety programs that provide oversight, critical levee safety processes, and support for community levee safety activities
- A foundation of well-aligned federal agency programs and processes.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers is responsible for safety inspections of some federal and non-federal dams in the United States that meet the size and storage limitations specified in the National Dam Safety Act. The Corps has inventoried dams; surveyed each state and federal agency's capabilities, practices, and regulations regarding design, construction, operation, and maintenance of the dams; and developed guidelines for inspection and evaluation of dam safety (U.S. Army Corps of Engineers, no date).

The Corps of Engineers inspects and assesses approximately 2,500 levee systems across the country each year (U.S. Army Corps of Engineers, no date); however, that represents only about 10 percent of the nation's levees. None of the levees in the planning area are maintained by the Corps of Engineers; all are the responsibility of state and local agencies.

Federal Energy Regulatory Commission Dam Safety Program

The Federal Energy Regulatory Commission (FERC) cooperates with a large number of federal and state agencies to ensure and promote dam safety. More than 3,000 dams are part of regulated hydroelectric projects in the FERC program. Two-thirds of these are more than 50 years old. As dams age, concern about their safety and integrity grows, so oversight and regular inspection are important. FERC inspects hydroelectric projects on an unscheduled basis to investigate the following:

- Potential dam safety problems
- Complaints about constructing and operating a project.
- Safety concerns related to natural disasters.
- Issues concerning compliance with the terms and conditions of a license.

Every five years, an independent engineer approved by the FERC must inspect and evaluate projects with dams higher than 32.8 feet (10 meters), or with a total storage capacity of more than 2,000 acre-feet.

FERC monitors and evaluates seismic research and applies it in investigating and performing structural analyses of hydroelectric projects. FERC also evaluates the effects of potential and actual large floods on the safety of dams. During and following floods, FERC visits dams and licensed projects, determines the extent of damage, if any, and directs any necessary studies or remedial measures the licensee must undertake. The FERC publication *Engineering Guidelines for the Evaluation of Hydropower Projects* guides the FERC engineering staff and licensees in evaluating dam safety. The publication is frequently revised to reflect current information and methodologies.

FERC requires licensees to prepare emergency action plans and conducts training sessions on how to develop and test these plans. The plans outline an early warning system if there is an actual or potential sudden release of water from a dam due to failure. The plans include operational procedures that may be used, such as reducing reservoir levels and reducing downstream flows, as well as procedures for notifying affected residents and agencies responsible for emergency management. These plans are frequently updated and tested to ensure that everyone knows what to do in emergency situations.

Illinois Department of Natural Resources

The Water Resources Division of the Illinois Department of Natural Resources (IDNR) issues permits for the construction of any structures in a floodway or floodplain (including levees); construction, operation and maintenance of new dams; and the modification, operation, and maintenance of existing dams. Dams are classified into one of three hazard classifications. All dams in the two higher classifications are required to have a permit. Dams in the lower hazard classification require a permit for construction or modification if they meet certain size criteria. Permits are also required for removing dams and transferring ownership of dams (IDNR, 2018). The Water Resources Division also has a Levee Safety Program, which is responsible for issuing permits regarding levees.

5.1.4 Hazard Extent/Intensity

Existing dam classification systems are numerous and vary within and between both federal and state agencies. Although differences in classification systems exist, they share a common thread: each system attempts to classify dams according to the potential impacts from a dam failure or mis-operation, should it occur. The hazard potential classification does not reflect in any way on the current condition of the dam (e.g., safety, structural integrity, flood routing capacity).

State and private classifications are the two primary dam hazard potential classification systems utilized in Cook County. Illinois dam classifications are defined under Ill. Admin. Code tit. 17, § 3702.30)., and used to permit construction, operation, and maintenance of dams by the IDNR Division of Water Resource Management (DWRM). Federal dam safety hazard classifications can be found in FEMA's *Federal Guidelines for Dam Safety Hazard Potential Classification System for Dams* publication.

According to Title 17 Illinois Administrative Code (IAC), dams are categorized by Illinois state dam safety regulators in one of three classes according to the degree of threat to life and property in the event of dam failure:

Class I: Dams that are located where failure has a high probability to cause loss of life or substantial economic loss more than that which would naturally occur downstream of the dam if the dam had not failed. A dam has a high probability for causing loss of life or substantial economic loss if it is located where its failure may cause additional damage to such structures as a home, hospital, a nursing home, a highly traveled roadway, a shopping center, or similar type facilities where people are normally present downstream of a dam. Similar to that of FEMA High Hazard Potential.

Class II: Dams located where failure has a moderate probability of causing loss of life or may cause substantial economic loss more than that which would naturally occur downstream of the dam if the dam had not failed. A dam has a moderate probability for causing loss of life or substantial economic loss if it is located where its failure may cause additional damage to such structures as a water treatment facility, a sewage treatment facility, a power substation, a city park, a U.S. Route, or Illinois Route highway, a railroad or similar type of facilities where people are downstream of the dam for only a portion of the day or on a more sporadic basis. Similar to FEMA Significant Hazard Potential.

Class III: Dams located where failure has a low probability for causing loss of life, where there are no permanent structures for human habitation, or minimal economic loss more than that which would naturally occur downstream of the dam if the dam had not failed. A dam has a low probability for causing loss of life or minimal economic loss if it is located where its failure may cause additional damage to agricultural fields, timber areas, township roads or similar type areas where people are seldom present and where there are few structures. Similar to FEMA Low Hazard Potential.

FEMA categorizes dams according to the degree of adverse incremental consequences of a failure or misoperation of a dam. The National Inventory of Dams uses the federal classification system. Dams are federally categorized into Low, Significant, and High Hazard Potential based on the probable loss of human life and the impacts on economic, environmental, and lifeline interests. Improbable loss of life exists where persons are only temporarily in the potential inundation area.

1. **Low Hazard Potential**: Failure or misoperation results in no probable loss of human life and low economic and environmental losses. Losses are principally limited to the owner's property.
2. **Significant Hazard Potential:** Failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.
3. **High Hazard Potential**: Failure or misoperation will probably cause loss of human life.

USACE LEVEE SAFETY ACTION CLASSIFICATION TABLE*

RISK	ACTIONS FOR LEVEE SYSTEMS AND LEVEED AREAS IN THIS CLASS (ADAPT ACTIONS TO SPECIFIC LEVEE SYSTEM CONDITIONS.)	RISK CHARACTERISTICS OF THIS CLASS
VERY HIGH (1)	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning systems and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as very high priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very high risk.
HIGH (2)	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as high priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in high risk.
MODERATE (3)	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in moderate risk.
LOW (4)	Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.
VERY LOW (5)	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very low risk.
NO VERDICT	Not enough information is available to assign an LSAC.	

*LEVEE RISK IS THE RISK THAT EXISTS DUE TO THE PRESENCE OF THE LEVEE SYSTEM, AND THIS IS THE RISK USED TO INFORM THE DECISION ON THE LSAC ASSIGNMENT. THE INFORMATION PRESENTED IN THIS TABLE DOES NOT REFLECT THE OVERTOPPING WITHOUT BREACH RISK ASSOCIATED WITH THE PRESENCE OR OPERATION OF THE LEVEE SYSTEM.

Dams

Dam failure can be catastrophic to all life and property downstream. The IDNR Dam Safety Program classifies dams and reservoirs in a three-class hazard rating system based on the degree of threat to life and property that would result from a dam failure (State of Illinois, 2016). The following table illustrates the hazard extent of each dam in terms of Storage Capacity, Max Discharge, and Hazard Class, if the data was available.

TABLE: DAMS IN THE PLANNING AREA WITH A HAZARD CLASS					
Name	**Water Course**	**City**	**Storage Capacity (acre-feet)**	**Max Discharge**	**Hazard Class**
Buffalo Creek Reservoir	Buffalo Creek	Buffalo Grove	720	N/A	I
Upper Salt Creek Structure #2	Tributary of Salt Creek	Palatine	297	9582	I
Touhy Reservoir	Higgin's Creek	Chicago	735	N/A	II
Upper Salt Creek Structure #3	St. Michael's Cemetery Tributary	Rolling Meadows	407	13948	I
Upper Salt Creek Structure #4	Salt Creek	Palatine	429	1300	I
Lake George Dam	Tributary to Butterfield Creek	Matteson	539	870	I
Midlothian Creek Dam	Midlothian Creek	Oak Forest	1,279	8031	I
Thornton Quarry Gap Dam	Thornton Quarry	Thornton	9,900	N/A	I
Busse Woods Res. South Dam	Salt Creek	Elk Grove	17,621	24272	I
Richton Crossing Dam	Tributary to Butterfield Creek	Matteson	53	920	I
Lower Elmhurst Dam	Tributary to Addison Creek-off stream	Elmhurst	93	N/A	I
Cornell Ave. Dam	McDonald Creek	Wheeling	--	N/A	I
Techny Reservoir Dam	W. Fork, N. Branch Chicago River	Glenview	250	N/A	II
Saganashkee Slough 1 Dam	Tributary to Calumet SAG Channel	Lemont	2,379	N/A	II
Bullfrog Lake Dam	Tributary to Des Plaines River	Oak Forest	144	N/A	II
Maple Lake Dam	Tributary to Des Plaines River	Lemont	765	N/A	II
Papoose Lake Dam	Tributary to Mill Creek	Palos Park	143	N/A	II

Tampier Lake Dam	Tributary to Long Run Creek	Lemont	859	N/A	II
Galvins Lake Dam	Tributary to Spring Creek	Carpentersville	120	N/A	II
White Pine Ditch Dam	White Pine Ditch	Arlington Heights	65	N/A	II
Chicago Harbor Lock	Chicago River	Chicago	--	N/A	II
Main St. Triangle Dam	Mill Creek-off-stream	Orland Park	--	N/A	II
Saganashkee Slough 6 Dam	Tributary to Calumet SAG Channel	Hastings	2,375	N/A	II
a. RE=Earth, VA=Arch, PG=Gravity, CN=Concrete					

Based on the U.S. Army Corps of Engineers, when dams are assigned the low (L) hazard potential classification, it means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner's property. Dams assigned the significant (S) hazard classification are those dams in which failure or incorrect operation results in no probable loss of human life; however, it can cause economic loss, environmental damage, and disruption of lifeline facilities. Dams classified as significant hazard potential dams are often located in predominantly rural or agricultural areas but could be located in populated areas with a significant amount of infrastructure. Dams assigned the high (H) hazard potential classification are those dams in which failure or incorrect operation has the highest risk of causing loss of human life and significant damage to buildings and infrastructure.

Levees

To determine the extent of levee failure, additional data regarding the volume and velocity of water that breaches the levee is needed. The planning team and stakeholders were not able to obtain this data, and future efforts will ensure this information is obtained.

5.1.5 Probability and Frequency

Dams: A dam can fail at any time, given the right circumstances. As a dam ages, the likelihood of failure increases as undesirable woody vegetation on the embankment, deteriorated concrete, inoperable gates, and corroded outlet pipes become problems. Since dam failures are often exacerbated by flooding, the probability of dam failures can be associated with projected flood frequencies. The probability of future dam failure for regulated dams can be reduced by proactive preventative actions in compliance with existing dam safety programs.

Levees: Determining levee failure probability depends on the condition and level of protection that levees provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps clearly reflect the flood protection capabilities of levees, and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners— usually states, communities, or in some cases private individuals or organizations—are responsible for ensuring that the levees they own are maintained according to their design.

5.1.6 Past Events

There is no record of Federal Dam Disaster Declarations in Cook County between 1956-2022 (State of Illinois HMP) 2023.

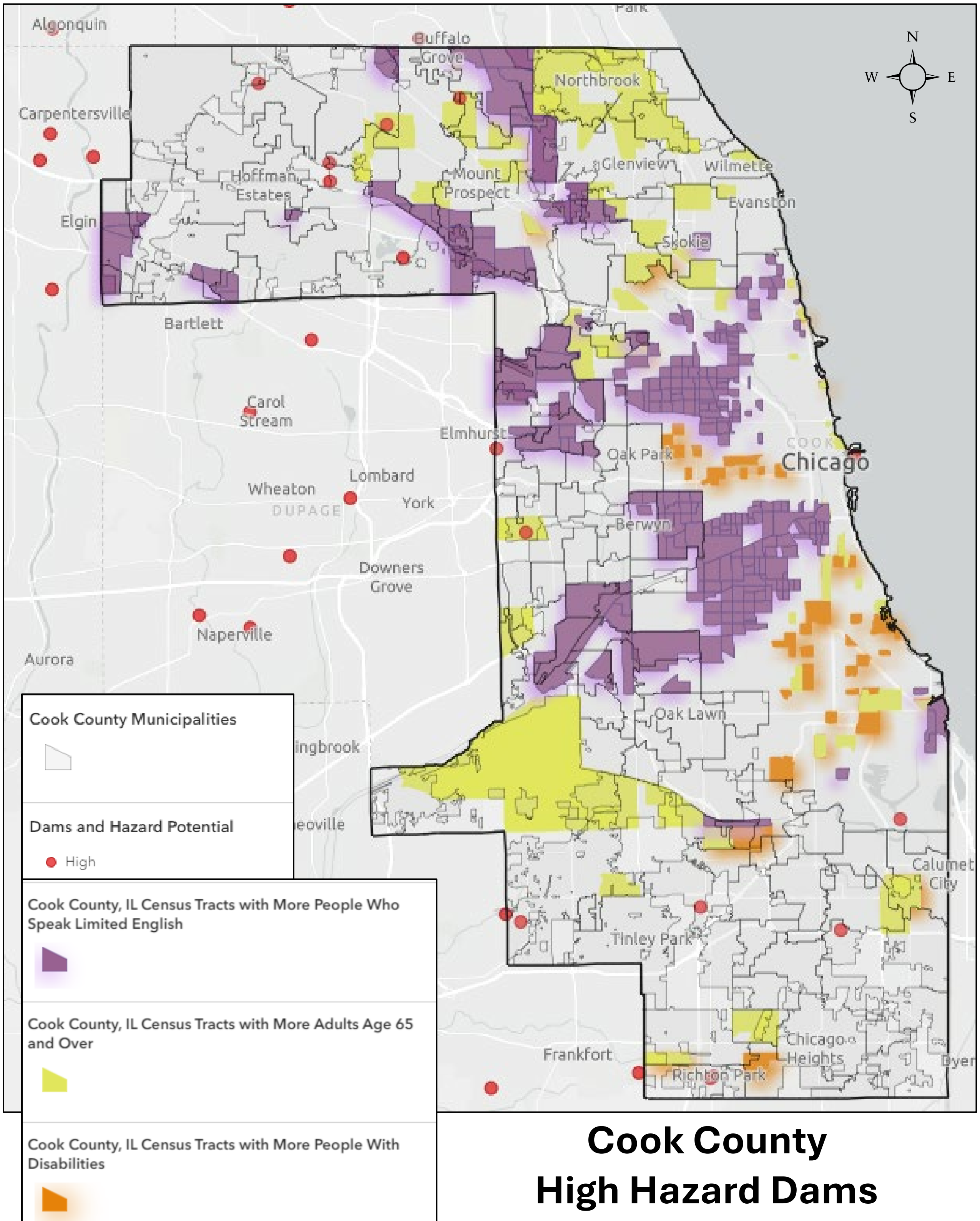
5.1.7 Vulnerability and Impacts

Impacted FEMA Community Lifelines	
Safety and Security Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	**Moderate**
Food, Hydration, Shelter Food, Hydration, Shelter, Agriculture	**Moderate**
Health and Medical Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	**Moderate**
Energy Power Grid, Fuel	**Minimal**
Communications Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	**Minimal**
Transportation Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	**Moderate**
Hazardous Materials Facilities, HAZMAT, Pollutants, Contaminants	**Significant**
Water Systems Potable Water Infrastructure, Wastewater Management	**Significant**
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown	

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

According to FEMA, the public health and life safety impacts of dam or levee failure can be significant and wide-ranging. The primary concerns include:

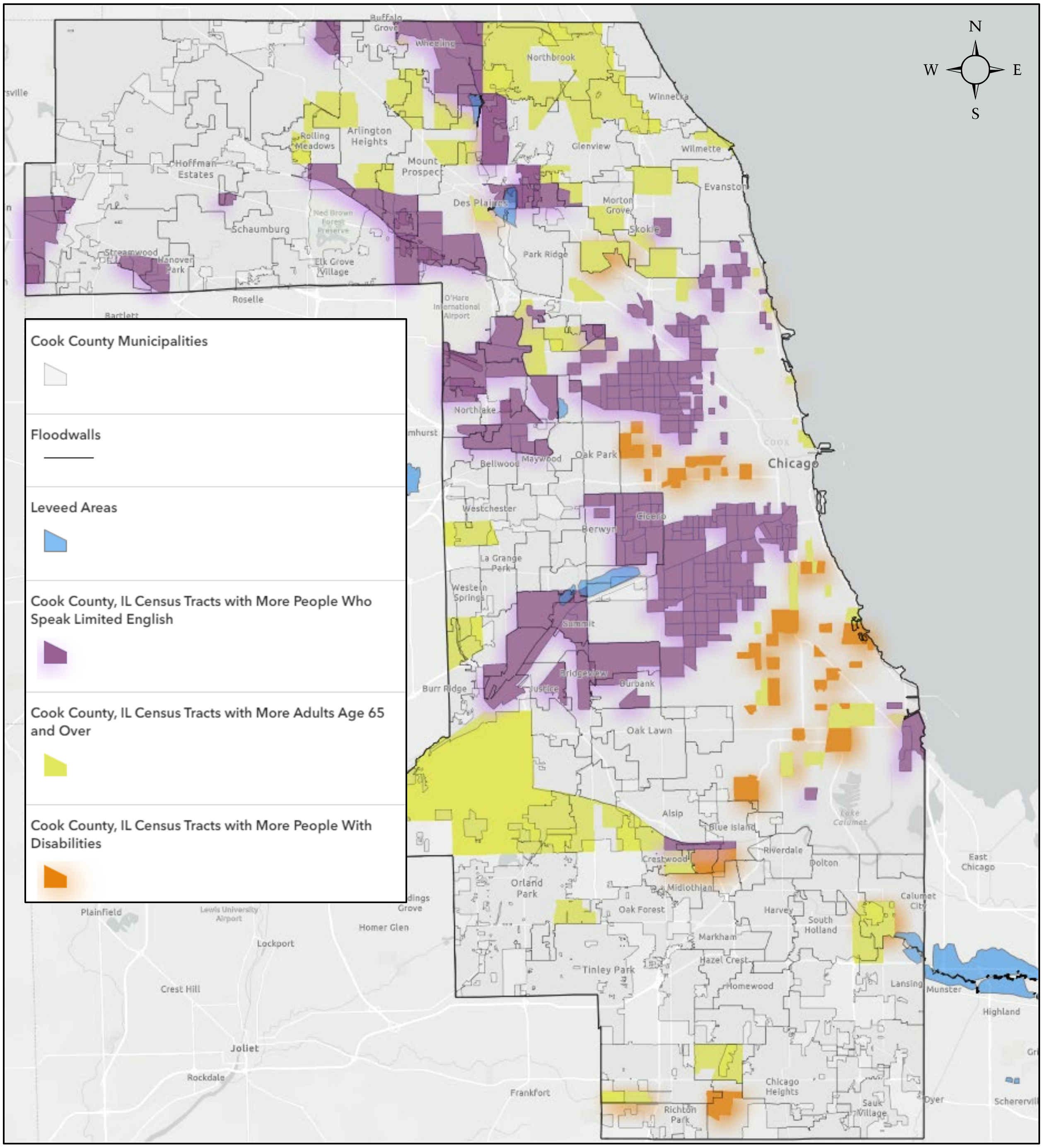
- Loss of Life: This is the most serious impact. A sudden dam or levee failure can lead to fast-moving floods, potentially resulting in loss of life, especially in areas immediately downstream of a dam or in the protected area behind a levee.
- Injuries: The force and unpredictability of floodwaters can result in physical injuries to people in the affected areas.
- Displacement of Populations: Dam or levee failures can lead to the displacement of people from their homes, either temporarily or permanently, due to flood damage. This displacement can have long-term impacts on mental health and community stability.
- Contamination of Water Supplies: Floodwaters can contaminate drinking water sources, leading to waterborne diseases and health complications. This is a particular concern in urban areas or where industrial and agricultural chemicals may be present.
- Sanitation and Hygiene Issues: Flooding can disrupt sewage systems and overwhelm sanitation services, leading to increased risks of diseases, particularly in densely populated areas.
- Disruption of Healthcare Services: Flooding can damage healthcare facilities and disrupt services, making it difficult for injured or ill individuals to receive necessary medical care.
- Mental Health Impacts: The trauma and stress associated with flooding, displacement, loss of property, and potential loss of life can have long-lasting effects on mental health.
- Strain on Emergency Services: Dam or levee failures require significant emergency response efforts, which can strain local resources, especially in smaller or rural communities.



Cook County High Hazard Dams

Vulnerability and Impacts

Source: National Inventory of Dams, US Census Bureau, Chicago GreenPrint



Cook County Levees

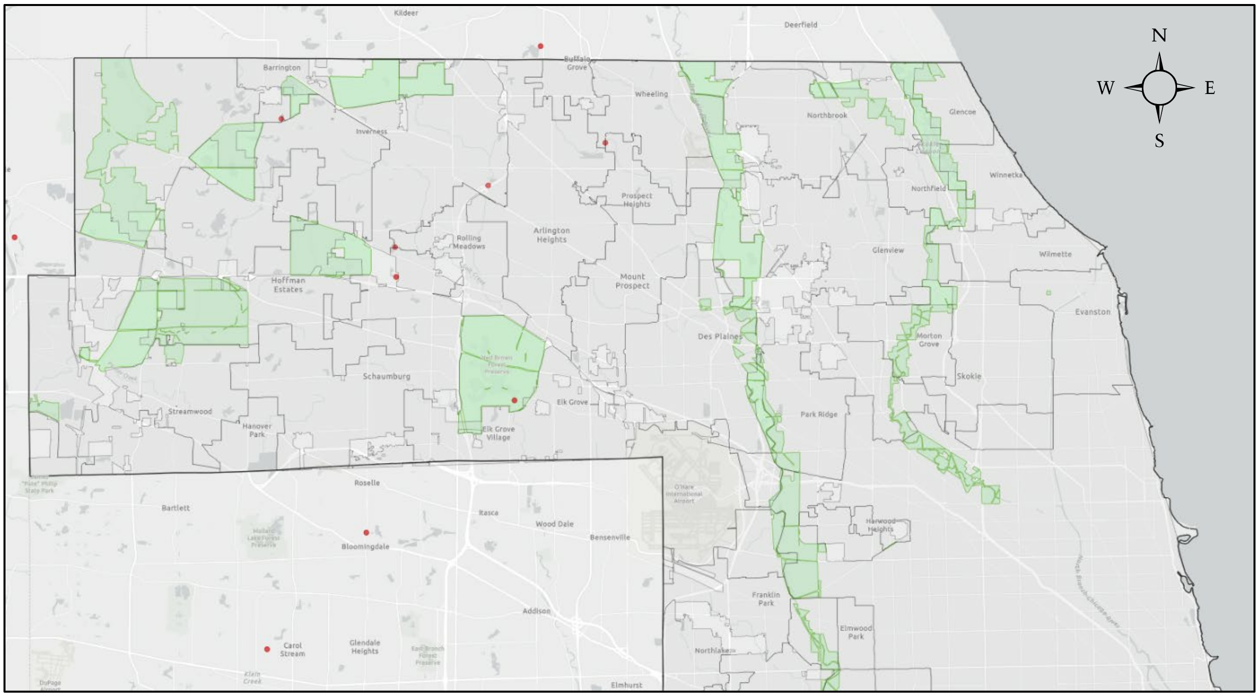
Vulnerability and Impacts

Source: National Inventory of Levees, US Census Bureau, Chicago GreenPrint

Property Damage and Critical Infrastructure

According to FEMA, dam or levee failure can have severe impacts on property and critical infrastructure. These impacts include:

- Extensive Property Damage: The sudden release of water from a dam or levee failure can lead to widespread flooding, resulting in significant damage to residential, commercial, and industrial properties. This includes damage to buildings, homes, and vehicles.
- Critical Infrastructure Damage: Flooding from dam or levee failures can severely impact critical infrastructure such as bridges, roads, railways, and utilities (water and sewage systems, electrical grids, gas lines). This not only causes immediate disruption but can also lead to long-term economic impacts due to the time and cost associated with repairs and reconstruction.
- Agricultural Losses: In rural areas, flooding can inundate farmland, leading to crop destruction, soil erosion, and loss of livestock, which can have a profound impact on local and regional agricultural economies.
- Environmental Contamination: Floodwaters can carry and spread pollutants and hazardous materials from industrial sites, sewage systems, and other sources, leading to environmental contamination of water, soil, and ecosystems.
- Disruption of Services: Essential services such as healthcare, education, emergency services, and transportation can be disrupted, affecting the wellbeing and daily life of the community.
- Economic Impact: The combined effect on property, infrastructure, and services can lead to significant economic losses, both direct and indirect. The cost of repairs, loss of business operations, and decrease in property values can have a lasting impact on affected communities.
- Recovery and Mitigation Costs: The financial burden of recovery and rebuilding can be substantial. In addition to immediate repair costs, there is often a need for investing in mitigation measures to prevent future incidents.



Cook County Municipalities

Dams and Hazard Potential

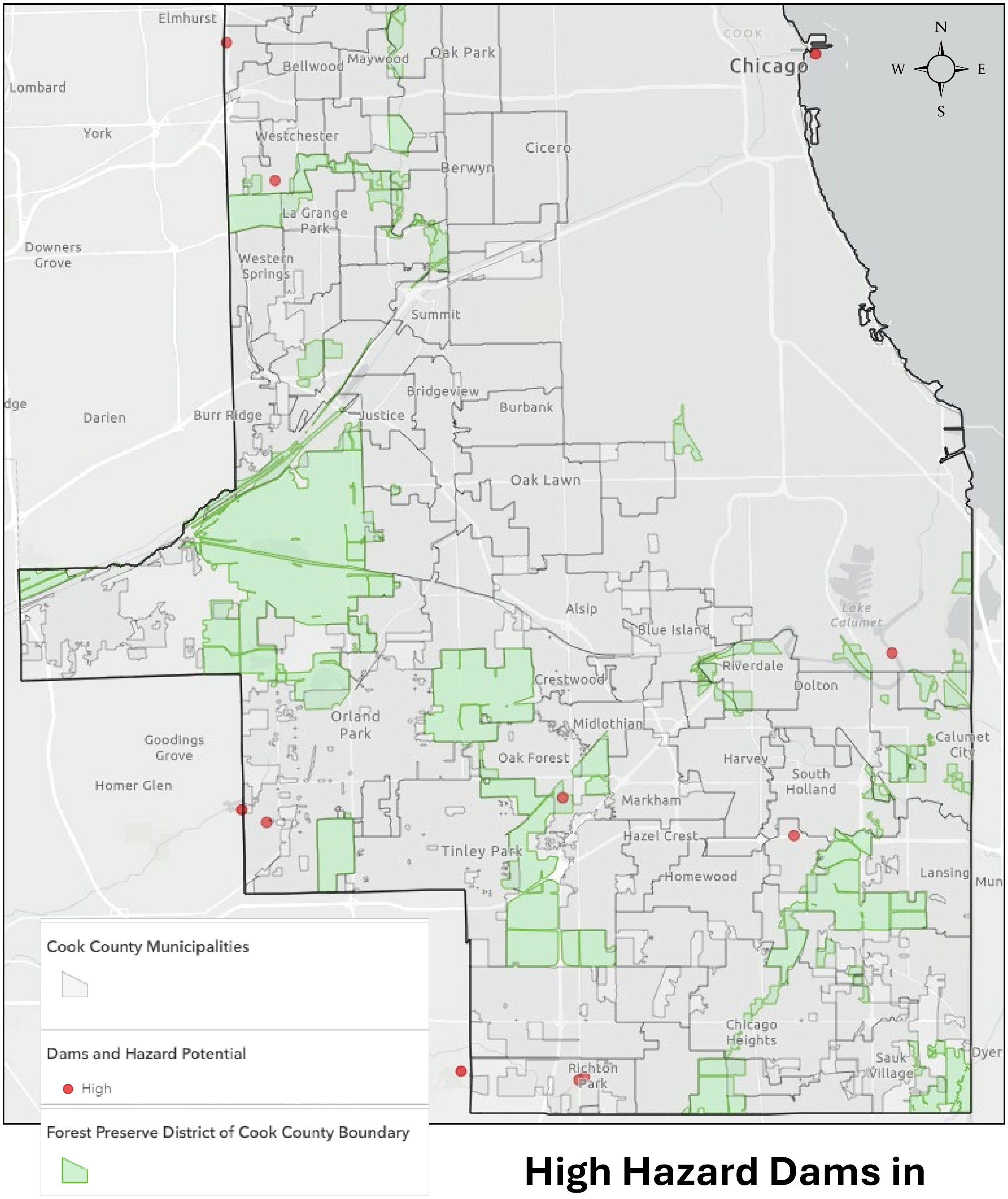
High

Forest Preserve District of Cook County Boundary

High Hazard Dams in Northern Cook County

Forest Preserves of Cook County

Source: National Inventory of Dams, Cook County



High Hazard Dams in Southern Cook County

Forest Preserves of Cook County

Source: National Inventory of Dams, Cook County

Exposed Structures and Property Value

The HAZUS-MH model estimated that there are 12,762 structures within the mapped dam failure inundation areas in the planning area. The value of exposed buildings is summarized in *Table: Exposure And Value Of Structures In Dam Failure Inundation Areas*. It is estimated that $10.7 billion worth of building-and-contents are exposed to dam failure inundation, representing 0.90 percent of the total building value of the planning area.

TABLE: EXPOSURE AND VALUE OF STRUCTURES IN DAM FAILURE INUNDATION AREAS

Dam	Buildings Exposed	Value Exposed Building	Value Exposed Contents	Total	% of Total Assessed Value
Buffalo Creek Reservoir	4,527	$1,794,369,000	$1,252,212,000	$3,046,581,000	0.26%
Upper Salt Creek Structure #2	3,855	$868,094,000	$658,159,000	$1,526,253,000	0.13%
Touhy Reservoir	490	$765,949,000	$759,825,000	$1,525,774,000	0.13%
Upper Salt Creek Structure #3	1,842	$1,295,532,000	$1,030,007,000	$2,325,539,000	0.19%
Upper Salt Creek Structure #4	2,048	$1,293,667,000	$990,251,000	$2,283,918,000	0.19%
Total	**12,762**	**$6,017,611,000**	**$4,690,454,000**	**$10,708,065,000**	**0.90%**

Land Use in the Inundation Zones

Some land uses are more vulnerable to dam failure inundation, such as single-family homes, while others are less vulnerable, such as agricultural land or parks. *Table: Land Use In The Buffalo Creek Reservoir And Touhy Reservoir Dry-Weather Inundation Zones* and *Table: Land Use Within The Upper Salt Creek Dams Dry-Weather Inundation Zones* show the existing land use of all areas in the modeled dam failure inundation zones. The estimated portion of the inundation zone that contains vacant, developable land ranges from 8 to 17 percent for the five dams evaluated.

TABLE: LAND USE IN THE BUFFALO CREEK RESERVOIR AND TOUHY RESERVOIR DRY-WEATHER INUNDATION ZONES				
Land Use Classification	Buffalo Creek Reservoir		Touhy Reservoir	
	Area (acres)	% of total	Area (acres)	% of total
Agricultural	5	0.8	0	0.0
Commercial	67	10.1	12	6.3
Education	29	4.3	Less than 1	0.2
Industrial	50	7.4	13	7.2
Institutional	12	1.8	Less than 1	0.1
Open Space	126	18.8	12	6.4
Residential	228	34.2	21	11.3
Utility/Right of Way	34	5.2	103	56.2
Vacant	117	17.4	23	12.3
Total	**668**	**100.0**	**184**	**100.0**
Source: CMAP land-use inventory were aggregated; categories representing major water features were excluded.				

TABLE: LAND USE WITHIN THE UPPER SALT CREEK DAMS DRY-WEATHER INUNDATION ZONES						
Land Use Classification	Upper Salt Creek Structure #2		Upper Salt Creek Structure #3		Upper Salt Creek Structure #4	
	Area (acres)	% of total	Area (acres)	% of total	Area (acres)	% of total
Agricultural	1	0.2	13	1.1	12	6.3
Commercial	8	2.2	160	14.5	0	0.2
Education	6	2.4	25	2.2	0	0
Industrial	0	0	5	0.5	`13	7.2
Institutional	0	0	2	0.2	0	0.1
Open Space	124	51.9	538	48.7	12	6.4
Residential	81	33.8	250	22.6	21	11.3
Utility/Right of Way	1	0.4	13	1.1	103	56.2

TABLE: LAND USE WITHIN THE UPPER SALT CREEK DAMS DRY-WEATHER INUNDATION ZONES						
Land Use Classification	**Upper Salt Creek Structure #2**		**Upper Salt Creek Structure #3**		**Upper Salt Creek Structure #4**	
	Area (acres)	**% of total**	**Area (acres)**	**% of total**	**Area (acres)**	**% of total**
Vacant	19	8.0	99	9.0	23	12.3
Total	**240**	**100.0**	**1,105**	**100.0**	**184**	**100.0**
Source: CMAP land-use inventory were aggregated; categories representing major water features were excluded.						

The HAZUS analysis indicated a total potential loss of $323,643,000 in the planning area for the five dam failures evaluated. This represents 3 percent of the total exposed property, or 0.03 percent of the total assessed value of the planning area. *Table: Loss Estimates For Dam Failure* summarizes the loss estimates for dam failure.

TABLE: LOSS ESTIMATES FOR DAM FAILURE				
Dam	**Estimated Loss Associated with Dam Failure**			**% of Total Value**
	Structure	**Contents**	**Total**	
Buffalo Creek Reservoir	$22,541,000	$42,767,000	$65,308,000	0.01%
Upper Salt Creek Structure #2	$7,581,000	$10,256,000	$17,837,000	0.00%
Touhy Reservoir	$6,107,000	$13,784,000	$19,891,000	0.00%
Upper Salt Creek Structure #3	$35,624,000	$71,118,000	$106,742,000	0.01%
Upper Salt Creek Structure #4	$40,286,000	$73,579,000	$113,865,000	0.01%
Total	**$112,139,000**	**$211,504,000**	**$323,643,000**	**0.03%**

5.1.8 Economy

No data exists demonstrating the economic impact of past dam or levee failure events within Cook County. However, according to FEMA, dam or levee failures can have severe economic impacts, including destruction of property and infrastructure, leading to costly repairs and loss of business revenue. Agricultural areas may suffer from loss of crops and soil erosion, while the interruption of water supply and quality can affect both businesses and residential areas. The overall economic stability of the affected region can be threatened, necessitating significant recovery and rebuilding efforts, often with long-term financial implications.

5.1.9 Changes in Development and Impact of Future Development

According to FEMA, dam failure or levee failure can significantly impact current and future development in several ways:

- Reassessment of Land Use: After a dam or levee failure, there may be a need to reassess land use in affected areas. This can lead to changes in zoning laws and development regulations, especially in areas deemed high-risk for future flooding.
- Impact on Real Estate Values: The perceived risk of flooding due to potential dam or levee failure can affect real estate values. Properties in areas identified as high risk may see a decrease in value, which can impact both current and future development decisions.
- Changes in Insurance and Financing: The risk of flooding may lead to higher insurance premiums for properties in the affected areas. In some cases, insurance may become difficult to obtain. This can influence development decisions, as the cost and availability of insurance are important factors in real estate development and investment.
- Infrastructure Redesign and Reinforcement: Existing and future infrastructure projects may need to be redesigned to withstand potential flood events. This can include strengthening or raising buildings, bridges, and roads, as well as improving drainage systems.
- Mitigation and Resilience Planning: There may be an increased focus on mitigation and resilience in future development to reduce the impact of potential flood events. This can include creating more green spaces, implementing better water management practices, and using flood-resistant building materials and techniques.
- Shift in Development Focus: In some cases, there might be a shift away from developing in high-risk areas. Development might be directed towards safer areas, potentially leading to changes in urban and regional planning strategies.
- Emergency Preparedness and Response Planning: Future development may need to incorporate improved emergency preparedness and response plans, including evacuation routes, emergency shelters, and communication systems.

5.1.10 Effects of Climate Change of Severity of Impacts

FEMA indicates that climate change can exacerbate the risks associated with dam and levee failures due to increased frequency and severity of extreme weather events. This includes heavier rainfall and more intense storms, leading to greater pressure on these structures. The heightened risk of overtopping or structural failure can result in more severe flooding and damage, necessitating improvements in resilience and emergency planning for affected communities.

Dams and levees in Illinois are on average 57 and 72 years old, respectively. Many of these structures were built using less rigorous engineering standards that may not stand up to extreme precipitation and faster streamflow (State of Illinois HMP) 2023.

Illinois does not currently have a funding program to assist dam owners with dam rehabilitation, although the state is removing aging low head dams (State of Illinois HMP) 2023.

Levees also need frequent maintenance and strengthening, which falls to the owner of the levee. As climate changes while dams and levees do not improve to catch up with changing precipitation and streamflow conditions, high-hazard dam failure has the potential to be catastrophic for areas downstream, and levee failures could flood cities along the Mississippi and Illinois rivers, where most of the state's levees are located (State of Illinois HMP) 2023.

Dams: Dams are designed partly based on historic patterns and assumptions about a river's flow behavior. Changes in weather patterns can have significant effects on a river's hydrograph used for the design of a dam. If the hygrograph changes suddenly or spasmodically, it is conceivable that the dam can lose some or all its designed margin of safety. When this happens, dam operators may be forced to release stored water earlier in a storm cycle or during other seasons to maintain the required margins of safety. Such releases can increase flood potential downstream.

Dams are constructed with spillways that serve as safety measures to help prevent overtopping of the dam in the event of the reservoir filling too quickly. Spillway overflow events at many large, high hazard dams often are referred to as "design or operations failures," resulting in discharges downstream that may increase the localized flooding potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability and/or magnitude of spillway releases (aka design failures).

Levees: According to the National Levee Database (managed by the U.S. Army Corps of Engineers), climate change can increase the severity and likelihood of levee failure in several ways:

1. Increased Frequency and Severity of Flooding: Climate change is associated with more extreme weather events, including heavier and more frequent rainfall. This can lead to higher river levels and increased pressure on levees, raising the risk of overtopping and failure.
2. Sea-Level Rise: For coastal levees, sea-level rise can lead to more frequent and severe flooding, particularly during storm surges and high tides. This increases the risk of levee failure and the inundation of protected areas.
3. Changing Weather Patterns: Shifts in weather patterns can lead to longer and more severe droughts, followed by intense rainfall. Drought conditions can weaken levee structures, making them more susceptible to failure during subsequent heavy rain events.
4. Erosion and Sedimentation Changes: Altered River flows and increased rainfall can affect erosion and sedimentation patterns. This can undermine the structural integrity of levees or necessitate more frequent maintenance and upgrades.
5. Temperature Changes: Higher temperatures can affect the moisture content of soils, potentially weakening earthen levees. Freeze-thaw cycles in colder climates can also be damaging to the structure of levees.
6. Adaptation and Resilience Needs: As the impacts of climate change become more pronounced, there is a growing need to adapt existing levees to withstand these changes. This may include reinforcing levees, increasing their height, improving drainage systems, and incorporating more resilient design features.

Heavy precipitation leads to both riverine flooding and flash floods as the ground fails to absorb the high volume of precipitation that falls in a short period. Increasing annual precipitation contributes to sustained flooding (Neighborhoods At Risk, 2024).

The table below illustrates 25-year precipitation projections for Cook County.

25-YEAR PRECIPITATION PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience a **10% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.8" increase** (from 36.9" to 37.7") in average annual precipitation.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience a **1% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.1" decrease** (from 37.3" to 37.2") in average annual precipitation.
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

The table below illustrates future climate indicators for Cook County.

FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40”**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation (Wet Days)	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Maximum Period of Consecutive Wet Days	**10 days**	**10 days**	**10 days**	**10 days**	**11 days**	**10 days**	**10 days**
	10-12	9-12	9-12	9-12	9-12	9-12	9-13
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**4 days**	**5 days**	**5 days**	**5 days**	**5 days**	**5 days**	**6 days**
	3-5	4-6	4-6	4-6	4-7	4-7	5-9
Annual Days With Total Precipitation > 2 inches	**0 days**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**
	0-1	0-1	0-1	0-1	0-1	0-1	0-2
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0

Annual Days That Exceed 99th Percentile Precipitation	**5 days**	**6 days**	**6 days**	**7 days**	**7 days**	**7 days**	**8 days**
	5-7	5-8	5-8	6-8	6-9	6-9	7-10
*Days With Maximum Temperature Below 32*F*	**41 days**	**30 days**	**28 days**	**25 days**	**22 days**	**21 days**	**12 days**
	37-44	17-40	21-37	13-36	11-32	10-32	2-24
Source: Climate Mapping for Resilience and Adaptation (2023)							

FEMA NRI Expected Annual Loss Estimates

The FEMA National Risk Index does not assess High Hazard Dams and Levees.

FEMA Hazard-Specific Risk

The FEMA National Risk Index does not assess High Hazard Dams and Levees.

5.2 Drought

5.2.1 Hazard Description

Drought is an expected phase in the climactic cycle of almost any geographical region and is certainly the case in Illinois. Objective and quantitative definitions for drought exist, but most authorities agree that because of the many factors contributing to it. None are entirely satisfactory because their onset and relief are slow and indistinct. According to the National Drought Mitigation Center, drought "originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector." What is clear is that a condition perceived as "drought" in a given location results from a significant decrease in water supply relative to what is "normal" in that area.

Drought Types

- **Meteorological Drought** – Defined as below-normal precipitation over a set period. Often, this type of drought is region-specific based on regional climatology. This drought type is often what is thought of as 'drought.'
- **Agricultural Drought** – This type of drought occurs when a reduction in soil moisture results in unmet demand for crops. This drought type is region-, crop-, and time-specific and usually occurs after meteorological droughts. Agricultural drought can cause significant crop losses and economic disruption for agriculture-dependent communities.
- **Hydrological Drought** – This type of drought is driven by a deficiency of surface and subsurface water resources, often indicated by reduced streamflow, lake or reservoir water levels, and groundwater table heights. Due to the complex hydrological network that feeds surface and subsurface water resources, hydrological drought occurs after meteorological drought.
- **Socioeconomic Drought** – This type of drought occurs when physical water shortages impact individuals or communities. Socioeconomic drought impacts can vary according to an individual's or community's ability to adapt or mitigate.

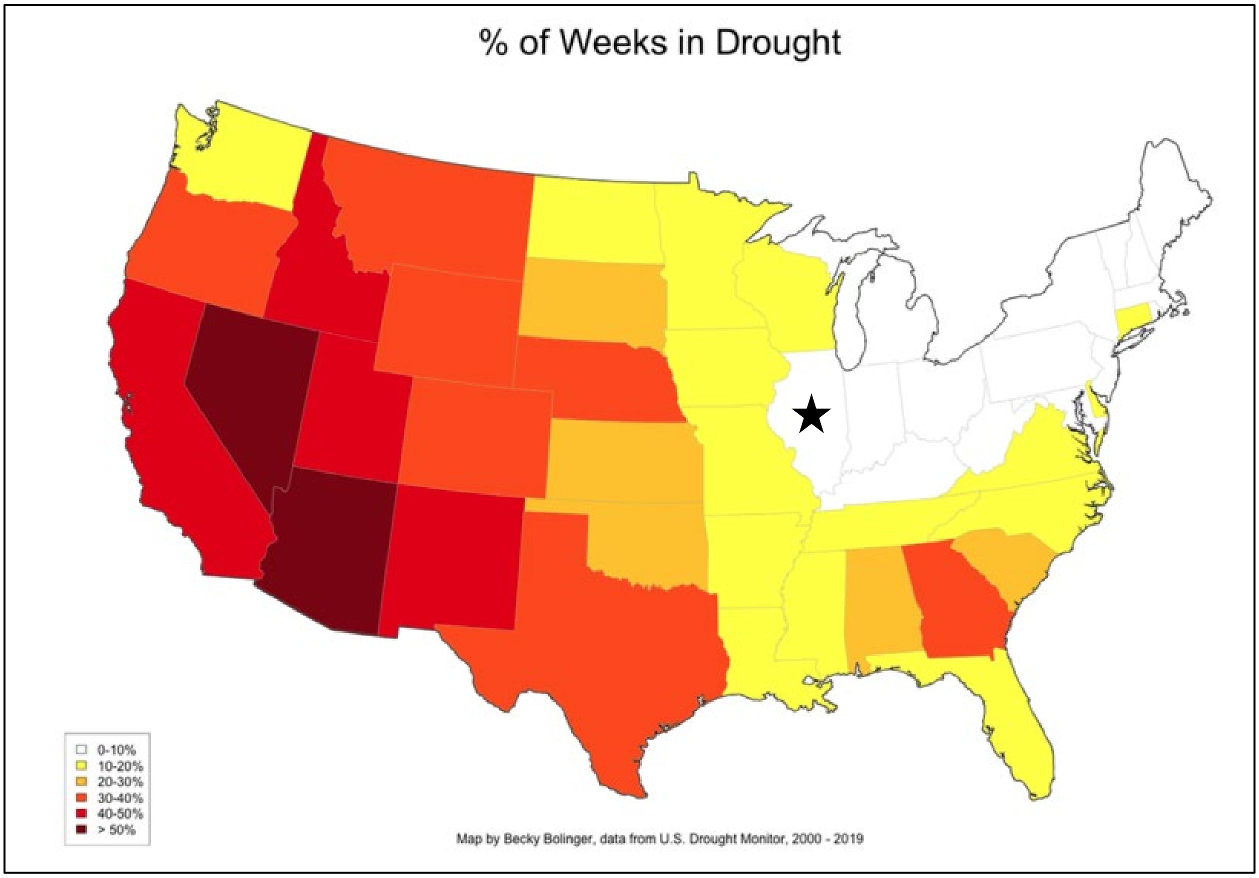
5.2.2 Hazard Location

Drought could occur anywhere in Cook County, likely affecting the entire county.

5.2.3 Hazard Extent/Intensity

Cook County, which is in the State of Illinois, has not historically been severely affected by drought compared to other locations in the United States.

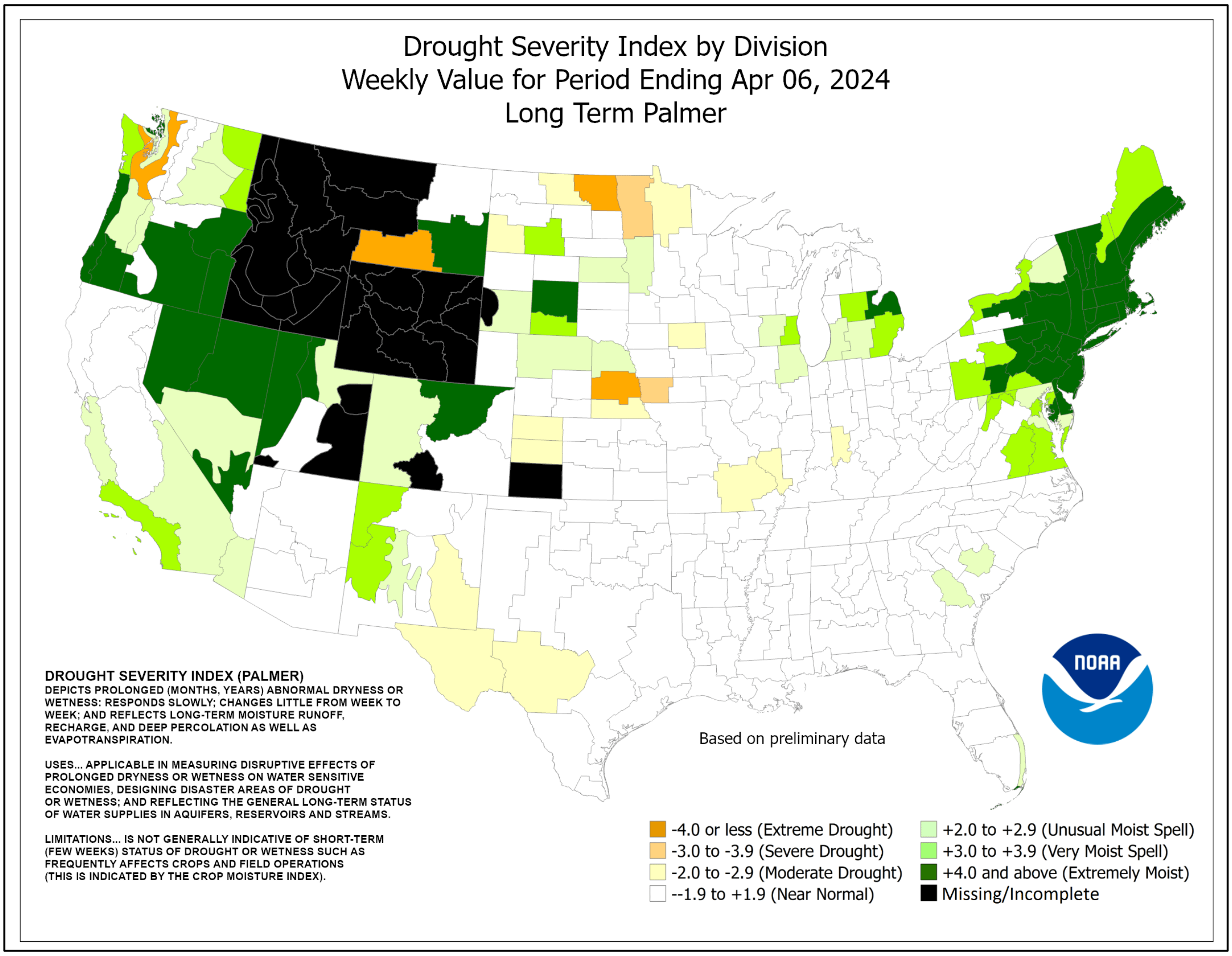
Figure: 2000-2019 Percent Weeks in Drought



The image on the next page displays the precipitation conditions for the United States using the Palmer Drought Severity Index (PDSI), taken from the National Weather Service (NWS). The PDSI quantifies drought in terms of prolonged and abnormal moisture deficiency or excess. This index indicates general conditions and not local variations caused by isolated rain. The PDSI is an important climatological tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. In addition, it can help delineate disaster areas and indicate the availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and potential intensity of forest fires (NCAR Climate Guide).

The PDSI compares moisture deficiency and excess on a numerical scale that usually ranges from positive five to negative five. Positive values reflect excess moisture supplies, while negative values indicate moisture demands in excess of supplies.

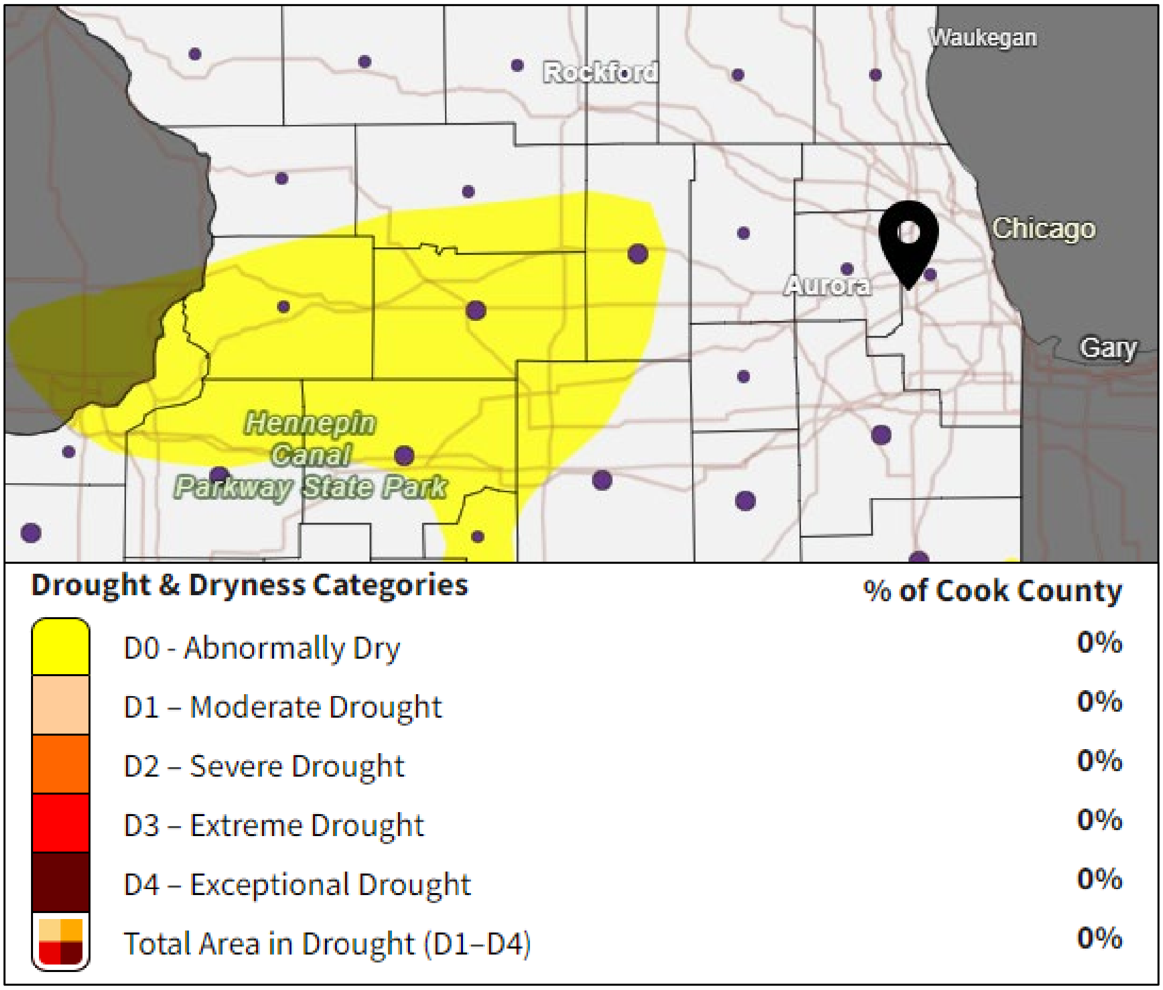
extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above



The U.S. Drought Monitor depicts the location and intensity of drought across the country using 5 classifications: Abnormally Dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought (D1–D4).

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
None	Normal or wet conditions	30.01 or Above	-0.49 or above
D0	Abnormally Dry	20.01 to 30.00	-0.5 to -0.79
D1	Moderate Drought	10.01 to 20.00	-0.8 to -1.29
D2	Severe Drought	5.01 to 10.00	-1.3 to -1.59
D3	Extreme Drought	2.01 to 5.00	-1.6 to -1.99
D4	Exceptional Drought	0.00 to 2.00	-2.0 or less

Figure: US Drought Monitor – Cook County Drought Conditions July 2024



Droughts can be widespread or localized events. The extent of droughts varies both in terms of the extent of the heat and range of precipitation.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT			
Hazard Type	Affected Jurisdictions	Extent (based on historical events)	
		Minimum	Maximum
Drought	County-wide	0	D4 (Exceptional Drought)

5.2.4 Probability and Frequency

"Meteorological drought can begin and end rapidly, while hydrological drought takes much longer to develop and recover. Over the decades, many indices have been developed to measure drought in these various sectors. For example, the U.S. Drought Monitor depicts drought integrated across all time scales and differentiates between agricultural and hydrological impacts (NOAA, 2024)."

The NOAA uses the PDSI to measure drought conditions, illustrated in the images below which illustrate the frequency of drought in Cook County between January 2004 and December 2023. The US Drought Monitor categories for the County between 2000 and 2024 are also displayed below.

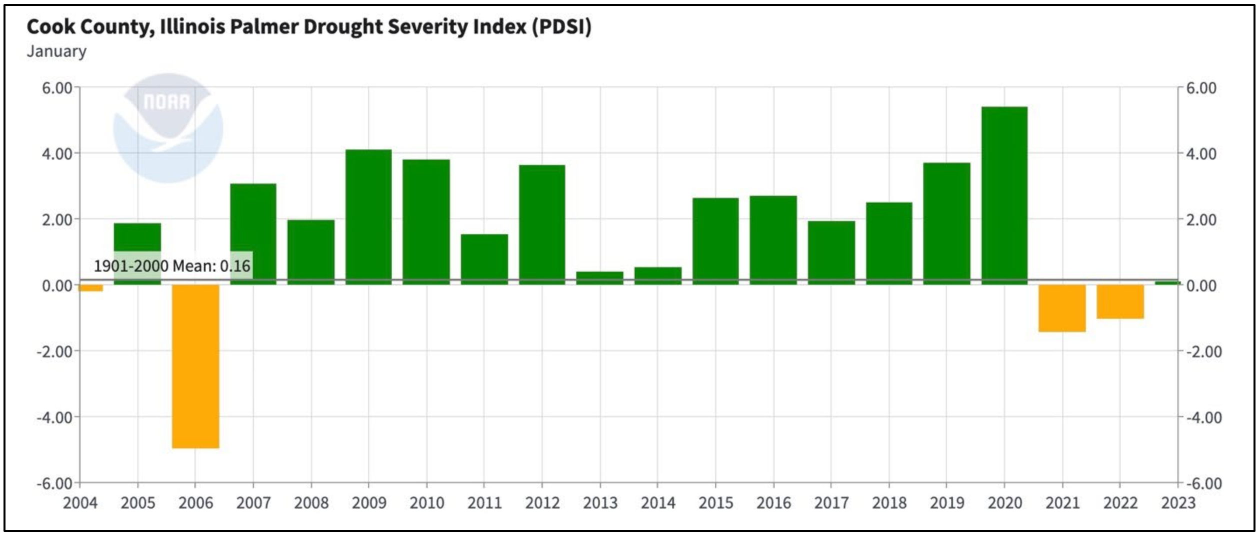
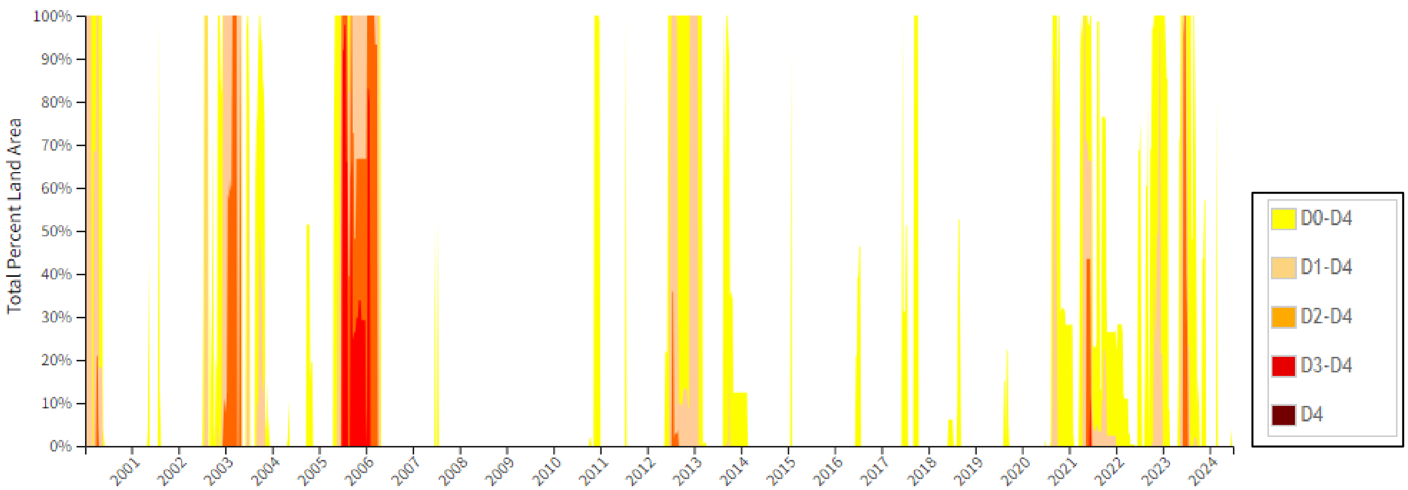


Figure: Cook County Percent Area in US Drought Monitor Categories 2001-2024



Frequency: Between 06/15/2005 and 06/15/2024, Cook County recorded 13 drought events. This equates to an average of 0.65 drought events/year.

(Note: Events are listed in the table on the next page and are based on impacts to an area (zone) of Cook County; impacts to more than one area (zone) will result in multiple entries and were not counted as part of the number of events that informed the average.)

5.2.5 Past Events

Droughts are fairly common in Illinois. In the past century, the state experienced serious drought periods from 1902 to 1915, from 1931 to 1934, and in 1954, 1964, and 1988. The 1930s had the greatest frequency and severity of drought since drought recording using the Palmer Drought Severity Index (PDSI) began in 1895. The worst case was the summer of 1934, with a statewide PDSI of -6.48, followed by the summer of 1931 with -6.39 and 1954 with -6.09. All three of these events fall into the category of extreme drought.

Recent events include drought in 1983 and 1988. In September 1983, all 102 counties were declared state disaster areas because of high temperatures and insufficient precipitation during the summer. In 1988, 54 percent of the state was impacted by drought-like conditions, resulting in disaster relief payments to landowners and farmers exceeding $382 million; however, no state declaration was made.

TABLE: DROUGHT EVENTS IN COOK COUNTY (2005-2023)											
Location	**County**	**State**	**Date**	**Time**	**T.Z.**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:							N/A	**0**	**0**	**0.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	06/15/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	08/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	09/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	12/01/2005	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/01/2006	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/01/2006	00:00	CST	Drought	N/A	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	05/18/2021	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	05/18/2021	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	06/01/2021	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	06/01/2021	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K

TABLE: DROUGHT EVENTS IN COOK COUNTY (2005-2023)											
Location	County	State	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	06/13/2023	07:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
SOUTHERN COOK COUNTY (ZO...	SOUTHERN COOK COUNTY (ZO...	IL	06/13/2023	07:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	06/13/2023	07:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	07/01/2023	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
SOUTHERN COOK COUNTY (ZO...	SOUTHERN COOK COUNTY (ZO...	IL	07/01/2023	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	07/01/2023	00:00	CST-6	Drought	N/A	0	0	0.00K	0.00K

5.2.6 Vulnerability and Impacts

Impacted FEMA Community Lifelines	
Safety and Security Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	Minimal
Food, Hydration, Shelter Food, Hydration, Shelter, Agriculture	Moderate
Health and Medical Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	Moderate
Energy Power Grid, Fuel	Minimal
Communications Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	Minimal
Transportation Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	Minimal
Hazardous Materials Facilities, HAZMAT, Pollutants, Contaminants	Minimal

	Water Systems Potable Water Infrastructure, Wastewater Management	**Significant**
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown		

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Health: Droughts affect life safety and public health in several ways. Health problems can arise from poor water quality, poor food quality, and increased dust in the air. In addition, droughts make fires more likely, spread more quickly, and make them more challenging. In addition, poor air quality and a lack of water may reduce residents' engagement in recreational activities, reducing overall mental and physical well-being (National Drought Mitigation Center).

Warning Time: Droughts are climatic patterns that occur over long periods of time. Only generalized warning can take place due to the numerous variables that scientists have not pieced together well enough to make accurate and precise predictions.

Empirical studies conducted over the past century have shown that meteorological drought is never the result of a single cause. It is the result of many causes, often synergistic in nature; these include global weather patterns that produce persistent, upper-level high-pressure systems along the West Coast with warm, dry air resulting in less precipitation.

Scientists at this time do not know how to predict drought more than a month in advance for most locations. Predicting drought depends on the ability to forecast precipitation and temperature. Anomalies of precipitation and temperature may last from several months to several decades. How long they last depend on interactions between the atmosphere and the oceans, soil moisture and land surface processes, topography, internal dynamics, and the accumulated influence of weather systems on the global scale.

Property Damage and Critical Infrastructure: Drought has a negligible impact on buildings. Possible losses/impacts to critical facilities include the loss of essential functions due to low water supplies. Severe droughts can negatively affect drinking water supplies. Should a public water system be involved, the losses could total millions if outside water is shipped. Possible losses to infrastructure include the loss of potable water.

Economy: Although no data demonstrates the economic impact of past drought events on Cook County, the most significant financial effect of drought is on agriculture. The table below indicates the agricultural assets impacts currently impacted by drought.

TABLE: COOK COUNTY AGRICULTURE IMPACTED BY DROUGHT	
Acres of Soybean in Drought (D1–D4) in Cook County (estimated)	5,168
Acres of Corn in Drought (D1–D4) in Cook County (estimated)	2,504
Acres of Hay in Drought (D1–D4) in Cook County (estimated)	1,223
Number of Sheep in Drought (D1–D4) in Cook County (estimated)	72
Number of Hogs in Drought (D1–D4) in Cook County (estimated)	28
Source: (NOAA) 2024	

Changes in Development and Impact of Future Development: The Illinois Hazard Mitigation Plan estimated that the annual probability of drought in Cook County is 14% with an estimated $0 annual loss in property or crop damage (Illinois HMP 2018). This estimation demonstrates a higher future probability based on historical records of 9 drought events occurring in the county from 1951 to 2017 and a climatic shift that would increase evaporation rates.

According to the USGS, the primary water use categories are:

- Public Supply
- Domestic
- Irrigation
- Thermoelectric Power
- Industrial
- Mining
- Livestock
- Aquaculture

The U.S. Geological Survey (USGS) collects and releases data every five years on water use. The USGS figures for Cook County show a substantial decrease in the public supply of self-supplied surface water withdrawals from 1985 (1113.29 mgal/d) to 2015 (824.87 mgal/d) even though population numbers in Cook County are similar in 1985 to 2015 (~2.5 million people). The decrease in industrial total self-supplied withdrawals of surface water demonstrates an even greater decline from 232.04 mgal/d in 1985 to 62.5 mgal/d in 2015. In line with the rest of the United States, only thermoelectric power total self-supplied withdrawals have increased and is only from freshwater. Data is not yet available for 2015 however the number increased from 409.18 mgal/d in 1995 to 749.35 mgal/d in 2010 (USGS).

Overall, national water use has declined over the last three decades and experienced a major drop between 2005 and 2010 despite overall national economic gains and an increase in the total population. Water requirements for thermoelectric power production are substantial, representing the single largest use of water — both fresh and saline — in the United States. Water use for agricultural irrigation continued its declining trend in 2010, while irrigated acres continue to increase. A report by Pacific Institute, Water Use Trends in the United States (2015), states that considerable progress has been made in managing the nation's water — but the current pace is not likely to counter the demands of continued population and economic growth, climate change, and increasing tensions over scarce water resources. While precipitation rates are predicted to increase (especially one-day heavy pour events), evaporation rates as temperature increases and green spaces decline are predicted to increase which would yield a higher frequency of drought events.

While drought is considered a low-risk hazard for Cook County, planners need to consider best practices for land use policies to support water supply sustainability and increase the protection of water resources. Utilizing these practices provides local municipality capability to protect future development from drought.

Effects of Climate Change on Severity of Impacts: According to the University Corporation for Atmospheric Research (UCAR), climate change is causing more extreme weather events, including severe drought. UCAR explains that warmer temperatures cause more evaporation, turning water into vapor in the air and causing drought in some areas of the world. Places prone to drought are expected to become even drier over the following century (UCAR).

Providing projections of future climate change for a specific region is challenging. Shorter-term projections are more closely tied to existing trends, making longer-term projections even more challenging. The further a prediction reaches, the more subject it becomes to changing dynamics. Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water's future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, and emergency response.

According to NOAA, climate change can impact drought conditions by altering precipitation patterns and increasing evaporation rates due to higher temperatures. These changes can lead to more frequent, severe, and prolonged drought periods, affecting water supply, agriculture, natural ecosystems, and urban areas. The shift in climate conditions may necessitate adjustments in water management and conservation strategies to mitigate the adverse effects of drought in Cook County.

TABLE: 25-YEAR CLIMATE PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience an 115**% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 55°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience an **83% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 54°F) in average annual temperatures.

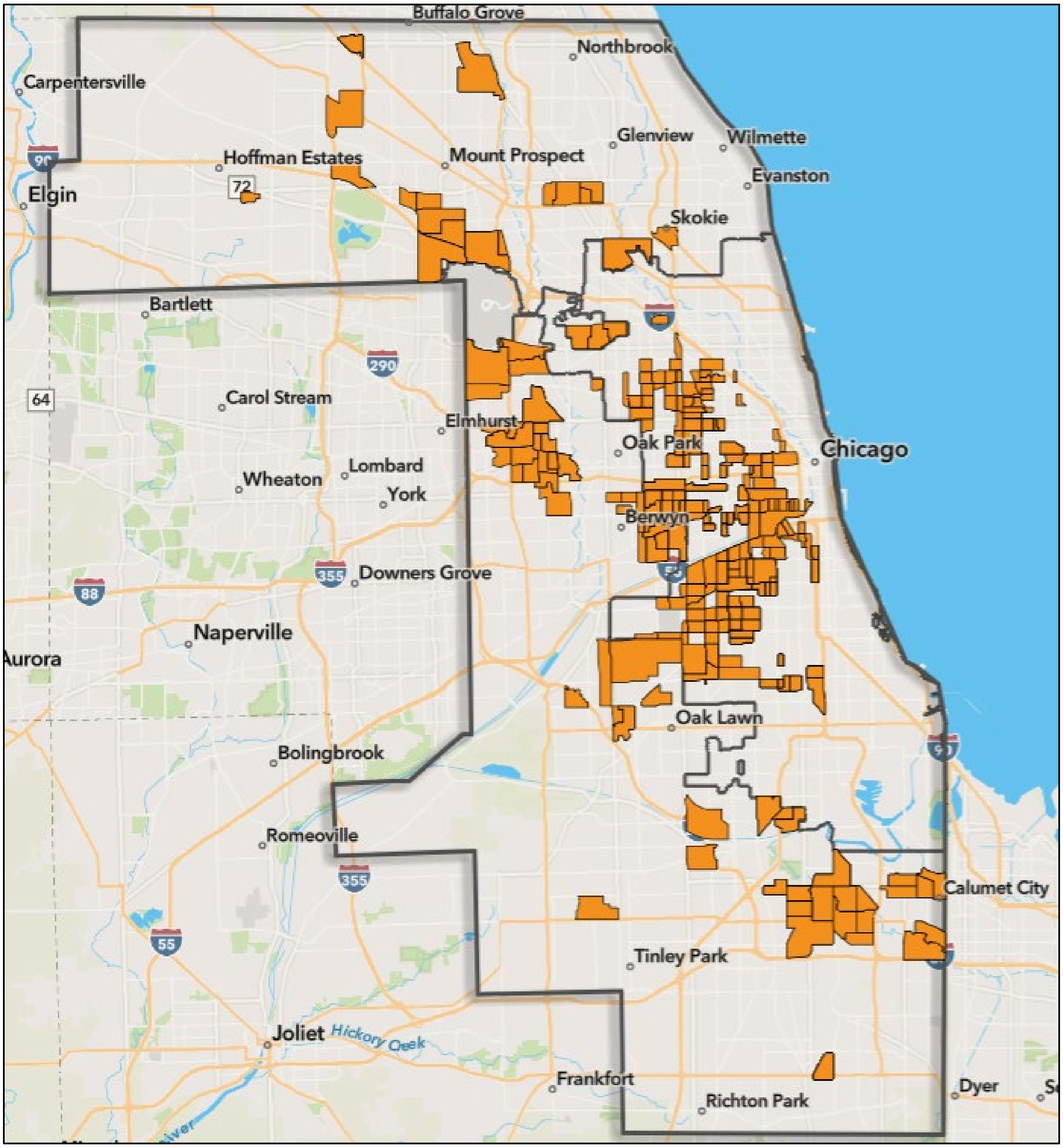
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL

Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Average Annual Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40”**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year with Precipitation	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Days Per Year with No Precipitation	**193 days**	**195 days**	**196 days**	**196 days**	**197 days**	**197 days**	**200 days**
	190-197	187-208	187-212	186-207	184-216	187-208	180-235
Maximum Number of Consecutive Dry Days	**13 days**	**13 days**	**14 days**	**14 days**	**14 days**	**14 days**	**15 days**
	11-14	12-16	12-17	12-16	12-18	12-16	12-20
Temperature Thresholds							
Annual days with Maximum temperature > 90°	**12 days**	**31 days**	**34 days**	**41 days**	**49 days**	**50 days**	**81 days**
	12-18	19-51	21-50	22-69	30-75	26-86	47-113
Annual days with Maximum temperature > 100°	**0 days**	**2 days**	**2 days**	**4 days**	**7 days**	**7 days**	**24 days**
	0-0	0-6	0-7	0-16	1-23	1-16	2-67
Source: Climate Mapping for Resilience and Adaptation (2024)							

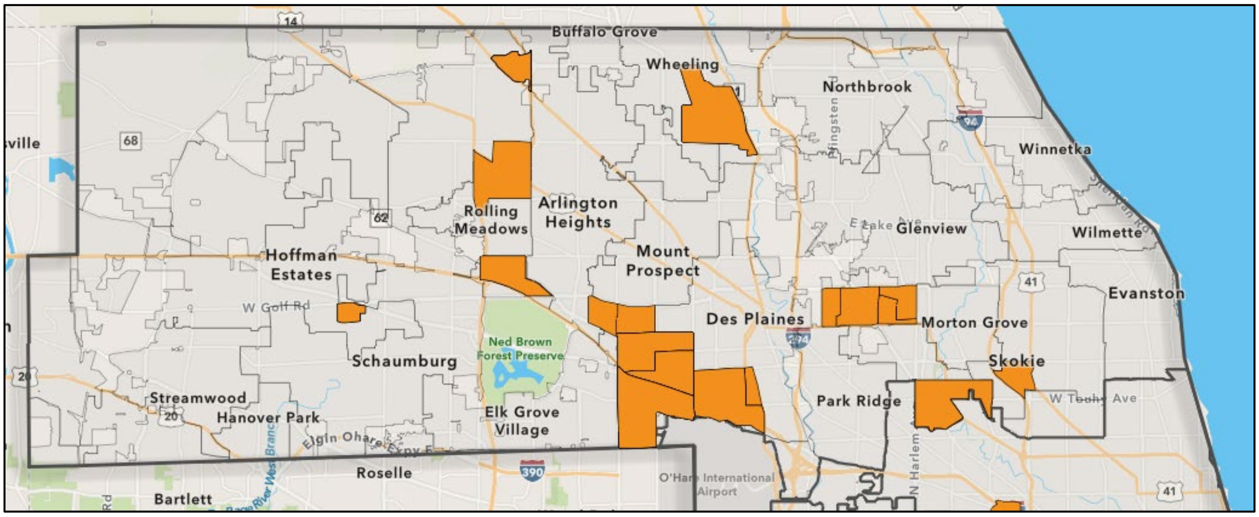
The figure below highlights the highest risk census tracts for extreme heat mitigation and intervention and associated challenges that communities face from climate change. This map examines where areas of high urban heat index, low tree canopy percentage, and high amounts of impervious surface overlap with one of eleven social vulnerability index variables. The resulting data shows census tracts that are at highest risk for extreme heat and contain populations who may be disproportionately affected by extreme heat events caused by climate change.

Climate Change Impact: High Heat Risk Areas for Cook County



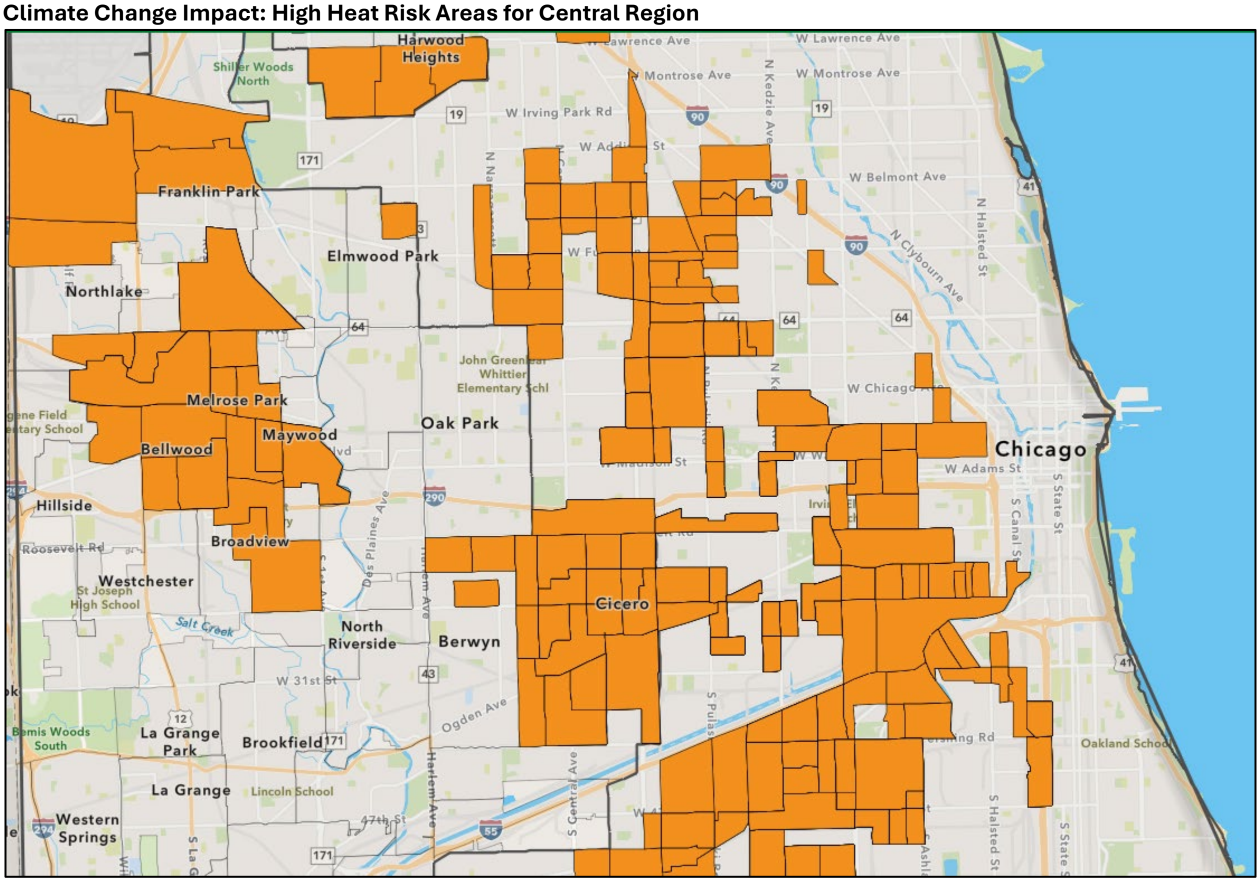
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for North Region



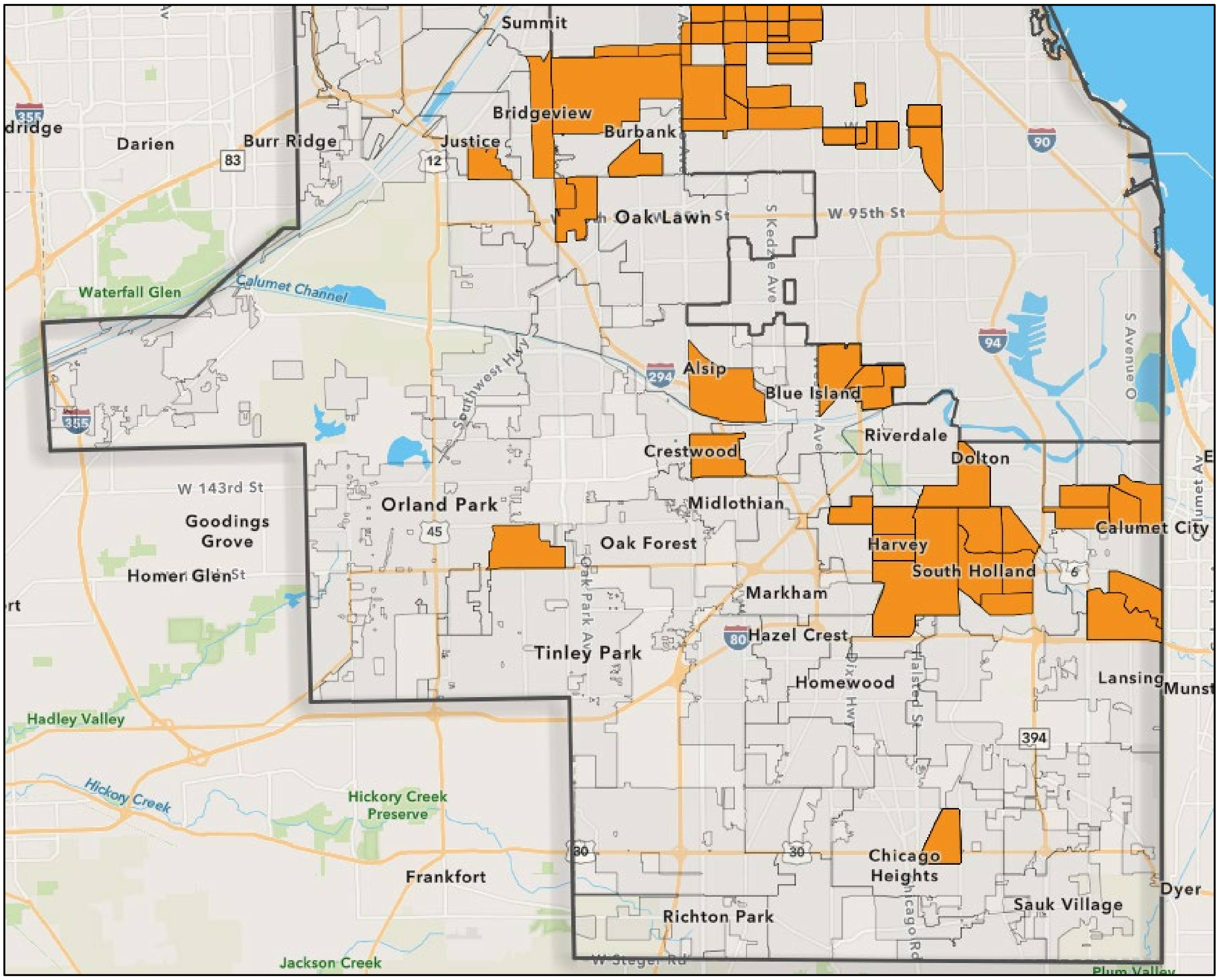
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for Central Region



Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for South Region



5.2.7 FEMA NRI Expected Annual Loss Estimates

TABLE: COOK COUNTY FEMA NRI EXPECTED ANNUAL LOSS TABLE - DROUGHT							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
2.6 events per year	N/A	N/A	N/A	$668	$668	22.0	Very Low
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss*** *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Period of Record: 2000-2021 (22 years)							

Source: FEMA National Risk Index (2024)

5.2.8 FEMA Hazard-Specific Risk Index Table

TABLE: COOK COUNTY FEMA HAZARD SPECIFIC RATING - DROUGHT		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
19.9	Very High	Relatively High

***Risk Index Scores**: are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*

***Social Vulnerability Ratings**: are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*

***Community Resilience Ratings**: are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

5.2.9 FEMA NRI Exposure Value

TABLE: COOK COUNTY, IL EXPOSURE VALUE TABLE FOR DROUGHT EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Drought	$16,651,320	N/A	N/A	N/A	$16,651,320

***Buildings**: Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.*

***Population:** Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars).*

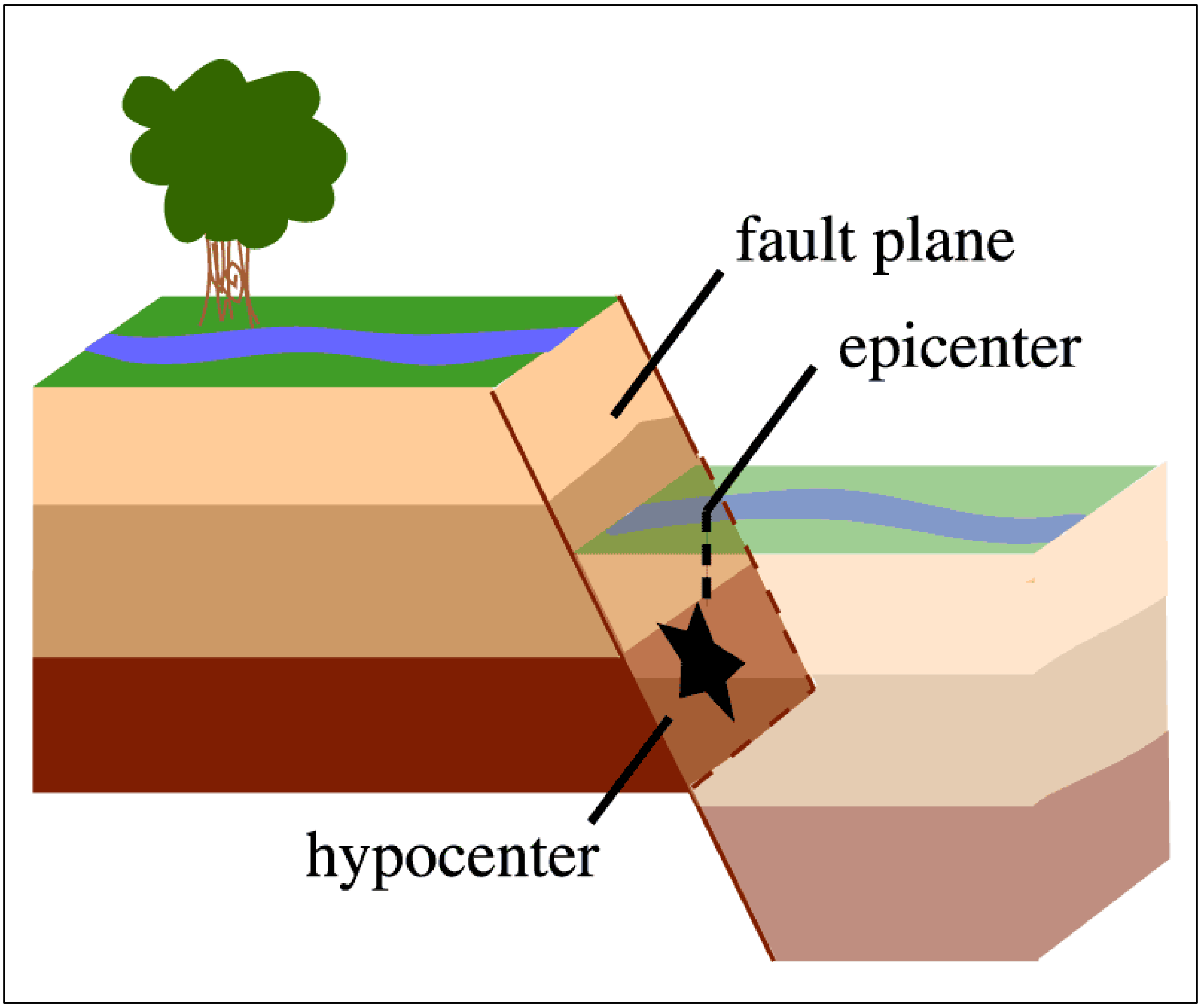
***Agriculture:** Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

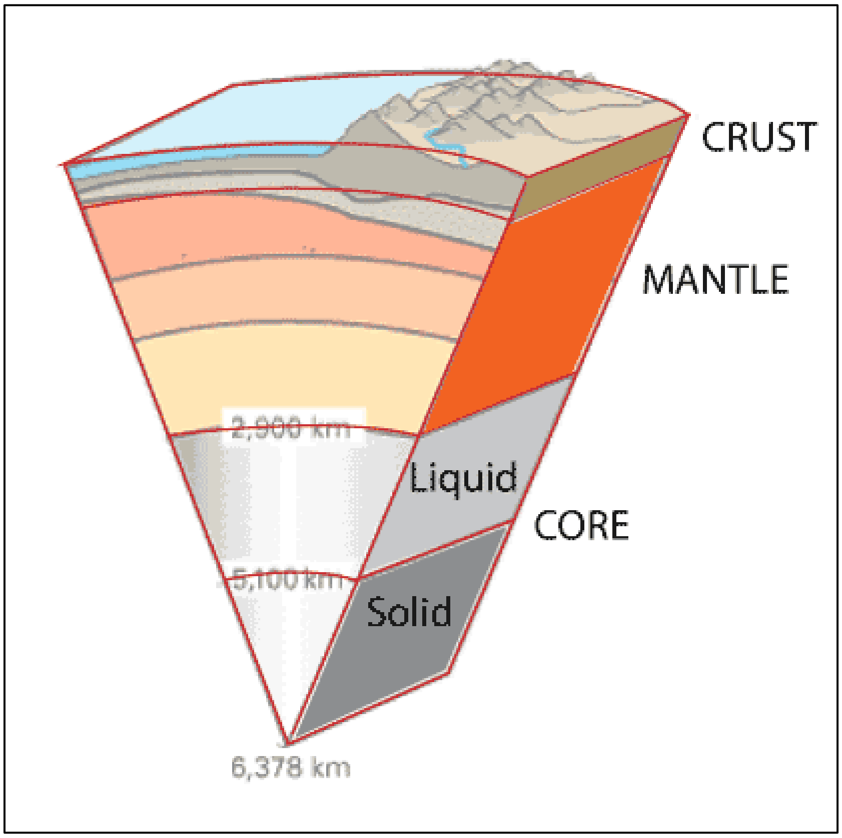
5.3 Earthquake

5.3.1 Hazard Description

An earthquake is what happens when two blocks of the earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter (US Geological Survey). This phenomenon is illustrated in the image below.



The earth has four major layers as shown in the image below. These layers are the inner core, outer core, mantle, and crust. The crust and the top of the mantle make up a thin skin on the surface of our planet. But this skin is not all in one piece – it is made up of many pieces like a puzzle covering the surface of the earth. Not only that, but these puzzle pieces keep slowly moving around, sliding past one another, and bumping into each other. These are called puzzle pieces tectonic plates, and the edges of the plates are called the plate boundaries. The plate boundaries are made up of many faults, and most of the earthquakes around the world occur on these faults. Since the edges of the plates are rough, they get stuck while the rest of the plate keeps moving. Finally, when the plate has moved far enough, the edges unstick on one of the faults and there is an earthquake (US Geological Survey).



Sometimes an earthquake has foreshocks. These are smaller earthquakes that happen in the same place as the larger earthquake that follows. Scientists can't tell that an earthquake is a foreshock until the larger earthquake happens. The largest, main earthquake is called the mainshock. Mainshocks always have aftershocks that follow. These are smaller earthquakes that occur afterwards in the same place as the mainshock. Depending on the size of the mainshock, aftershocks can continue for weeks, months, and even years after the mainshock (US Geological Survey).

5.3.2 Hazard Location

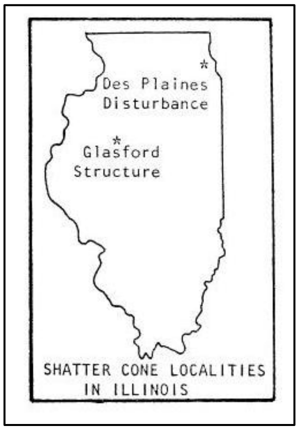
According to USGS, no fault zones are in Cook County; however, numerous reports highlight the fault activity of the Des Plaines Crater located beneath the populated Des Plaines suburb of Chicago.

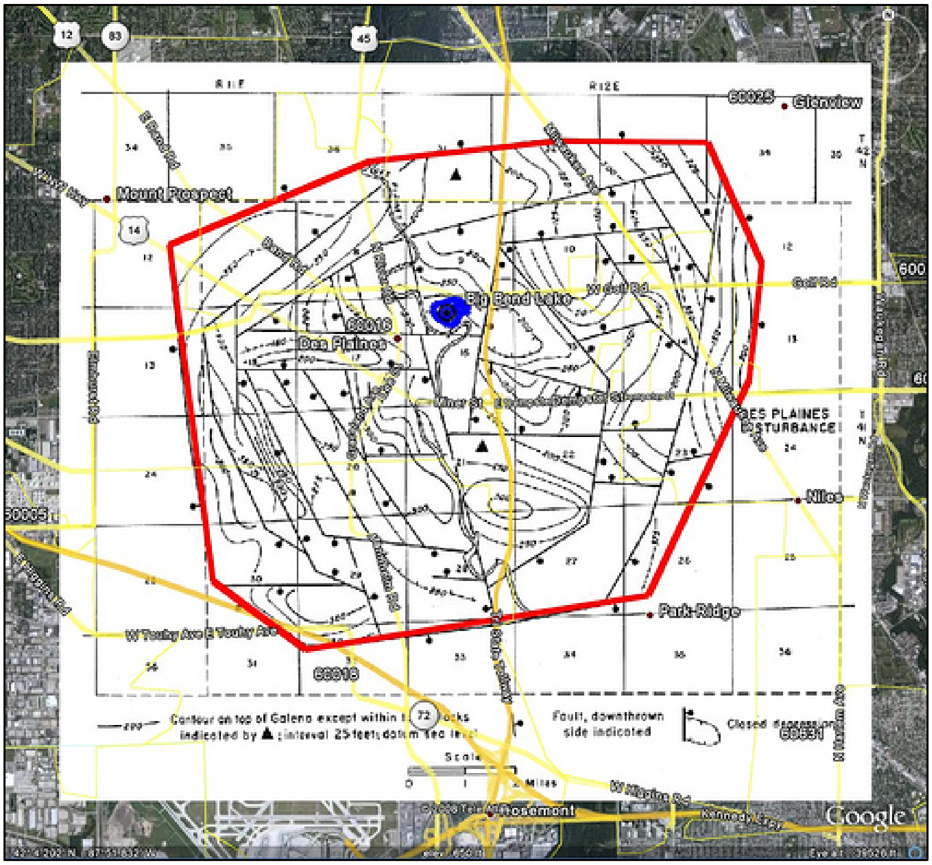
Des Plaines Crater/Disturbance

Anomalous geologic conditions in the northwest Chicago suburb of Des Plaines were noted by water well drillers as early as the 1890s. It was first suggested that it was faulting in the area. In 1944, the tectonic map of the United States identified the area of faulting as the "Des Plaines Disturbance", which has generally been used since. The disturbance was labeled a "cryptovolcanic structure" in 1945. The Des Plaines Disturbance is roughly circular and about 5 miles (8 km) in diameter. It lies on the east flank of the Wisconsin Arch and is surrounded by Silurian bedrock that dips gently eastward (Koeberl *et al* 1996).

The 8-km diameter Des Plaines Structure exhibits complex faulting and shock features such as percussion fractures and strain lamellae, as well as a few shatter cones. The center of the crater lies under Big Bend Lake on the Des Plaines River. Seismic reflection data suggest that there are numerous other faults within the bedrock of Cook County (United States Meteorite Impact Craters). More study is needed to determine the extent and magnitude of this phenomenon as it has not caused significant seismic activity.

Figure: Location of Des Plaines Disturbance





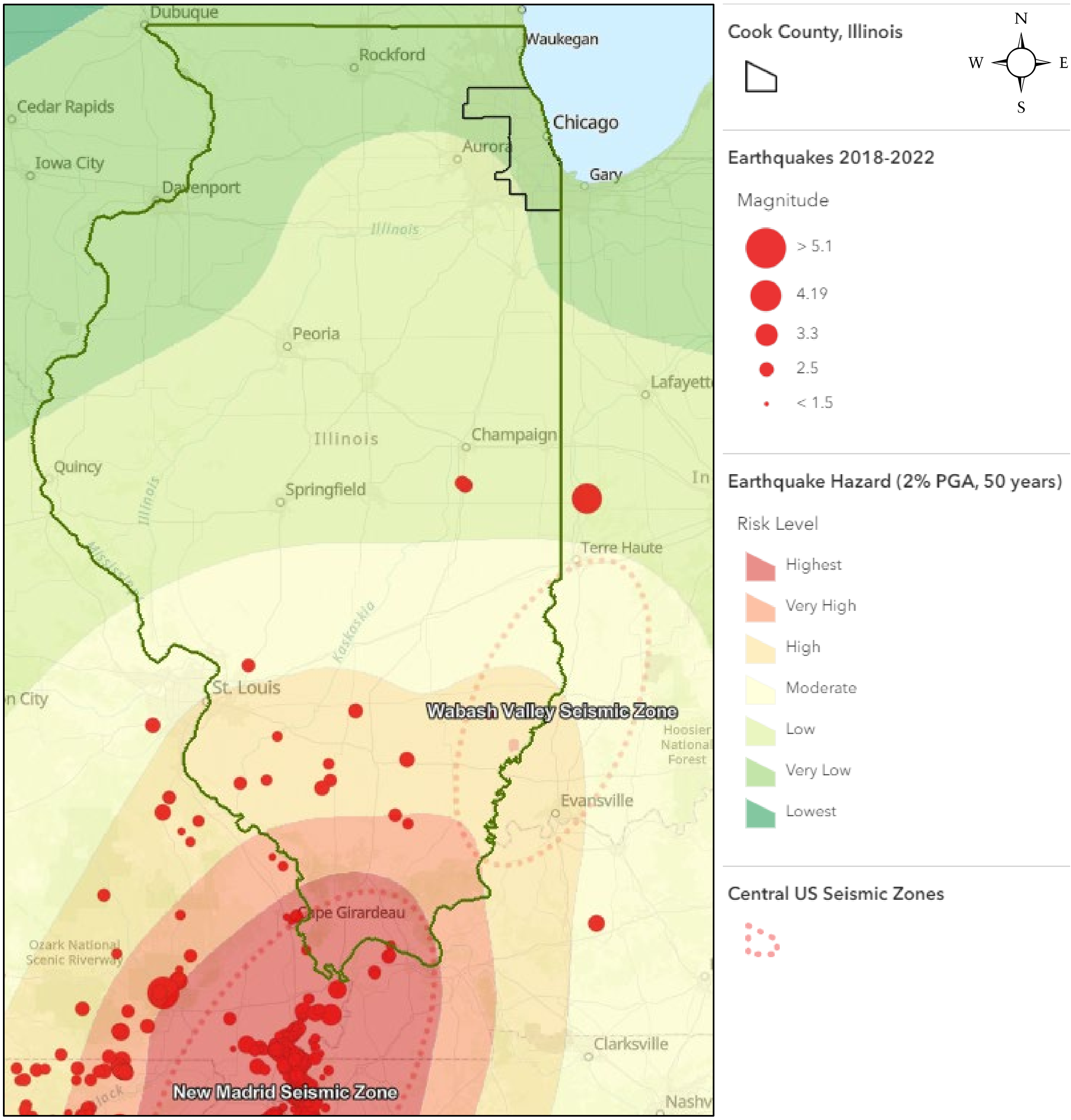
Location and Origin of Seismic Activity

The image on the next page illustrates the seismic hazard in Illinois according to United States Geological Survey (USGS). The image illustrates the location of the New Madrid and Wabash Valley Seismic Zones which are most likely to affect the planning area.

The New Madrid Seismic Zone, in the central Mississippi Valley, extends from northeast Arkansas through southeast Missouri, western Tennessee, and western Kentucky to southern Illinois.

The Wabash Valley Seismic Zone, in southeastern Illinois and southwest Indiana, is capable of producing earthquake events of magnitude similar to those of the New Madrid Seismic Zone. People living in this area experience moderate-sized earthquakes, impacting Illinois, Indiana, and Kentucky. This fault system is about 55 miles long and 31 miles wide. It consists of a series of parallel, high-angle normal faults. The easternmost faults extend into Indiana.

Figure: New Madrid and Wabash Valley Seismic Zones and Past Seismic Events



Earthquake Risk for Cook County

Source: USGS, Central United States Earthquake Consortium

Fault Lines

The figure below shows the major fault systems and other seismic structural features of Illinois and surrounding areas.

Figure: Faults in Illinois (ISGS)

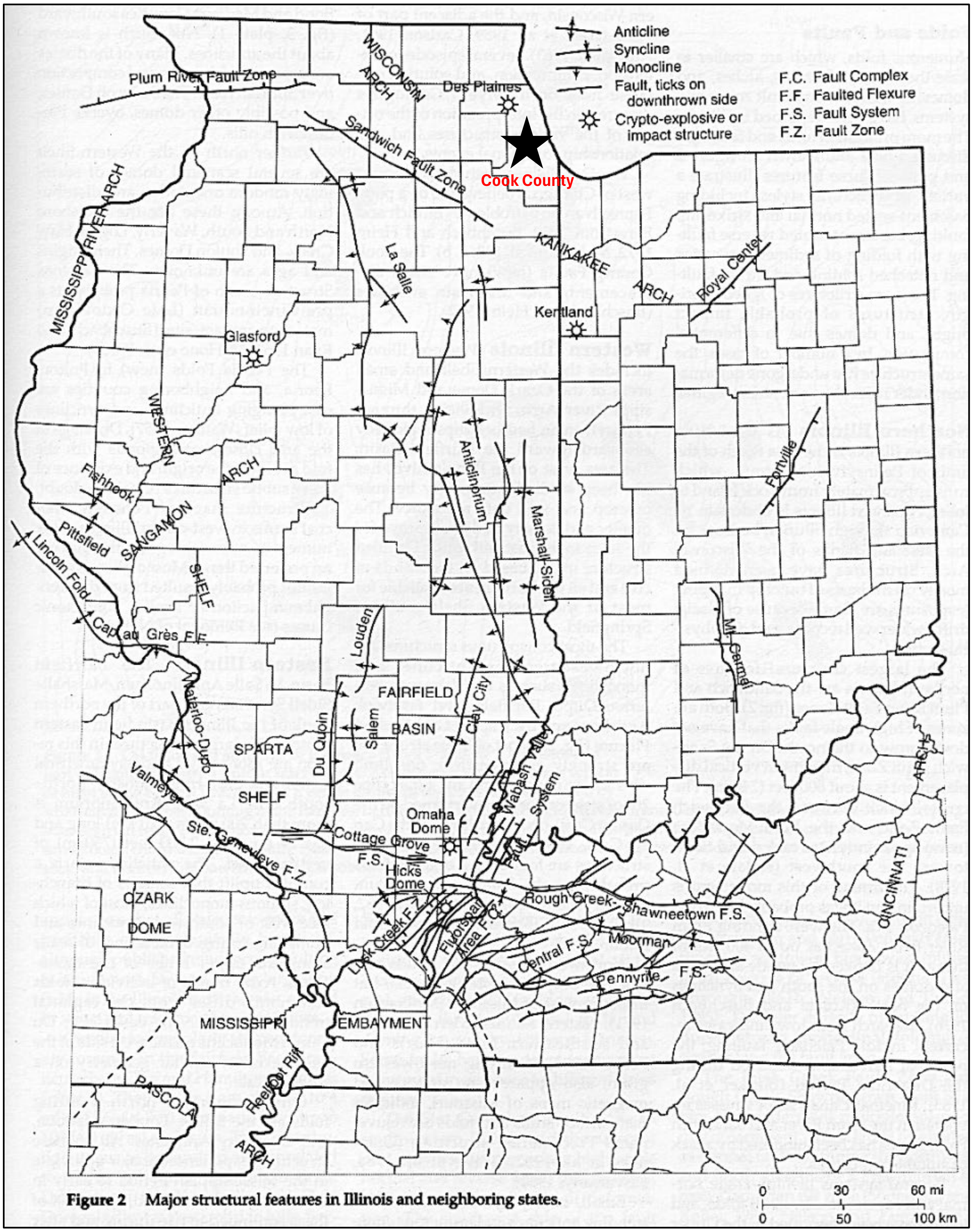


Figure 2 Major structural features in Illinois and neighboring states.

Faults in Close Proximity to Cook County

The Sandwich Fault Zone extends northwesterly from near Manhattan, Will County, to near Oregon, Ogle County, a distance of about 85 miles. Drilling samples from exploratory borings and water wells, drillers' logs, geophysical logs, refraction seismography, earth resistivity profiles, and outcrop studies indicate that the fault zone is about one half to two miles wide and is upthrown to the south throughout most of its extent. The fault zone has a maximum cumulative displacement of about 800 feet at its midpoint in southeastern De Kalb County. At the eastern end, in Will County, the fault zone is downthrown to the south with a total displacement of about 150 feet (The Sandwich Fault Zone of Northern Illinois, 1978).

Earthquakes in Illinois and Surrounding Region

Earthquakes in Illinois originate within the crystalline basement rocks at depths of one to 25 miles, which is below the layers of sedimentary rock where coal, oil, and aggregate (gravel) are mined. They occur in the granitic rocks far below the sedimentary layers of rock where known faults are mapped. The earthquake vibrations move out away from the point of origin (hypocenter or focus) through the bedrock and then up though the overlying soils on top of the bedrock. In the central part of the U.S., the bedrock is flat-lying, old, intact, and strong. Earthquake vibrations travel very far through material such as this in comparison to the young, broken, weak bedrock of the west coast. Because of this difference, central U. S. earthquakes are felt and cause damage over an area 15 to 20 times larger than California earthquakes with similar magnitudes (Illinois State Hazard Mitigation Plan, 2018).

The hazard risk for earthquakes is much more prevalent in Southern Illinois closer to the New Madrid fault, whereas Cook County is located far enough North that the hazard risk is much less.

5.3.3 Hazard Extent/Intensity

The severity of an earthquake can be expressed in terms of both *intensity* and *magnitude*. However, the two terms are quite different, and they are often confused. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. It varies from place to place within the disturbed region depending on the location of the observer with respect to the earthquake epicenter. Magnitude is related to the amount of seismic energy released at the hypocenter of the earthquake. It is based on the amplitude of the earthquake waves recorded on instruments which have a common calibration. The magnitude of an earthquake is thus represented by a single, instrumentally determined value (US Geological Survey).

Earthquake strength has traditionally been measured using the Richter scale, developed by Charles Richter in 1935. The Richter scale went through numerous adjustments since its conception and was eventually replaced by the “Moment Magnitude Scale” for earthquakes larger than 3.5; however, most still refer to both scales as the Richter scale. The Richter magnitude scale, used as an indicator of the force of an earthquake, measures the magnitude, intensity, and energy released by an earthquake with seismographs. Each whole-number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value. It is important to note that the Richter Magnitude Scale is not used to express damage (US Geological Survey).

TABLE: THE RICHTER SCALE	
Magnitude	**Description**
< 2.0	Micro earthquakes not felt.
2.0 - 2.9	Minor earthquakes, generally not felt, but are recorded.
3.0 - 3.9	Minor earthquakes, often felt, but rarely cause damage.
4.0 - 4.9	Light earthquakes, noticeable shaking of indoor items, rattling noises, and significant damage is unlikely.
5.0 - 5.9	Moderate earthquakes can cause major damage to poorly constructed buildings over small regions, and possible slight damage to well-designed buildings.
6.0 - 6.9	Strong earthquakes can be destructive in areas up to about 99 miles across populated regions.
7.0 - 7.9	Major earthquakes can cause serious damage over larger regions.
8.0 - 8.9	Great earthquakes can cause serious damage in regions several hundred miles across.
9.0 - 9.9	Great earthquakes, devastating in areas several thousands of miles across.
10 <	Massive earthquakes, never recorded, widespread devastation across vast regions.

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally - total destruction. The Modified Mercalli (MM) Intensity Scale is the common intensity scale used in the United States. This scale is composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects. The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the non-scientist than the magnitude because intensity refers to the effects actually experienced at that place (US Geological Survey).

The table below illustrates abbreviated descriptions of the 12 levels of Modified Mercalli Intensity Scale.

TABLE: MODIFIED MERCALLI INTENSITY SCALE	
Level of Intensity	**Observed Earthquake Effects**
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by people indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations are similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes and windows were broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.

TABLE: MODIFIED MERCALLI INTENSITY SCALE	
Level of Intensity	**Observed Earthquake Effects**
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage is great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage is great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures were destroyed; most masonry and frame structures were destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. The rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Earthquakes can trigger other types of ground failures which could contribute to the damage. These include landslides, dam failures, and liquefaction. In the last situation, shaking can mix groundwater and soil, liquefying and weakening the ground that supports buildings and severing utility lines. This is a special problem in floodplains where the water table is relatively high, and the soil is more susceptible to liquefaction (US Geological Survey).

One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. Soils along rivers and other bodies of water have higher water tables and higher sand content. As a result, these areas are more susceptible to liquefaction and land shaking. Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking as a result of water filling the space between individual soil particles. This can cause buildings to tilt or sink into the ground, slope failures, lateral spreading, surface subsidence, ground cracking, and sand blows.

NEHRP Soil Maps

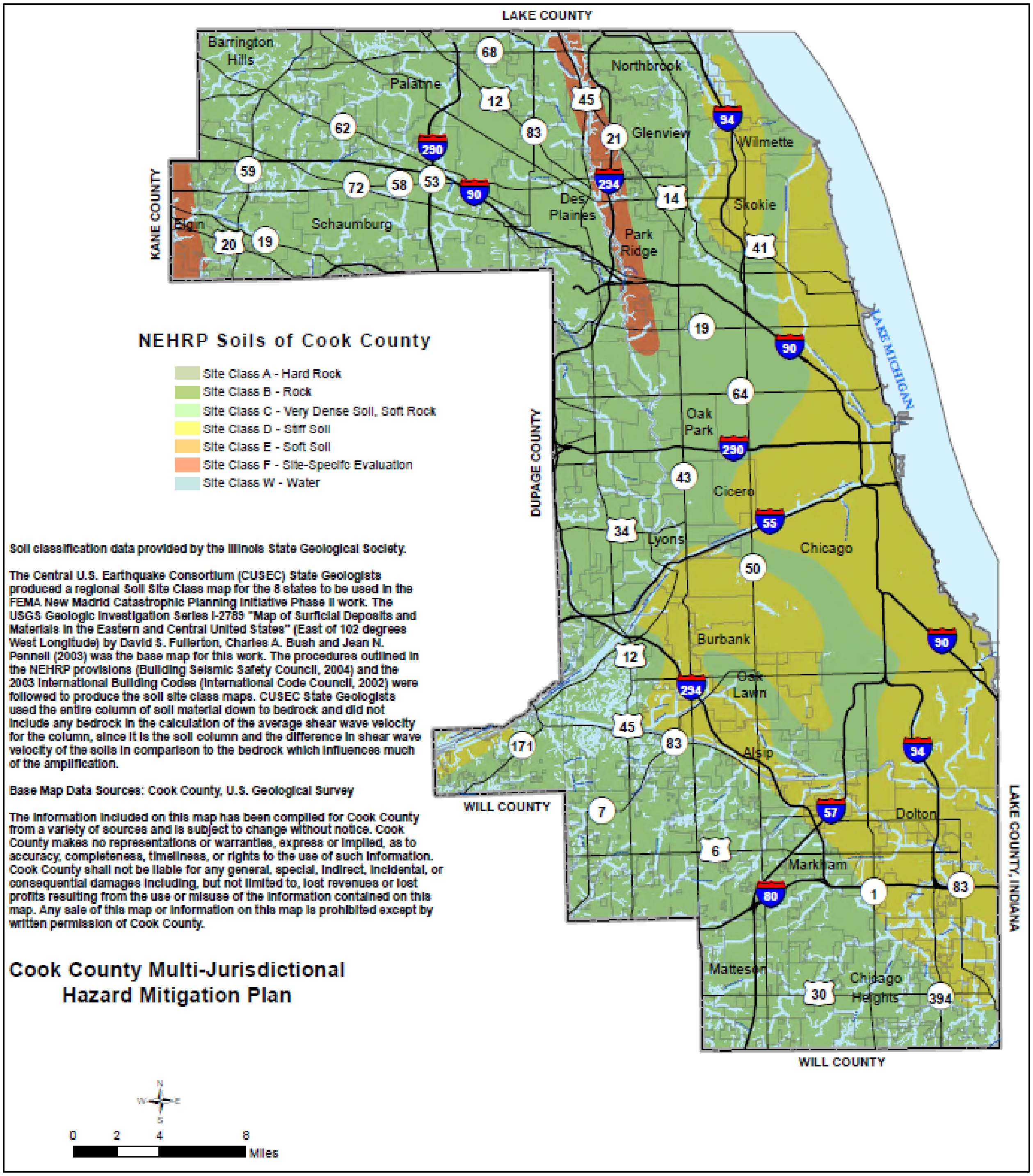
NEHRP soil types define the locations that will be significantly impacted by an earthquake. *Figure: NEHRP Soil Classifications of Cook County* shows NEHRP soil classifications in the county.

Effect on Soil Types: The impact of an earthquake on structures and infrastructure is largely a function of ground shaking, distance from the source of the quake, and liquefaction, a secondary effect of an earthquake in which soils lose their shear strength and flow or behave as liquid, thereby damaging structures that derive their support from the soil. Liquefaction generally occurs in soft, unconsolidated sedimentary soils.

A program called the National Earthquake Hazard Reduction Program (NEHRP) creates maps based on soil characteristics to help identify locations subject to liquefaction. *Table: NEHRP Soil Classification System* summarizes NEHRP soil classifications. NEHRP Soils B and C typically can sustain ground shaking without much effect, dependent on the earthquake magnitude. The areas that are commonly most affected by ground shaking have NEHRP Soils D, E and F. In general, these areas are also most susceptible to liquefaction.

TABLE: NEHRP SOIL CLASSIFICATION SYSTEM		
NEHRP Soil Type	**Description**	**Mean Shear Velocity to 30m (m/s)**
A	Hard Rock	1,500
B	Firm to Hard Rock	760-1,500
C	Dense Soil/Soft Rock	360-760
D	Stiff Soil	180-360
E	Soft Clays	< 180
F	Special Study Soils (liquefiable soils, sensitive clays, organic soils, soft clays >36 m thick)	

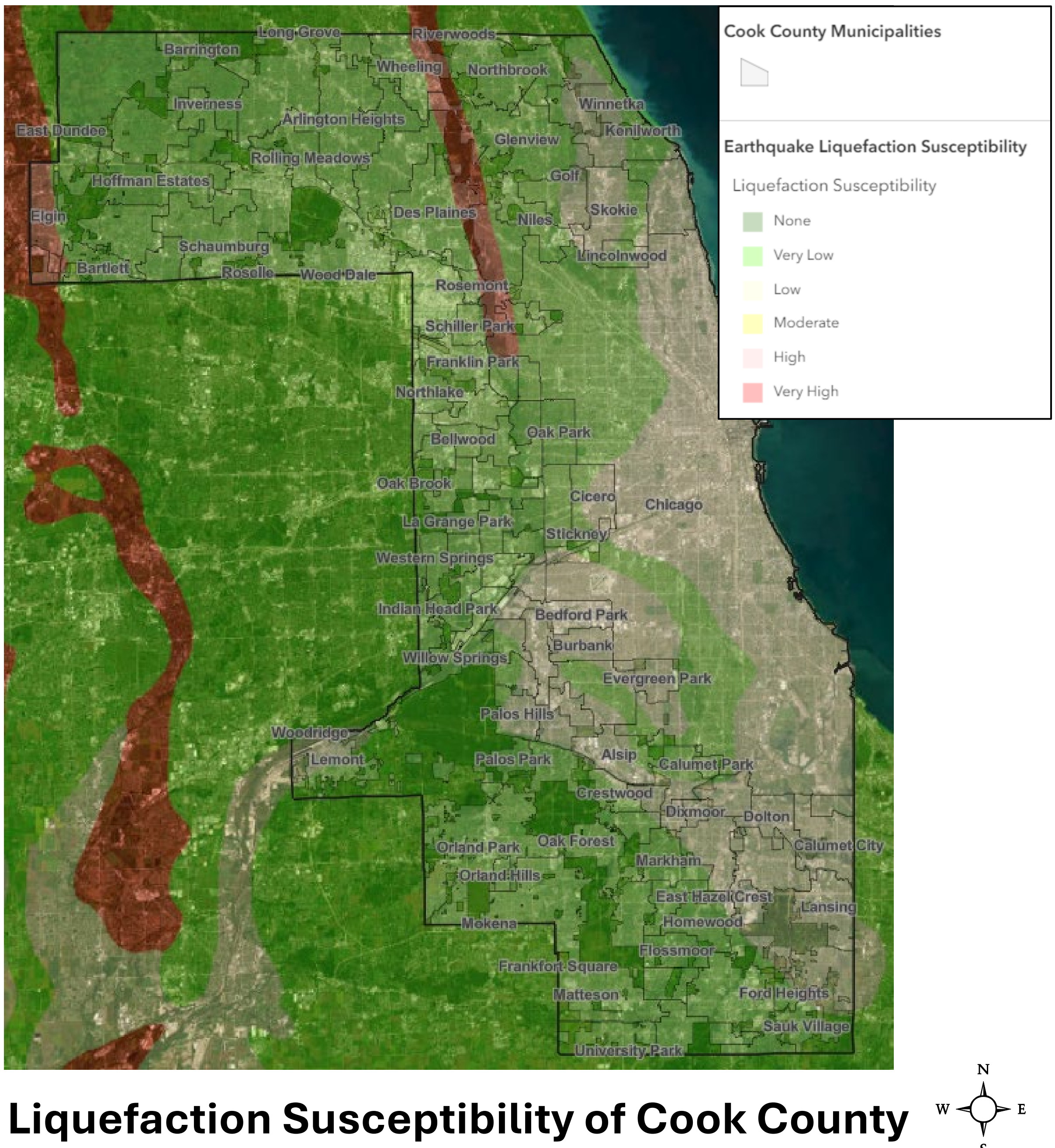
Figure: NEHRP Soil Classifications of Cook County



Liquefaction Maps

Soil liquefaction maps are useful tools to assess potential damage from earthquakes. When the ground liquefies, sandy or silty materials saturated with water behave like a liquid, causing pipes to leak, roads and airport runways to buckle, and building foundations to be damaged. In general, areas with NEHRP Soils D, E, and F are also susceptible to liquefaction. If there is a dry soil crust, excess water will sometimes come to the surface through cracks in the confining layer, bringing liquefied sand with it, creating sand boils. *Figure: Liquefaction Susceptibility of Cook County* shows the liquefaction susceptibility in the planning area.

Figure: Liquefaction Susceptibility of Cook County



Liquefaction Susceptibility of Cook County

Source: USGS

The impacts of an earthquake can be felt be felt throughout the entire county.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT				
Hazard Type	Affected Jurisdictions	Extent (based on historical events)		Comments
		Minimum	Maximum	
Earthquake	County-wide	0	4.9	Cook County has experienced three earthquakes ranging from a magnitude of 3 to 4.9. Since the 2018 Hazard Mitigation Plan, Cook County has not experienced any additional significant earthquakes.

5.3.4 Probability and Frequency

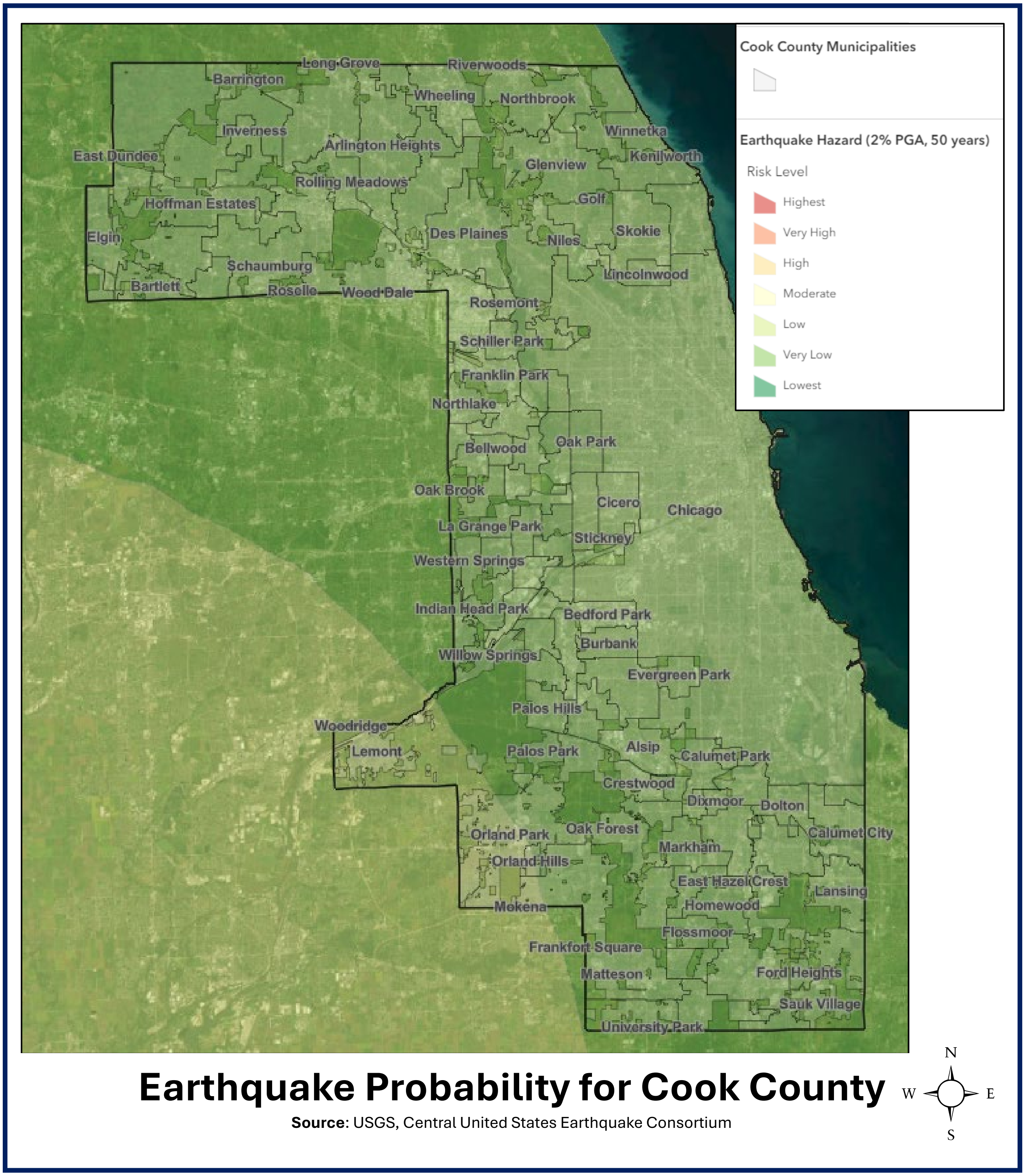
Probability: The United States Geological Survey (USGS) determines the probability of earthquake events through a combination of historical earthquake data, geological and seismological research, and advanced modeling techniques. This process involves analyzing past earthquakes to understand patterns of occurrence, fault line activities, and the distribution of seismic activity across different regions. By studying the behavior of tectonic plates, including their movement and the stress accumulation along faults, scientists can assess where earthquakes are more likely to occur. The USGS also utilizes seismic hazard maps that depict the likelihood of various levels of earthquake shaking in different areas over specific time frames. These maps are based on models that incorporate the rates at which earthquakes occur in different areas and the expected ground shaking from those earthquakes.

In addition, the USGS employs probabilistic seismic hazard analysis (PSHA), a method that quantifies the likelihood of exceeding various levels of earthquake shaking in a given time period, considering the uncertainties inherent in predicting earthquake behavior. PSHA takes into account the location, rate, and magnitude of potential earthquakes, as well as how seismic waves will propagate through the Earth to affect particular locations. The analysis also incorporates the potential for soil amplification and other local effects that can influence ground shaking intensity.

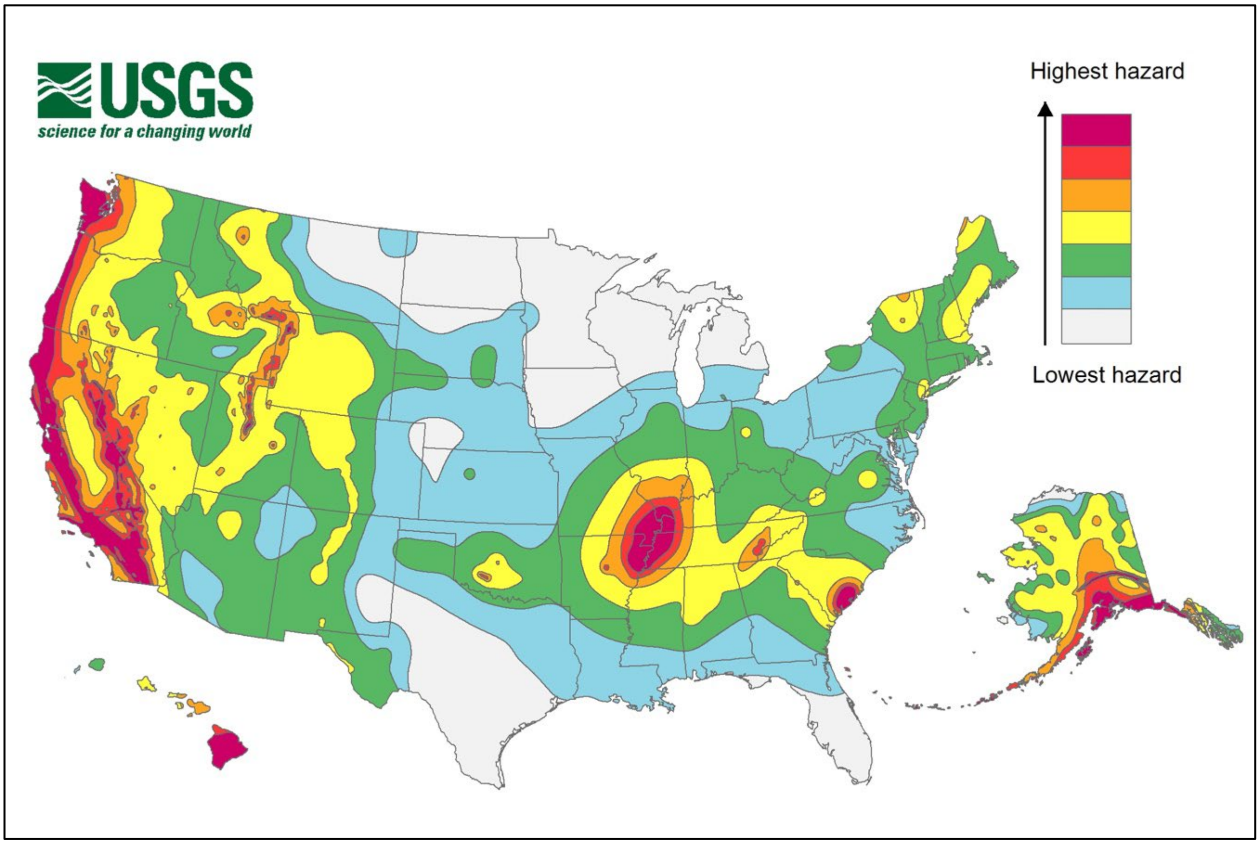
Probabilistic Earthquake Events

A probabilistic seismic hazard map shows the hazard from earthquakes that geologists and seismologists agree could occur. The maps are expressed in terms of probability of exceeding a certain ground motion. The image below illustrates peak ground accelerations having a 2% probability of being exceeded in 50 years, for a firm rock site, which is used by the Central US Earthquake Consortium, and includes Illinois.

Figure: Earthquake Probability Based on Peak Ground Acceleration for Cook County



The 2018 long-term national seismic hazard map is based on the most recent USGS models for the conterminous U.S. (2018), Hawaii (1998), and Alaska (2007). These models are based on seismicity and fault-slip rates and consider the frequency of earthquakes of various magnitudes (US Geological Survey).



Frequency: In the 2023 Illinois State HMP, data from Illinois State Geological Survey provided the number of earthquakes between 1795 to 2022, that were of a magnitude that could be felt or cause possible damage. During this time there were six earthquakes in Cook County as shown in the table below. This averages a frequency of 0.02643172 events per year during this time.

It should be noted that these numbers do not represent the total recorded earthquakes since some counties have had large numbers of small events that were not detected by people (below magnitude 2.0). Earthquakes recorded prior to about 1955 utilized estimated magnitudes and locations for the events based on damage amounts, aerial extent, and location.

TABLE: NUMBER OF EARTHQUAKES IN COOK COUNTY BETWEEN 1795-2022

COUNTY	FELT		SOME POSSIBLE DAMAGE	
	MAGNITUDES		MAGNITUDES	
	2.0–2.9	*3.0–3.9*	*4.0–4.9*	*5.0-5.4*
Cook County	3	2	1	-

Source: Illinois State HMP 2023

5.3.5 Past Events

Earthquakes occur throughout Illinois, with most in the southern third of the state. Over 360 earthquakes have occurred in Illinois during the past 20 years. Damage resulted from 32 of these earthquakes. Sixteen notable events have been recorded in Cook, DuPage, Kane, Kendall, and Will Counties since 1804. Cook County has experienced three earthquakes ranging from a magnitude of 3 to 4.9. Cook County has not experienced significant earthquakes since 2013. The table below lists examples of major past seismic events that have impacted Cook County.

TABLE: EARTHQUAKES THAT IMPACTED COOK COUNTY

Date	Magnitude	Location/Fault Line	Comments
August 1804	4.4	Fort Dearborn (Chicago)	Felt over 30,000 square miles
December 16, 1811	N/A	New Madrid	Earthquake was so severe that it awakened people in Pittsburgh, PA and Norfolk, VA.
1812	N/A	New Madrid	Aftershocks from the December 16, 1811, event
October 13, 1895	6.2	Charlestown, MO	No reference and/or no damage reported
1909	5.1	7 miles southwest of the Village of Lemont, IL	One of the largest earthquakes in Illinois knocked over many chimneys in Aurora. It was felt over 500,000 square miles. Buildings swayed in Chicago.
1968	5.4	New Madrid Fault	Southern Illinois; damage occurred in south-central Illinois, southwest Indiana, and northwest Kentucky; felt over all or parts of 23 states
May 10, 1987	5.0	Near Lawrenceville, IL	No reference and/or no damage reported
April 27, 1989	4.7	15 miles SW of Caruthersville, MO	No reference and/or no damage reported
September 28, 1989	4.5	15 miles south of Cairo, IL	No reference and/or no damage reported
September 26, 1990	4.6	10 miles south of Cape Giradau, MO	No reference and/or no damage reported
May 3, 1991	4.6	10 miles west of New Madrid, MO	No reference and/or no damage reported
September 9, 1985	3.0	2 miles from Lombard, IL	No reference and/or no damage reported

TABLE: EARTHQUAKES THAT IMPACTED COOK COUNTY			
Date	**Magnitude**	**Location/Fault Line**	**Comments**
February 5, 1994	4.2	Lick Creek-Goresville Area	No reference and/or no damage reported
September 2, 1999	3.5	8 miles from Dixon, IL	No reference and/or no damage reported
June 28, 2004	4.2	8 miles from Ot8 miles from Ottawa, IL	Felt throughout Cook County and most of Illinois
April 18, 2008	5.2	7 miles from Mt. Carmel	Felt around the state, including the Chicago area; skyscrapers in downtown Chicago shook but damage was mostly seen downstate
February 11, 2010	3.8	1 mile southeast of Pingree Grove (40 miles northwest of Chicago)	Located 6 miles below the ground surface
2011	3.8	Central Indiana	Residents of Chicago, Naperville, and Buffalo Grove reported having felt the earthquake
January 31, 2012	2.3	East of McHenry, IL	Residents of McHenry County reported having felt this earthquake
March 11, 2013	2.7	Benton, IL – New Madrid Seismic Zone	Occurred around 5 a.m.; no injuries or damage reported

5.3.6 Vulnerability and Impacts

Impacted FEMA Community Lifelines		
Safety and Security	**Safety and Security** Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	**Significant**
Food, Hydration, Shelter	**Food, Hydration, Shelter** Food, Hydration, Shelter, Agriculture	**Moderate**
Health and Medical	**Health and Medical** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	**Moderate**
Energy (Power & Fuel)	**Energy** Power Grid, Fuel	**Moderate**
Communications	**Communications** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	**Minimal**

Transportation	**Transportation** Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	**Significant**
Hazardous Materials	**Hazardous Materials** Facilities, HAZMAT, Pollutants, Contaminants	**Moderate**
Water Systems	**Water Systems** Potable Water Infrastructure, Wastewater Management	**Significant**
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown		

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health: According to FEMA, earthquakes can impact life safety and public health in different ways. Some of the most common impacts are as follows:

- Injuries and Loss of Life: The violent shaking and structural damage caused by earthquakes can result in injuries and, in severe cases, loss of life. Falling debris, structural collapses, and ground ruptures can pose immediate risks to individuals in affected areas.
- Structural Damage: Earthquakes can cause extensive damage to buildings, homes, and infrastructure, making them unsafe for occupancy. This can lead to injuries, homelessness, and the need for temporary shelter.
- Displacement: Earthquake-affected individuals may be forced to evacuate their homes due to damage or the threat of aftershocks. This displacement can lead to overcrowding in emergency shelters and increased stress for affected individuals and families.
- Mental Health Impact: Earthquakes can have long-lasting psychological effects, including trauma, anxiety, and post-traumatic stress disorder (PTSD), which may require mental health support and counseling.
- Strain on Healthcare Systems: Earthquakes can overwhelm healthcare systems with an influx of injured individuals in need of medical attention. Hospitals and medical facilities may face challenges in providing care and resources.
- Infrastructure Disruption: Critical infrastructure, including roads, bridges, utilities, and communication networks, can be damaged, affecting emergency response capabilities and access to essential services.

- Water Supply Contamination: Ground shaking can damage water supply systems, leading to contamination of drinking water sources. This poses health risks and requires water treatment and distribution efforts.
- Fire Hazards: Earthquakes can cause gas leaks and damage to electrical systems, increasing the risk of fires. Fire outbreaks can lead to additional injuries, property damage, and air quality issues.
- Aftershocks: Aftershocks following the initial earthquake can further damage weakened structures, hinder response efforts, and prolong the risks to life safety and public health.
- Warning Time: There is currently no reliable way to predict the day or month that an earthquake will occur at any given location.

Property Damage and Critical Infrastructure: Generally, wood frame buildings and structures on solid ground fare best during an earthquake. Wood frame buildings are flexible enough to withstand ground shaking and swaying. Evaluations of recent earthquakes found that damage was primarily caused to:

- Unreinforced masonry structures.
- Older buildings with some degree of deterioration.
- Buildings without foundation ties.
- Multi-story structures with open or “soft” first floors.

Most building codes have standards related to the first three concerns. This means that the most threatened buildings are older ones (built before current codes), masonry ones, and taller ones with open first floors.

In addition to the building type, damage is related to the underlying soil. Buildings on solid ground fare better, while those on loose or sandy soils will suffer more from shaking. These can be found in floodplains. If there is enough water present, the shaking can liquefy the underlying soils, which removes the support under the foundation.

Secondary Hazards: During earthquakes, river valleys are vulnerable to slope failure, often as a result of loss of soil cohesion. Soil liquefaction occurs when water-saturated sands, silts, or gravelly soils are shaken so violently that the individual grains lose contact with one another and float freely in the water, turning the ground into a pudding-like liquid. Building and road foundations lose load-bearing strength and may sink into what was previously solid ground. Unless properly secured, hazardous materials can be released, causing significant damage to the environment and people. Earthen dams and levees are highly susceptible to seismic events and the impacts of their eventual failures can be considered secondary risks for earthquakes. Additionally, other underground critical infrastructure such as the extensive network of oil and gas pipelines which feed the supply chain and fiber optic communications cable are highly vulnerable.

Economy: According to FEMA, earthquake events can have profound and multifaceted economic impacts, affecting communities, businesses, and governments at all levels. Initially, earthquakes inflict direct damage to infrastructure, including buildings, roads, and bridges, leading to substantial repair and reconstruction costs. These costs not only strain public budgets but also divert resources from other vital community needs. Businesses experience significant disruptions, with some forced to cease operations temporarily or permanently, resulting in lost income, employment, and productivity. The ripple effects extend to the wider economy, as supply chains are disrupted, and consumer spending patterns shift in the aftermath of the disaster.

According to FEMA, earthquakes can undermine investor confidence and lead to declines in property values, especially in areas deemed at high risk for future seismic events. The insurance sector faces increased claims, which can impact the availability and cost of coverage for businesses and homeowners. Efforts to rebuild and recover from an earthquake often require substantial investment, which can stimulate economic activity in construction and related sectors but also highlight the need for improved resilience and preparedness strategies.

Changes in Development and Impact of Future Development: According to FEMA, earthquake events significantly influence changes in development and future planning strategies, primarily through the lens of enhancing resilience and safety in earthquake-prone areas. In the aftermath of significant seismic activity, there is often a reassessment of building codes and construction practices to reduce the vulnerability of structures to future earthquakes. This includes the adoption of more stringent engineering standards, the use of earthquake-resistant materials, and the incorporation of innovative design techniques that allow buildings and infrastructure to withstand seismic forces. Such measures are crucial in minimizing physical damage and ensuring the safety of occupants during subsequent earthquakes. Lastly, urban planning and zoning regulations may be revised to limit development in high-risk areas, such as fault zones and areas susceptible to soil liquefaction, further mitigating potential damage and loss of life.

According to FEMA, earthquake events also impact long-term planning of communities, through higher building code standards and retrofitting existing structures to improve their earthquake resilience. Efforts to enhance public awareness and preparedness, including earthquake drills and the development of emergency response plans, have become integral components of community planning.

Effects of Climate Change on Severity of Impacts: According to NOAA, the relationship between climate change and the severity of earthquake events is not direct, as earthquakes are primarily caused by geophysical processes related to the movement of tectonic plates beneath the Earth's surface. According to NOAA, earthquakes result from the buildup and release of energy along faults or by volcanic activity, processes that are generally considered to be independent of atmospheric conditions influenced by climate change.

HAZUS-MH Analysis (Cook County 1909 Historic Scenario Event):

Scenario Earthquake Events

Earthquake scenario maps describe the expected ground motions and effects of hypothetical large earthquakes for a region. Maps of these scenarios can be used to support all phases of emergency management. The following scenario was chosen to analyze for this plan:

1909 Historical Earthquake Scenario—A Magnitude 6.2 event with a shallow depth and epicenter approximately 7 miles southwest of the Village of Lemont, IL. The basis for this map and analysis was the historical events database contained within the HAZUS-MH model. For this assessment, the magnitude of the event was changed from 5.0 to 6.0, using the same focal depth and epicenter as the historical event.

Building Damage

HAZUS estimates that about 103,124 buildings will be at least moderately damaged. This is over 8.00% of the buildings in the region. There are an estimated 4,702 buildings that will be damaged beyond repair.

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	303.88	0.03	76.15	0.04	69.86	0.09	33.33	0.17	18.79	0.40
Commercial	54168.79	5.09	14078.39	7.39	10307.11	13.06	3518.72	18.05	824.99	17.54
Education	1747.44	0.16	438.44	0.23	336.14	0.43	99.25	0.51	28.73	0.61
Government	345.54	0.03	94.87	0.05	81.13	0.10	25.40	0.13	8.07	0.17
Industrial	16871.33	1.59	4493.32	2.36	3858.06	4.89	1410.51	7.23	300.78	6.40
Other Residential	249971.16	23.51	39450.02	20.72	14430.84	18.28	3109.49	15.95	548.48	11.66
Religion	1052.30	0.10	222.00	0.12	148.21	0.19	48.75	0.25	12.74	0.27
Single Family	738968.86	69.49	131582.20	69.10	49693.30	62.96	11251.96	57.71	2959.67	62.94
Total	**1,063,429**		**190,435**		**78,925**		**19,497**		**4,702**	

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	819258.31	77.04	123754.59	64.99	28902.06	36.62	2627.38	13.48	143.63	3.05
Steel	19549.46	1.84	5392.82	2.83	6115.28	7.75	2623.49	13.46	636.50	13.54
Concrete	12859.48	1.21	3288.98	1.73	2614.63	3.31	842.38	4.32	206.57	4.39
Precast	7397.31	0.70	1431.61	0.75	1629.09	2.06	690.10	3.54	92.45	1.97
RM	6100.30	0.57	853.10	0.45	857.88	1.09	279.82	1.44	21.54	0.46
URM	197685.68	18.59	55456.14	29.12	38489.67	48.77	12291.11	63.04	3561.64	75.74
MH	578.76	0.05	258.14	0.14	316.02	0.40	143.13	0.73	39.94	0.85
Total	**1,063,429**		**190,435**		**78,925**		**19,497**		**4,702**	

Essential Facility Damage

Before the earthquake, the region had 18,541 hospital beds available for use. On the day of the earthquake, the model estimates that only 12,398 hospital beds (67.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 83.00% of the beds will be back in service. By 30 days, 95.00% will be operational.

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	82	0	0	77
Schools	1,985	16	0	1,835
EOCs	15	1	0	12
PoliceStations	175	2	0	156
FireStations	328	7	0	297

Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	1,320	0	0	1,320	1,320
	Bridges	1,697	26	0	1,676	1,694
	Tunnels	63	0	0	63	63
Railways	Segments	1,254	0	0	1,254	1,254
	Bridges	509	0	0	509	509
	Tunnels	0	0	0	0	0
	Facilities	97	1	0	96	97
Light Rail	Segments	0	0	0	0	0
	Bridges	35	0	0	35	35
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	2	0	0	2	2
Ferry	Facilities	4	0	0	4	4
Port	Facilities	178	24	0	156	178
Airport	Facilities	10	1	0	9	10
	Runways	17	0	0	17	17

Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	9	0	0	9	9
Waste Water	14	1	0	11	13
Natural Gas	0	0	0	0	0
Oil Systems	9	2	0	7	7
Electrical Power	24	4	0	24	24
Communication	81	0	0	81	81

Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	13,324	1443	361
Waste Water	7,995	725	181
Natural Gas	251	11	3
Oil	0	0	0

Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	2,086,940	30,620	18,709	4,387	0	0
Electric Power		38,557	26,792	14,034	1,850	51

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 64 ignitions that will burn about 0.26 sq. mi 0.03% of the region's total area.) The model also estimates that the fires will displace about 4,063 people and burn about 509 (millions of dollars) of building value.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris. The model estimates that a total of 7,413,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 48.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 296,520 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 13,754 households to be displaced due to the earthquake.

Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows:

- Severity Level 1: Injuries will require medical attention, but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day when different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	18.06	3.81	0.46	0.90
	Commuting	0.09	0.12	0.20	0.04
	Educational	0.00	0.00	0.00	0.00
	Hotels	1.04	0.19	0.02	0.04
	Industrial	24.57	5.07	0.61	1.18
	Other-Residential	1494.34	269.98	31.80	61.81
	Single Family	2350.84	486.21	63.24	123.71
	Total	**3,889**	**765**	**96**	**188**
2 PM	Commercial	1817.78	387.30	48.00	92.01
	Commuting	0.81	1.04	1.79	0.35
	Educational	1975.54	439.00	59.89	115.81
	Hotels	0.20	0.04	0.00	0.01
	Industrial	181.15	37.50	4.52	8.69
	Other-Residential	472.23	88.15	10.86	20.22
	Single Family	719.58	153.42	20.79	38.91
	Total	**5,167**	**1,106**	**146**	**276**
5 PM	Commercial	1603.80	344.46	43.36	81.72
	Commuting	15.34	19.81	34.23	6.59
	Educational	182.85	37.05	4.76	9.07
	Hotels	0.31	0.06	0.01	0.01
	Industrial	113.22	23.44	2.82	5.43
	Other-Residential	595.51	111.05	13.67	25.46
	Single Family	939.83	200.75	27.24	50.97
	Total	**3,451**	**737**	**126**	**179**

Economic Loss

The total economic loss estimated for the earthquake is 30,964.30 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake. The total building-related losses were 29,885.38 (millions of dollars); 16% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up over 45% of the total loss. The table below provides a summary of the losses associated with the building damage.

Building-Related Economic Loss Estimates (Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	36.7337	654.4305	53.9330	122.7293	867.8265
	Capital-Related	0.0000	15.6216	552.0556	32.7437	42.1132	642.5341
	Rental	163.1330	288.0514	450.9451	42.7533	43.3086	988.1914
	Relocation	582.2212	202.9194	637.1662	238.5650	533.0738	2,193.9456
	Subtotal	**745.3542**	**543.3261**	**2294.5974**	**367.9950**	**741.2249**	**4692.4976**
Capital Stock Losses							
	Structural	1520.9950	506.5449	1969.5182	681.6558	594.5965	5,273.3104
	Non_Structural	4942.5627	2825.7122	2681.7074	1660.3785	1806.1021	13,916.4629
	Content	1548.6772	752.7877	1268.5270	1134.4000	846.0152	5,550.4071
	Inventory	0.0000	0.0000	308.9610	135.7536	7.9860	452.7006
	Subtotal	**8012.2349**	**4085.0448**	**6228.7136**	**3612.1879**	**3254.6998**	**25192.8810**
	Total	**8757.59**	**4628.37**	**8523.31**	**3980.18**	**3995.92**	**29885.38**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component only. There are no losses computed by HAZUS for business interruption due to lifeline outages. The next two tables provide a detailed breakdown in the expected lifeline losses.

Transportation System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	12738.3535	0.0000	0.00
	Bridges	17816.5051	146.6044	0.82
	Tunnels	1192.7998	0.4493	0.04
	Subtotal	**31747.6584**	**147.0537**	
Railways	Segments	34835.6058	0.0000	0.00
	Bridges	2578.0850	6.2607	0.24
	Tunnels	0.0000	0.0000	0.00
	Facilities	258.3110	29.5690	11.45
	Subtotal	**37672.0018**	**35.8297**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	4.3656	0.0022	0.05
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**4.3656**	**0.0022**	
Bus	Facilities	4.5699	0.4602	10.07
	Subtotal	**4.5699**	**0.4602**	
Ferry	Facilities	5.3240	0.3639	6.84
	Subtotal	**5.3240**	**0.3639**	
Port	Facilities	603.9797	92.8180	15.37
	Subtotal	**603.9797**	**92.8180**	
Airport	Facilities	2872.1139	281.4308	9.80
	Runways	253.8872	0.0000	0.00
	Subtotal	**3126.0011**	**281.4308**	
	Total	**73,163.90**	**557.96**	

Utility System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	332.6670	14.4383	4.34
	Distribution Lines	428.8687	6.4934	1.51
	Subtotal	**761.5357**	**20.9317**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	2142.9002	161.6443	7.54
	Distribution Lines	257.3212	3.2618	1.27
	Subtotal	**2400.2214**	**164.9061**	
Natural Gas	Pipelines	1813.3109	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	171.5475	1.1175	0.65
	Subtotal	**1984.8584**	**1.1175**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.9990	0.1312	13.13
	Subtotal	**0.9990**	**0.1312**	
Electrical Power	Facilities	4163.6312	333.3646	8.01
	Subtotal	**4163.6312**	**333.3646**	
Communication	Facilities	8.9910	0.5057	5.62
	Subtotal	**8.9910**	**0.5057**	
	Total	**9,320.24**	**520.96**	

5.3.7 FEMA NRI Expected Annual Loss Estimates

TABLE: COOK COUNTY - EXPECTED ANNUAL LOSS FOR EARTHQUAKE EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0.051% chance per year	0.33	$3,857,819	$13,280,151	N/A	$17,137,969	Relatively Moderate	96.4
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Period of Record: 2021 dataset							
Source: FEMA National Risk Index (2024)							

5.3.8 FEMA Hazard-Specific Risk Index

TABLE: COOK COUNTY - FEMA HAZARD SPECIFIC RISK INDEX – EARTHQUAKE EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$17,137,969	Very High	Relatively High	$20,828,989	96.7
*FEMA Hazard-Type **Risk Index Scores** are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type **Social Vulnerability Score** represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type **Community Resilience Score** represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

5.3.9 FEMA NRI Exposure Values

TABLE: COOK COUNTY, IL EXPOSURE VALUE TABLE FOR EARTHQUAKE EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Earthquake	$62,089,381,870,000	$893,106,270,000	$61,196,275,600,000	5,275,541.00	N/A
Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population*					

equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars). ***Agriculture:*** *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*
Source: FEMA National Risk Index (2024)

5.4 Flooding

5.4.1 Hazard Description

Flooding is defined by the National Weather Service (NWS) as "the inundation of normally dry areas as a result of increased water levels in an established water course." River flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes, including prolonged, general rainfall, locally intense thunderstorms, snowmelt, and ice jams. In addition to these natural events, there are a number of factors controlled by human activity that may cause or contribute to flooding. These include dam failure (discussed below) and activities that increase the rate and amount of runoff, such as paving, reducing ground cover, and clearing forested areas. Flooding is a periodic event along most rivers, with the frequency depending on local conditions and controls, such as dams and levees. The land along rivers that is identified as being susceptible to flooding is called the floodplain.

Flooding is a dynamic natural process. Along rivers and streams, a cycle of erosion and deposition is continuously rearranging and rejuvenating the aquatic and terrestrial systems. Although many plants, animals, and insects have evolved to accommodate and take advantage of these ever-changing environments, property and infrastructure damage often occurs when people develop floodplains and natural processes are altered or ignored.

Flooding can also threaten life, safety, and health and often results in substantial damage to infrastructure, homes, and other property. The extent of damage caused by a flood depends on the topography, soils, and vegetation in an area, and the depth and duration of flooding, velocity of flow, rate of rise, and the amount and type of development in the floodplain.

Floodplains are areas adjacent to a river, creek, or lake that become inundated during a flood. Floodplains may be broad, as when a river crosses an extensive flat landscape, or narrow, as when a river is confined in a canyon.

When floodwaters recede after a flood event, they leave behind layers of rock and mud. These gradually build up to create a new floor of the floodplain. Floodplains generally contain unconsolidated sediments (accumulations of sand, gravel, loam, silt, and/or clay), often extending below the bed of the stream. These sediments provide a natural filtering system, with water percolating back into the ground and replenishing groundwater. These are often important aquifers, the water drawn from them being filtered compared to the water in the stream. Fertile, flat reclaimed floodplain lands are commonly used for agriculture, commerce, and residential development.

Connections between a river and its floodplain are most apparent during and after major flood events. These areas form a complex physical and biological system that not only supports a variety of natural resources but also provides natural flood and erosion control. When a river is separated from its floodplain with levees and other flood control facilities, natural, built-in benefits can be lost, altered, or significantly reduced.

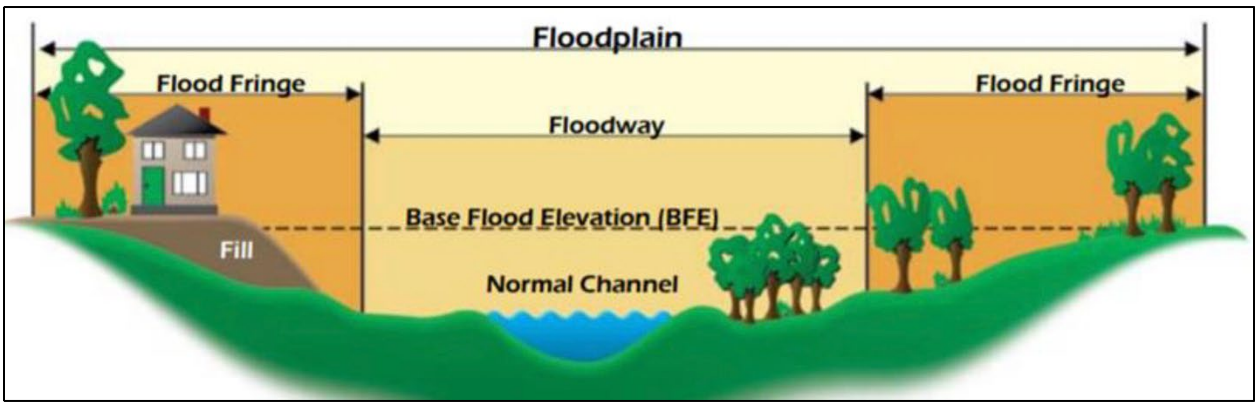
Types of Flooding

Flooding can occur in a number of ways, and many instances are not independent of each other and can occur simultaneously during a flood event. The types of flooding considered for this plan include:

- Heavy rainfall

- Urban stormwater overflow
- Rapid snowmelt
- Rising groundwater (generally in conjunction with heavy prolonged rainfall and saturated conditions)
- Riverine ice jams
- Flash floods
- Alluvial fan flooding
- Flooding from dam failure
- Coastal/Shoreline flooding
    - Seiche
    - Meteotsunami
    - Coastal Erosion

Riverine Flooding: Riverine flooding originates from a body of water, typically a river, creek, or stream, as water levels rise onto normally dry land. Water from snowmelt, rainfall, freezing streams, ice flows, or a combination thereof, causes the river or stream to overflow its banks onto adjacent floodplains. Winter flooding usually occurs when ice in the rivers creates dams or streams freeze from the bottom up during extreme cold spells. Spring flooding is usually the direct result of melting winter snowpacks, heavy spring rains, or a combination of the two.



Urban/Flash/Stormwater Flooding: Urban (or "Flash") flooding, as defined in the Urban Flooding Awareness Act, is "the inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers. 'Urban flooding' does not include flooding in undeveloped or agricultural areas. 'Urban flooding' includes (i) situations in which stormwater enters buildings through windows, doors, or other openings, (ii) water backup through sewer pipes, showers, toilets, sinks, and floor drains, (iii) seepage through walls and floors, and (iv) the accumulation of water on property or public rights-of-way. Urban flooding is characterized by its repetitive, costly, and systemic impacts on communities, regardless of whether or not these communities are located within formally designated floodplains or near any body of water. These impacts include damage to buildings and infrastructure, economic disruption, and negative effects on health and safety.

Coastal/Shoreline Flooding: According to NOAA, coastal or shoreline flooding is defined as the inundation of land areas along the coast by seawater, which can occur due to various factors including sea level rise, storm surges, and high tides. This type of flooding is exacerbated by climate change, leading to more frequent and severe occurrences, impacting coastal ecosystems, infrastructure, and communities.

- **Seiche:** is a standing wave in a body of water, often created by strong winds, rapid atmospheric pressure changes, or seismic activity. These forces displace water in enclosed or partially enclosed bodies like lakes or bays. When the initial force subsides, the water oscillates back and forth between the boundaries, forming the seiche. This phenomenon can last for hours or days, depending on the size of the water body and initial energy (NOAA).
- **Meteotsunami:** a large wave generated by air pressure disturbances often associated with fast-moving weather events, such as severe thunderstorms. Unlike tsunamis caused by seismic activity, meteotsunamis are primarily driven by atmospheric conditions. These waves can be amplified by geographical features like shallow continental shelves and bays, and they can travel long distances along coastlines. Meteotsunamis pose challenges in prediction and public warning due to their similarities with other oceanic phenomena (NOAA).
- **Coastal Erosion:** is the process where rising sea levels, strong wave action, and coastal flooding contribute to the wearing down and removal of rocks, soils, and sands along the coastline. This erosion is exacerbated by storm surges and high tides during tropical storms, leading to significant land and property loss (US Climate Resilience Toolkit).

Watershed: is the land area that drains to a particular waterbody, such as a river, lake, or ocean. It is a geographic region that collects and channels precipitation and surface water to a common outlet, a stream, river, or other waterbody. Watersheds can vary in size, from a small drainage basin encompassing only a few acres to a large river basin spanning thousands of square miles. The health and quality of a watershed are critical for the sustainability of the ecosystem and the organisms that depend on it, including humans (US Environmental Protection Agency).

A healthy watershed is one in which natural land cover supports:

- Dynamic hydrologic and geomorphologic processes within their natural range of variation
- Habitat of sufficient size and connectivity to support native aquatic and riparian species
- Physical and chemical water quality conditions can support healthy biological communities.

Natural vegetative cover in the landscape, including the riparian zone, helps maintain the natural flow regime and fluctuations in water levels in lakes and wetlands. This, in turn, helps maintain natural geomorphic processes, such as sediment storage and deposition, which form the basis of aquatic habitats. The connectivity of aquatic and riparian habitats in the longitudinal, lateral, vertical, and temporal dimensions helps ensure the flow of chemical and physical materials and the movement of biota among habitats.

A healthy watershed has the structure and function in place to support healthy aquatic ecosystems. Key components of a healthy watershed include:

- Intact and functioning headwater streams, floodplains, riparian. corridors, biotic refugia, instream habitat, and biotic communities.
- Natural vegetation in the landscape; and

- Hydrology, sediment transport, fluvial geomorphology, and disturbance regimes are expected for its location.

A stream's flow regime refers to its characteristic pattern of flow magnitude, timing, frequency, duration, and rate of change. The flow regime plays a central role in shaping aquatic ecosystems and the health of biological communities. Alteration of natural flow regimes (e.g., more frequent floods) can reduce the quantity and quality of aquatic habitat, degrade aquatic life, and result in the loss of ecosystem services (US Environmental Protection Agency).

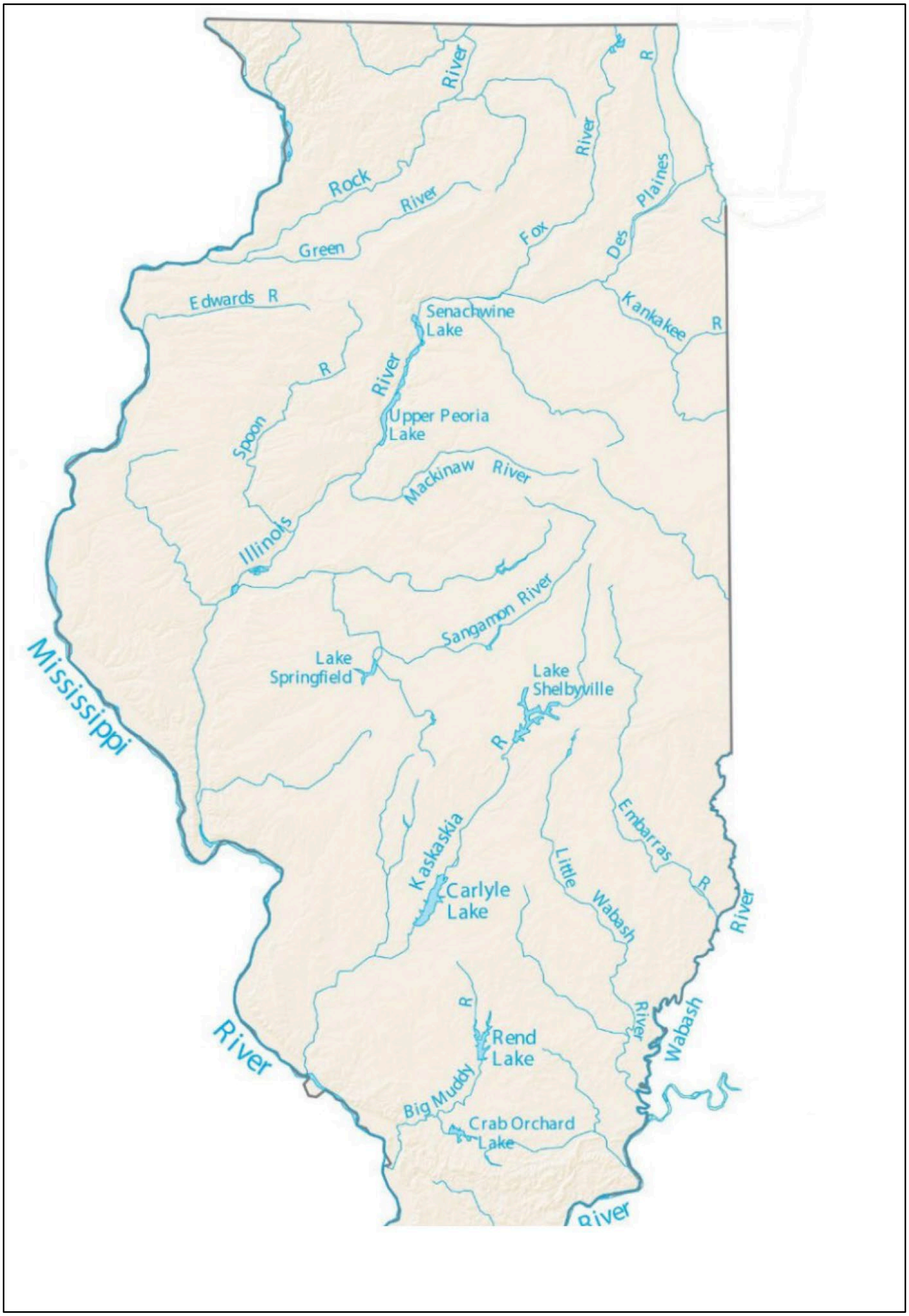
Floodplain Ecosystems

Floodplains can support ecosystems that are rich in plant and animal species. A floodplain can contain 100 or even 1,000 times as many species as a river. Wetting of the floodplain soil releases an immediate surge of nutrients: those left over from the last flood, and those that result from the rapid decomposition of organic matter that has accumulated since then. Microscopic organisms thrive and larger species enter a rapid breeding cycle. Opportunistic feeders (particularly birds) move in to take advantage. The production of nutrients peaks and falls away quickly, but the surge of new growth endures for some time. This makes floodplains valuable for agriculture. Species growing in floodplains are markedly different from those that grow outside floodplains. For instance, riparian trees (trees that grow in floodplains) tend to be very tolerant of root disturbance and very quick growing compared to non-riparian trees.

5.4.2 Hazard Location

Floods in Cook County are caused by rainfall from large frontal storms, which may be in combination with some snowmelt, runoff, and ice jams. The principal contributor to flooding in the area is the inadequate capacity of some of the natural stream channels to contain runoff resulting from intense thunderstorm precipitation over the stream basins. Inundation of lands adjoining stream channels has been aggravated over the years by the gradual accumulation of silt. The buildup of sand bars and island channels has resulted in the loss of channel capacity. Another factor lending itself to the poor flow characteristics of some portions of channels is the excessive growth of brush, light timber, and aquatic vegetation.

The image below illustrates the major rivers and lakes in Illinois.



Source: (2023 Illinois State HMP)

FEMA has mapped over 78 square miles of the 100-year floodplain and 99 square miles of 500-year floodplain along 172 water courses within the Cook County planning area. This includes floodplains within jurisdictions that intersect multiple counties. Whiles these maps do not cover all the flood risks within the planning area, they do represent a large percentage of the risk. A brief description of some of these riverine flood sources is provided below.

Addison Creek

Addison Creek is a tributary to Salt Creek and the principal flood source for the Village of Bellwood. Addison Creek caused substantial flooding following a storm in March 1948. In 1951 and 1952, the channel was deepened and widened by IDNR from the mouth to Lake Street in Northlake. Flooding in the 1960s led to channel improvements in the reaches upstream from Bellwood in 1970. A peak stream flow of 1,120 cubic feet per second (cfs) with a river stage of 12.84 feet was observed on August 14, 1987.

North Branch of the Chicago River

Large magnitude floods occurred on the Chicago River, North Branch, West Fork in 1938, 1954, 1957, 1960, 1967, 1982, 1987, 1994 and 2001. Flood damage in the Chicago River, North Branch watershed have been most severe in the Chicago River, North Branch, West Fork because of relatively greater levels of floodplain development, such as that which has occurred along the 2.6-mile West Fork stream reach in Glenview. The 1967 flood, approximately a 5-percent-annual-chance flood event, caused damage along the entire Chicago River, North Branch, West Fork. A peak stream flow of 1,190 cfs, with a river stage of 10.10 feet, was observed on the West Fork of this riverine system on August 14, 1987.

The Chicago River, North Branch, West Fork flooded in the Village of Northbrook on July 22, 1982, when more than 7 inches of rain fell over 12 hours. The flood was the most extreme event recorded since the early 1950s when systematic streamflow records were first recorded on the West Fork. The peak discharge recorded at the Dundee Road gauge in Northbrook was 1,070 cfs, which had an estimated recurrence interval of 25 years. A major storm, which had been preceded by a very wet 30-day period, occurred on December 2, 1982. Rainfall amounts from 3 to 4 inches were recorded over a 1- to 2-day period. The peak discharge of 740 cfs was recorded at the Dundee Road gauge.

Flood damage is increasing in the Chicago River, North Branch watershed. The change can be attributed to a number of factors, the most notable of which is urbanization of upland areas, increasing the rate and volume of storm runoff. Another factor is floodplain development, which reduces natural floodplain storage and often obstructs conveyance of flood flows. Both urbanization and floodplain filling are expected to continue. In combination, these factors cause more frequent flooding and higher flood stages.

It should be noted that in July 2018, the Albany Park Stormwater Diversion Tunnel was completed in Chicago's Albany Park neighborhood. As of July 2019, the tunnel had successfully diverted stormwater during several heavy rainfall events that have historically created flooding issues in the immediate area.

Des Plaines River

Damaging floods in the primarily urban Des Plaines River watershed occurred in 1938, 1948, 1950, 1954, 1957, 1960, 1965, 1972, 1974, 1976, 1979, 1986, 1987, 2000, 2004, and 2013. Despite numerous flood control efforts, the Des Plaines River remains one of the most flood-prone waterways in the region. Two floods (September-October 1986 and August 1987) caused more than $100 million in damage to more than 10,000 residential, commercial or public structures. More than 15,000 residents were evacuated during the 1986 flood. Communities along the Des Plaines River that were affected include Gurnee, Lincolnshire, and Wadsworth, as well as the unincorporated areas of Cook County. Flooding in these communities has impacted the transportation network, homes, commercial/industrial sites, public/municipal sites, streets, golf courses, cemeteries, and recreation/open space areas. According to the National Weather Service, the Des Plaines River near Gurnee has a flood stage of 7 feet; at 11 feet the flood category becomes major. Major floods occurred in 1986 and 2004, with crests at 11.95 feet and 11.76 feet, respectively.

West Branch of the DuPage River

Flooding is frequent and severe along the DuPage River, West Branch in Hanover Park. Rapid urbanization in the drainage areas since 1960 has led to increasing stormwater runoff. At the same time, development in the floodplain in the north portion of the village has obstructed overbank flows during floods, raising water-surface elevations in the vicinity and generally worsening the damage. A major storm in October 1954 caused record flooding in the Chicago area, but Hanover Park was sparsely developed at that time. Other significant floods occurred on June 10, 1967, and on September 6, 1970, when an estimated 2.7 inches of rain fell in the drainage area. Peak discharges at the crest-stage gauge at Lake Street on the river reached 570 cfs in 1967 and 450 cfs in 1970. Damage in Hanover Park resulting from the 1970 flood was estimated at $470,000. In addition to flooding due to major storms, more frequent flooding occurs due to high waters in the river blocking storm sewer outlets and causing basement flooding. Data from the recording gauge on the river near North Avenue in the Village of Bartlett indicated that the June 1967 flood had a 1-percent-annual-chance probability.

Little Calumet River

The Little Calumet River in Calumet City, Illinois, had severe flooding in June 1981, December 1982, November 1990, and July 1996. The highest flood on record occurred in November 1990 when the river reached a stage between 20 and 21 feet. This flood was below the 1-percent-annual-chance probability.

Flagg Creek

The most severe floods on Flagg Creek near Indian Head Park, and their approximate recurrence intervals can be documented from records for the USGS Flag Creek at Willow Springs gauge downstream of Indian Head Park. This gauge (No. 05533000, drainage area 16.5 square miles) was established in 1949.

A peak stream flow of 2,680 cfs with a river stage of 13.814 feet was observed on September 14, 1961. This peak was approached again on April 18, 2013, with a flow of 2,610 cfs and a stage of 10.57 feet.

Flint Creek

Flint Creek Tributary, in the Village of Barrington, can flood upstream of bridges, apparently due to restrictive culverts. The storm on December 2-3, 1982, resulted in Elm Road being covered by approximately 18 inches of water.

Midlothian Creek

One of the earliest recorded floods in Cook County occurred on Midlothian Creek in April 1947; it had a 2-percent-annual-chance recurrence probability. Other major floods of Midlothian Creek in the City of Blue Island occurred in April 1973, October 1954, July 1957, September 1961, and July 1996. A peak stream flow of 627 cfs with a river stage of 7.67 feet was observed on April 22, 1973.

Salt Creek

Salt Creek, as measured by USGS Gauge No. 05531500, located approximately 4 miles upstream of the Village of Broadview at Western Springs, had a peak discharge for the period of record of 3,980 cfs on April 18, 2013. The river stage for this event was 10.65 feet. Flooding on Salt Creek in the Village of Broadview creates backwater in the lower reaches of Addison Creek. Flooding on Salt Creek and other streams in the Village of Schaumburg is principally caused by inadequate sewers. The most common problem during a major storm is street flooding.

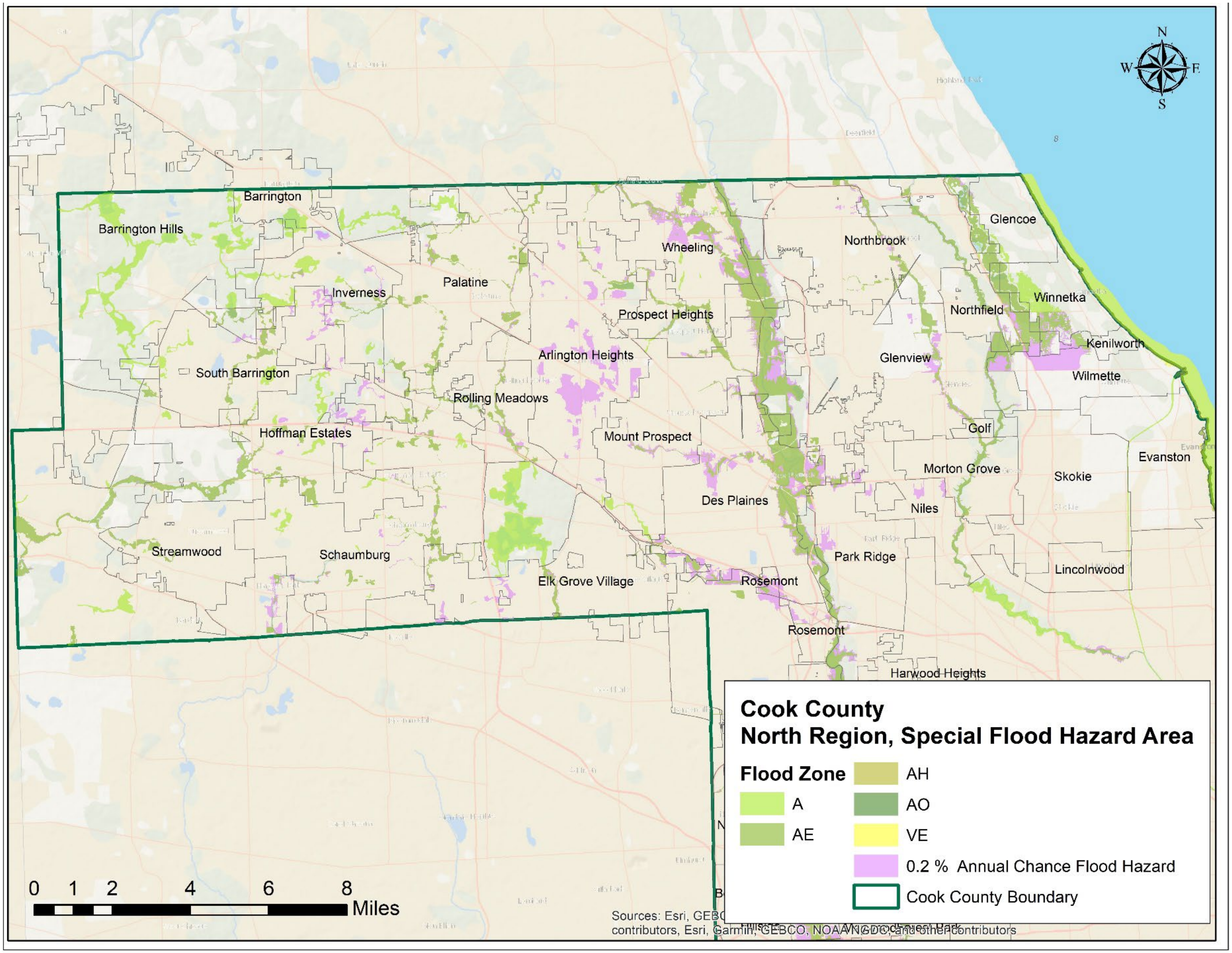
Stoney Creek (East)

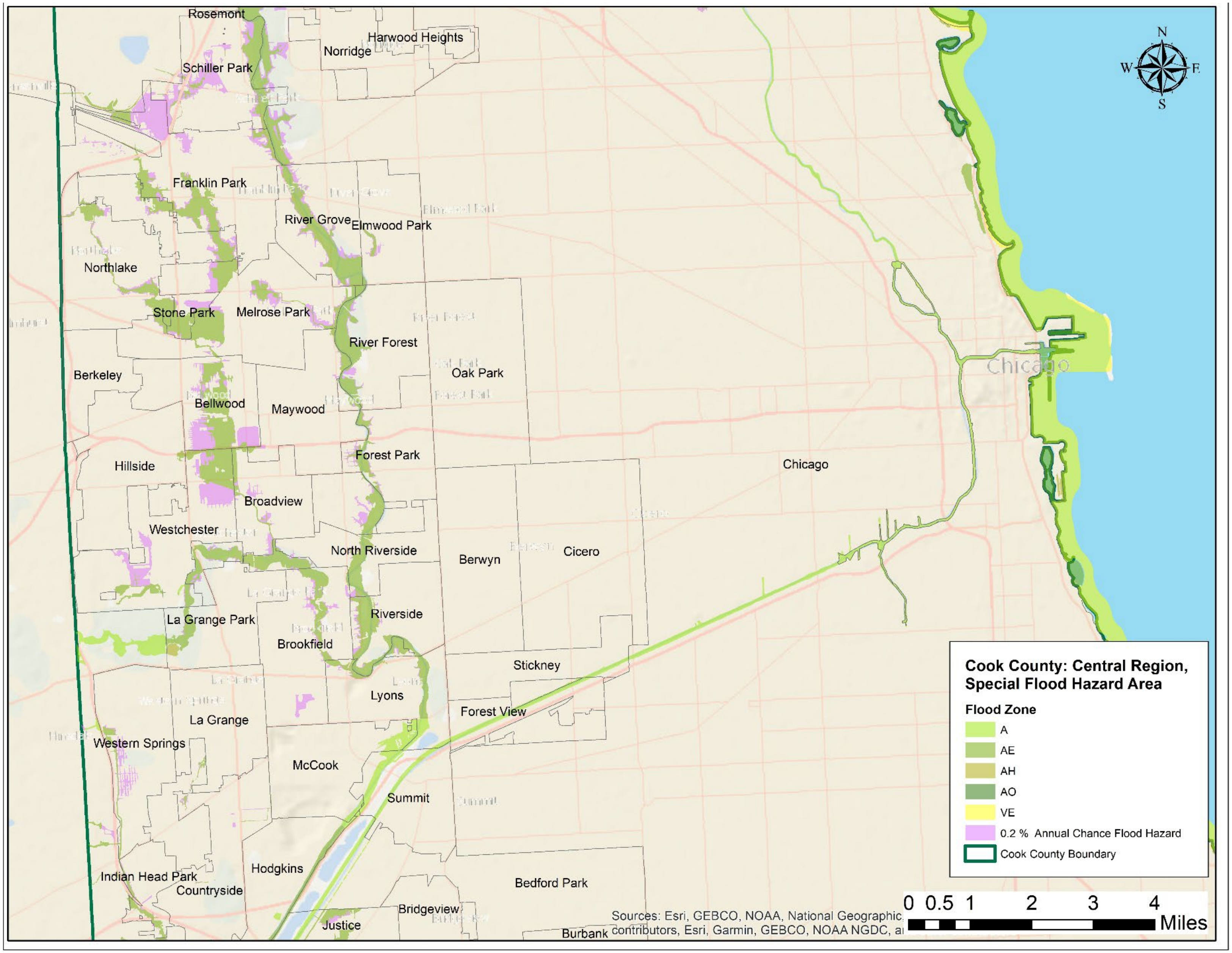
Stony Creek (East) is formed by a confluence of local, natural, and sewered tributaries. Although low-lying areas in the vicinity of the channel in the Village of Alsip have a record of extensive flooding, the channel has been the recipient of varied state, county, and local improvements that have reduced most of the flooding problems. There are two prominent areas along Stony Creek (East) that still present a flood hazard in Alsip: one at Central Park Avenue, at the confluence of Merrionette Park Ditch, and the other downstream of Cicero Avenue. Major damage during these floods can be attributed to basement flooding by flowing through windows or doors, wall seepage, and backup of combined sewers. The worst flood on record in Alsip prior to 1965 was in October 1954, which was estimated to be a 2-percent-annual-chance flood. Other floods of significance occurred in July 1957 and September 1961. All of these floods affected Stony Creek (East) and Merrionette Park Ditch. In 1977, improvements to the flow in the creek and discharge into the Calumet Sag Channel were completed.

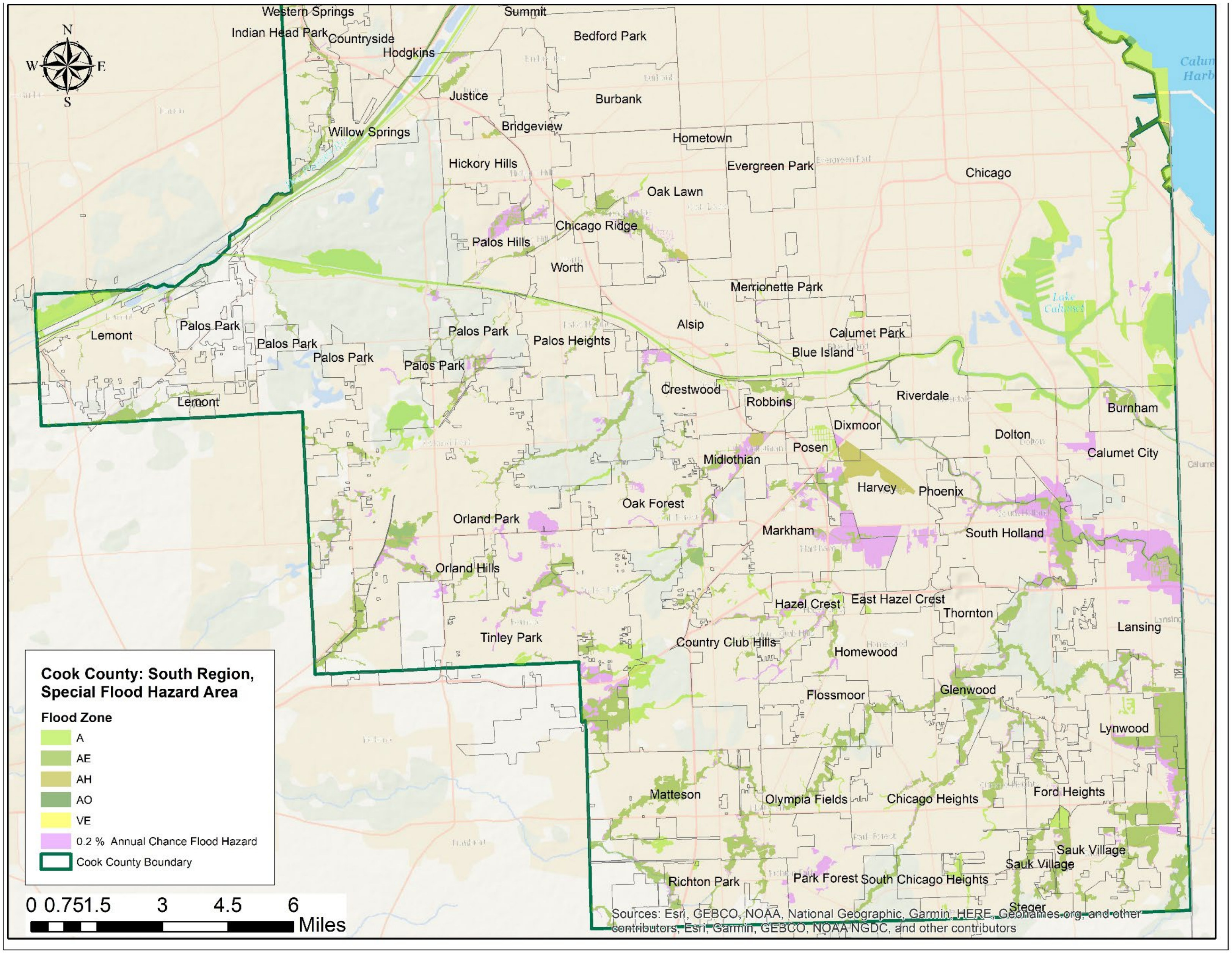
FIRM SFHA

The following are maps to show the Special Flood Hazard Areas (SFHA), which are areas having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) as Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V). 1 FIRM SFHAs can be viewed on the National Flood Hazard Layer (NFHL).

The FIRM SFHA maps are illustrated below.


Cook County
North Region, Special Flood Hazard Area
Flood Zone
A
AE
AH
AO
VE
0.2 % Annual Chance Flood Hazard
Cook County Boundary
0 1 2 4 6 8
Miles
N
S
E
W
Barrington
Barrington Hills
Wheeling
Northbrook
Glencoe
Palatine
Inverness
Prospect Heights
Northfield
Winnetka
Kenilworth
Wilmette
Glenview
Arlington Heights
South Barrington
Rolling Meadows
Hoffman Estates
Mount Prospect
Golf
Morton Grove
Skokie
Evanston
Des Plaines
Niles
Streamwood
Schaumburg
Park Ridge
Lincolnwood
Elk Grove Village
Rosemont
Harwood Heights
Sources: Esri, GEBCO, Garmin, NOAA NGDC, and other contributors


Cook County: Central Region, Special Flood Hazard Area
Flood Zone
A
AE
AH
AO
VE
0.2 % Annual Chance Flood Hazard
Cook County Boundary
0 0.5 1 2 3 4 Miles
N
W
E
S
Rosemont
Harwood Heights
Norridge
Schiller Park
Franklin Park
River Grove
Elmwood Park
Northlake
Stone Park
Melrose Park
River Forest
Oak Park
Berkeley
Bellwood
Maywood
Hillside
Forest Park
Chicago
Broadview
Westchester
North Riverside
Berwyn
Cicero
La Grange Park
Riverside
Brookfield
Stickney
Lyons
La Grange
Forest View
Western Springs
McCook
Summit
Indian Head Park
Countryside
Hodgkins
Bedford Park
Bridgeview
Justice
Burbank
Sources: Esri, GEBCO, NOAA, National Geographic, contributors, Esri, Garmin, GEBCO, NOAA NGDC, a



Cook County: South Region, Special Flood Hazard Area
Flood Zone
A
AE
AH
AO
VE
0.2 % Annual Chance Flood Hazard
Cook County Boundary
0 0.751.5 3 4.5 6
Miles
Western Springs
Indian Head Park
Countryside
Hodgkins
Summit
Bedford Park
Burbank
Justice
Bridgeview
Willow Springs
Hometown
Evergreen Park
Hickory Hills
Oak Lawn
Chicago
Chicago Ridge
Palos Hills
Worth
Merrionette Park
Alsip
Calumet Park
Blue Island
Lemont
Palos Park
Palos Heights
Crestwood
Robbins
Riverdale
Dixmoor
Burnham
Dolton
Calumet City
Posen
Midlothian
Harvey
Phoenix
Oak Forest
Orland Park
Markham
South Holland
Orland Hills
Hazel Crest
East Hazel Crest
Thornton
Lansing
Tinley Park
Country Club Hills
Homewood
Glenwood
Flossmoor
Lynwood
Matteson
Olympia Fields
Chicago Heights
Ford Heights
Sauk Village
Richton Park
Park Forest
South Chicago Heights
Steger
Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Watersheds in Cook County

Each Cook County watershed has unique qualities that affect its response to rainfall. Stream gauges are used to monitor stream levels or stages. Data collected from stream gauges are used to develop hydrograph models to help predict potential flood conditions and flood heights. A hydrograph is a graph or chart illustrating stream flow in relation to time (see *Figure: Des Plaines River Hydrograph*).

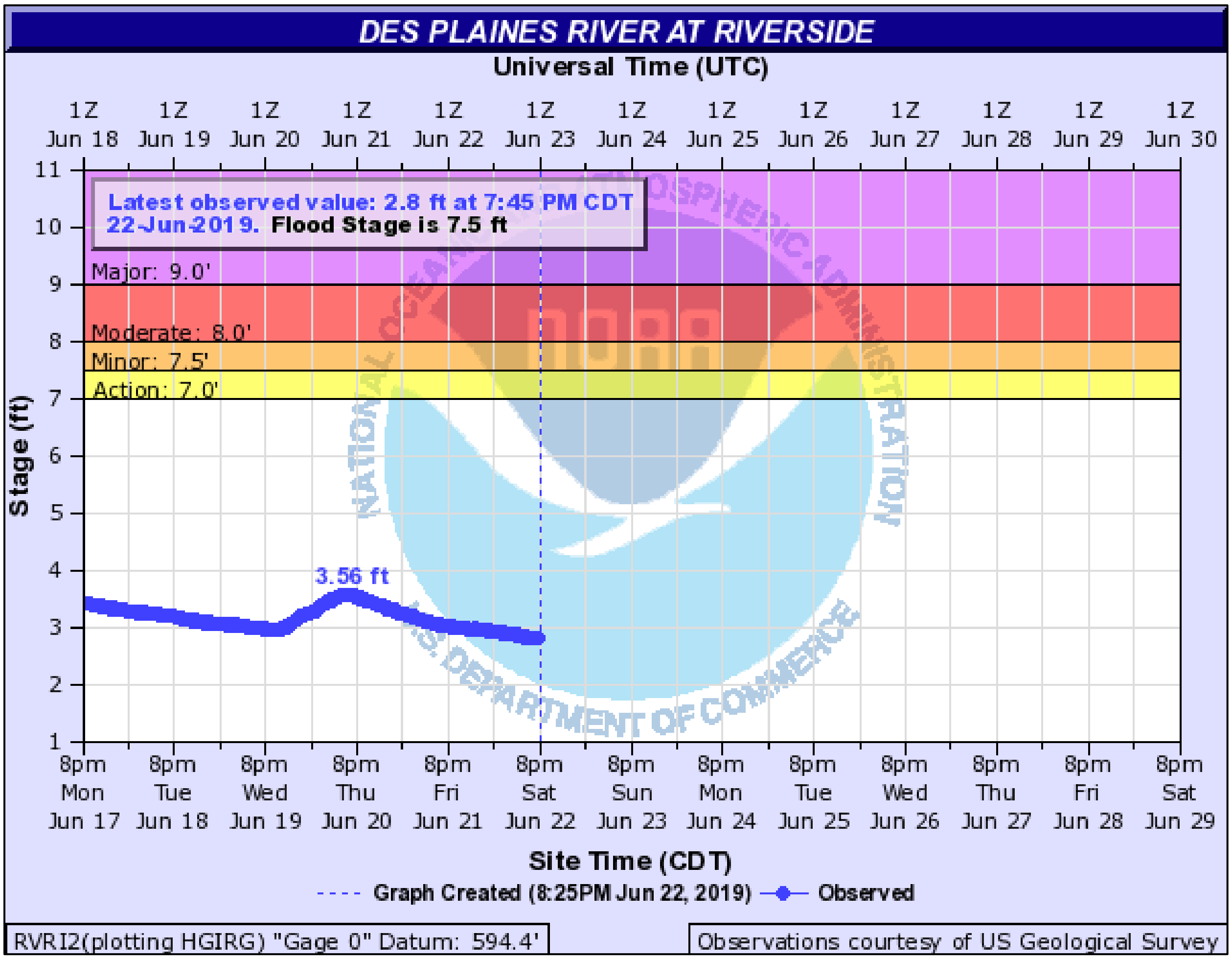


Figure: Des Plaines River Hydrograph

Once rainfall starts falling over a watershed, runoff begins, and the stream begins to rise. Water depth in the stream channel (stage of flow) will continue to rise in response to runoff even after rainfall ends. Eventually, the runoff will reach a peak, and the stage of flow will crest. The flooding eventually subsides, and the stream flow decreases to a level below the flooding stage.

Metropolitan Water Reclamation District of Greater Chicago

The frequency and the magnitude of stormwater/urban drainage flooding in Cook County dictated the assignment of stormwater management within the County to a single entity—the Metropolitan Water Reclamation District of Greater Chicago. The District's mission is to protect the health and safety of the public in its service area, protect the quality of the water supply source (Lake Michigan), improve the quality of water in watercourses in its service area, protect businesses and homes from flood damage, and manage water as a vital resource for its service area. The District has developed a stormwater management program that includes a detailed watershed plan (DWP) for the six principal watersheds that make up Cook County (see figures below). The purpose of each DWP was to identify the stormwater-related problems in a watershed, develop regional alternative solutions to those problems, and then evaluate the regional alternatives to determine the most effective alternative solutions in addressing the watershed's needs. Each DWP contains a summary of the watershed's areas of concern and a listing of proposed regional capital improvement projects to address those concerns. After DWPs were completed, the District again solicited information for its Phase II Program from each municipality, township and regional agency having jurisdiction in Cook County. Summary descriptions of each watershed are provided.

The Calumet-Sag Channel Watershed

The Calumet-Sag Channel Watershed in southwestern Cook County drains an area of 151 square miles that includes 27 communities. The watershed area north of the Calumet-Sag Channel is heavily developed and characterized by low relief. It is drained principally by the East and West branches of Stony Creek, which both discharge into the Calumet-Sag Channel.

Several smaller streams discharge westward into the I&M Canal or southward into the Calumet-Sag Channel. The watershed area south of the Calumet-Sag Channel is less intensely developed and characterized by greater topographic relief. Spring Creek, Long Run Creek, and Marley Creek all drain southwest into Will County and are tributary to Hickory Creek, which drains to the Lower Des Plaines River. These streams are included in the scope of the Calumet-Sag Channel DWP, along with tributaries that flow north to the Calumet-Sag Channel and several tributaries that flow west to the I&M Canal.

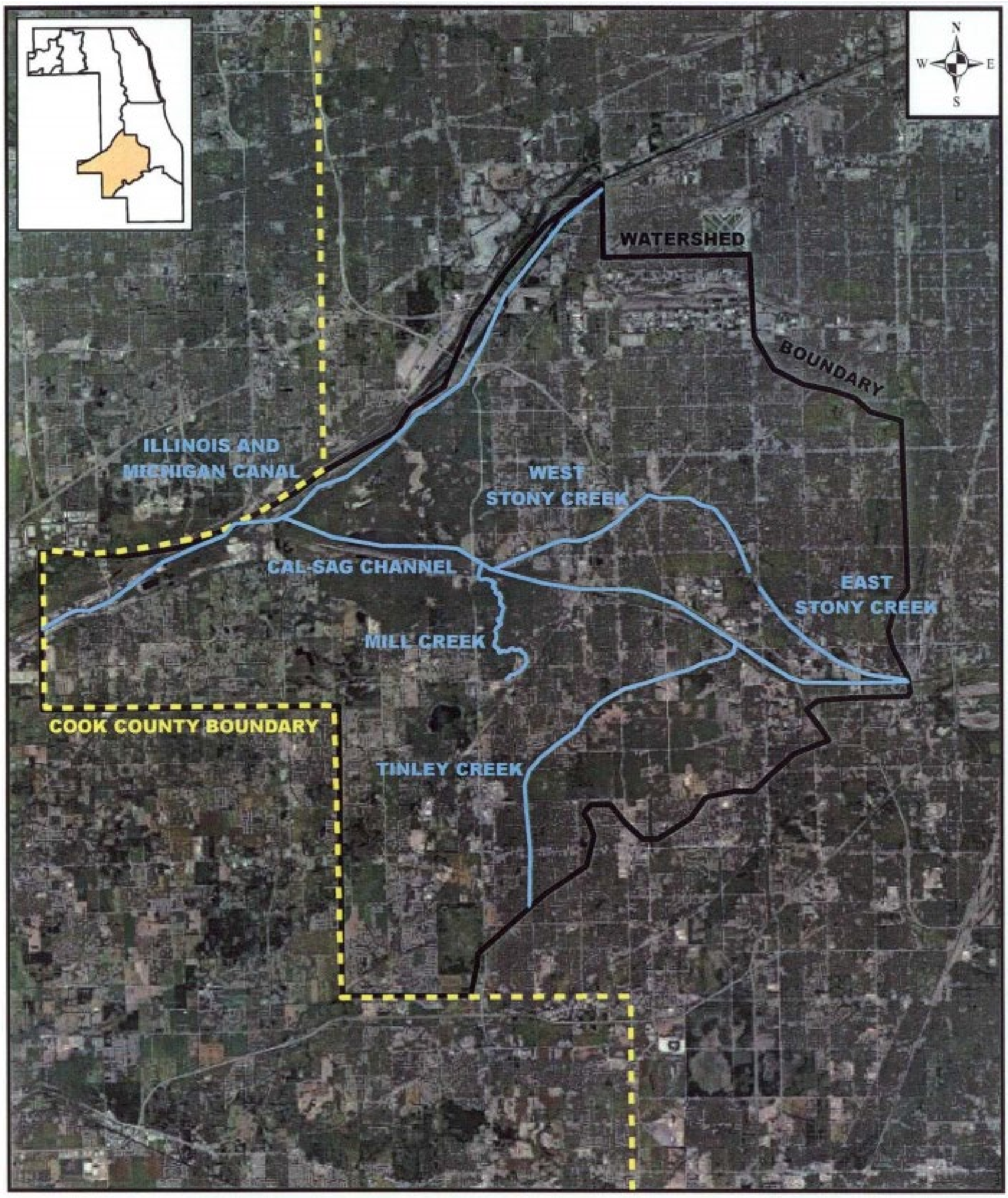


Figure: Calumet-Sag Channel Watershed (Cook County Stormwater Management Plan, 2014)

The Little Calumet River Watershed

The Little Calumet River Watershed is predominantly in the southeast portion of Cook County and has a total area of 264.6 square miles: 159.6 square miles in Cook County, 61.4 square miles in Will County, and 43.6 square miles in Lake County, Indiana. The watershed is bounded on the north by Blue Island, on the south by Monee, on the west by Tinley Park, and on the east by Gary, Indiana. The watershed includes nine sub-watersheds: Butterfield Creek, Cady Marsh Ditch, Calumet Union Drainage Ditch, Deer Creek, Little Calumet River, Midlothian Creek, North Creek, Plum Creek/Hart Ditch, and Thorn Creek. The predominant land use in the watershed (Cook and Will Counties, Illinois) is residential (35 percent). Approximately 20 percent of the watershed is undeveloped land (agriculture and vacant land) and 28 percent is classified as open space (parks, cemeteries, golf courses, wetlands, etc.). The remaining land is mostly classified as commercial, industrial, and institutional. Locations with historical flooding and stream bank erosion problems on regional waterways exist throughout the watershed.

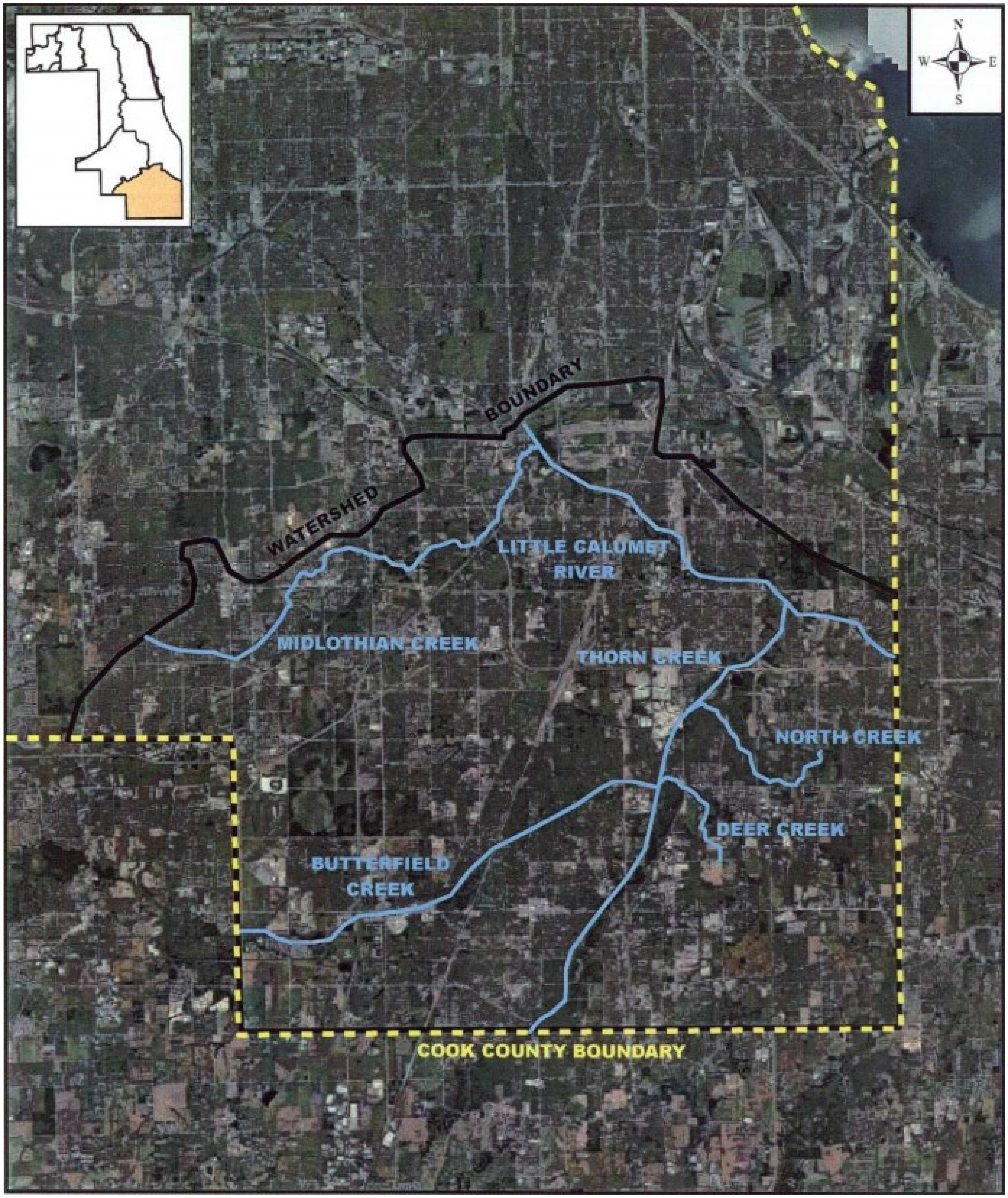


Figure: Little Calumet River Watershed (Cook County Stormwater Management Plan, 2014)

Lower Des Plaines River Watershed

The Des Plaines River Watershed is located in portions of Racine and Kenosha Counties in Wisconsin and Lake, Cook, DuPage, and Will Counties in Illinois. The majority of the watershed is an urban developed area within the Chicago metropolitan area, with most remaining agricultural lands in Lake and Will Counties. Approximately 680 square miles of the watershed area is a tributary to the Des Plaines River at the Cook-Will County border.

Tributary sub-watersheds within the Lower Des Plaines River Watershed study area include 67th Street Ditch, Addison Creek, Buffalo Creek, Chicago Sanitary and Ship Canal, Crystal Creek, Des Plaines River Main Stem, Des Plaines River Tributary A, East Avenue Ditch, Farmers-Prairie Creek, Feehanville Ditch, Flagg Creek, Golf Course Tributary, McDonald Creek, Lower Salt Creek, Silver Creek, Weller Creek, and Willow Creek. The tributary sub-watersheds are generally on the west side of the Lower Des Plaines River and flow east toward the Lower Des Plaines River main stem, except for the Farmers-Prairie Creek and Golf Course Tributary Sub-watersheds, which are on the east side of the Lower Des Plaines River Main Stem. Locations with historical flooding and streambank erosion problems on regional waterways exist throughout the watershed.

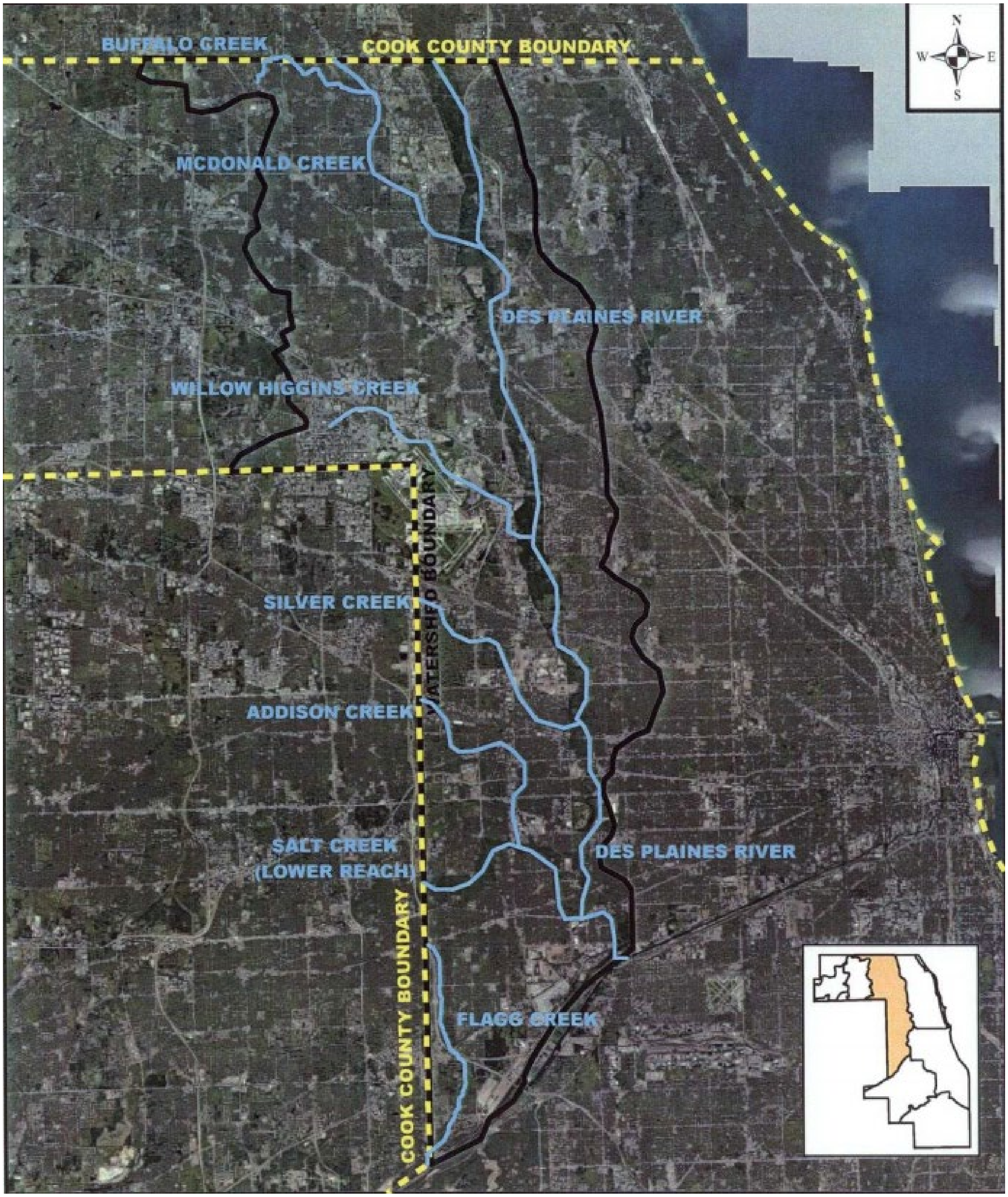


Figure: Lower Des Plaines River Watershed (Cook County Stormwater Management Plan, 2014)

Chicago River, North Branch Watershed

The Chicago River, North Branch watershed is located in northeastern Cook County. The headwaters of the three major tributaries—the West Fork, the Middle Fork, and the Skokie River—are located in Lake County. These tributaries flow south and combine with the Chicago River, North Branch at two separate confluence points. Another tributary, the NSC, enters the system near Albany Avenue in Chicago. Twenty municipalities are located entirely, or in part, in the watershed, and the entire watershed covers 141 square miles. The downstream limit of the Chicago River, North Branch is at the confluence with the Chicago River, South Branch near West Lake Street. This reach has been widened and dredged, with widths up to 300 feet and depths of 10 to 15 feet. For the next 7 miles upstream to the North Branch Dam, the river is about 90 feet wide with a depth of 10 feet. The Chicago River, North Branch watershed area is a heavily urbanized area, characterized by low relief, with small portions of forest preserve and park areas. Locations with historical flooding and stream bank erosion problems on regional waterways exist throughout the watershed.

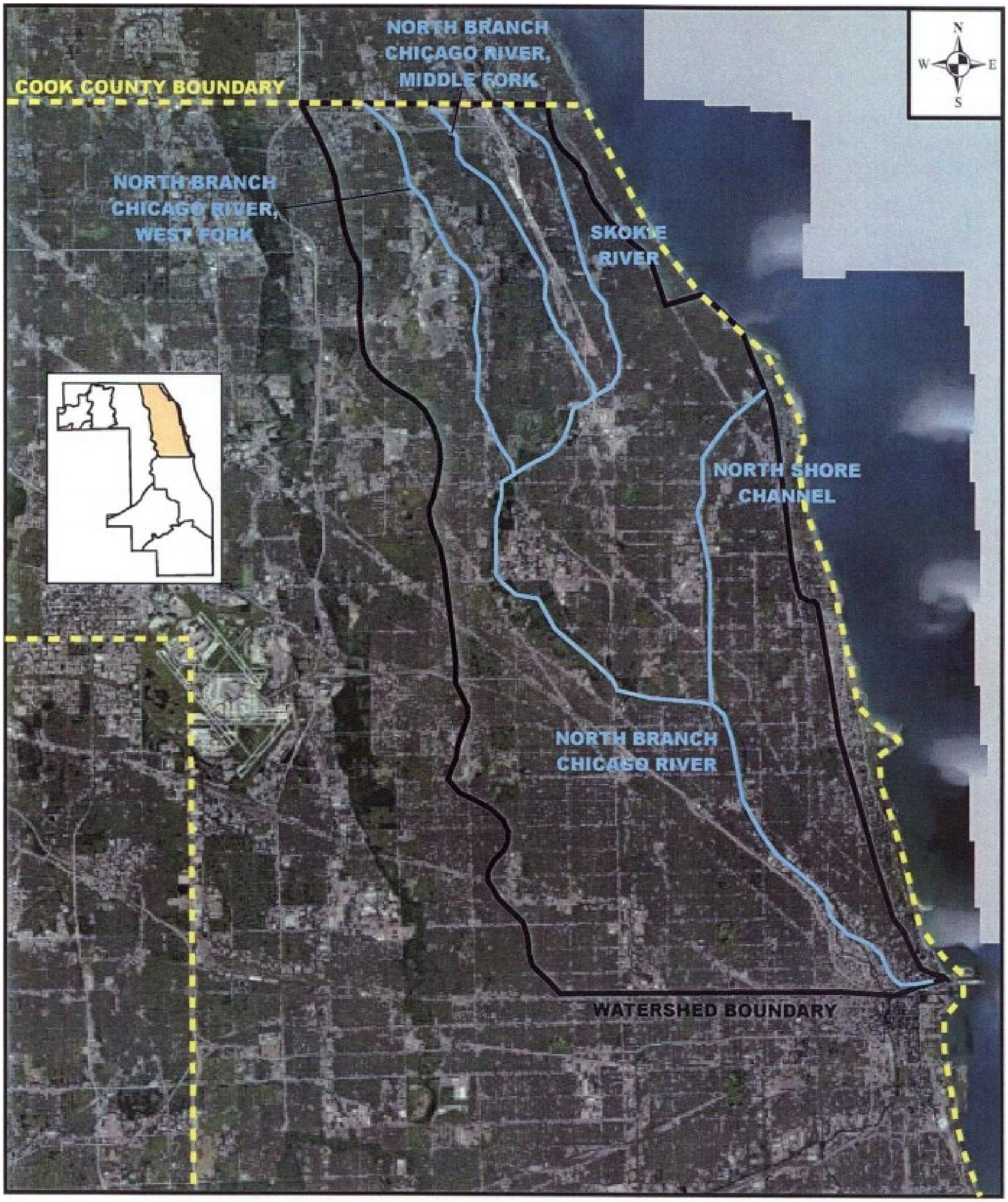


Figure: Chicago River, North Branch, Watershed (Cook County Stormwater Management Plan, 2014)

Poplar Creek Watershed

The Poplar Creek Watershed study area covers 83.5 square miles in northwestern Cook County and includes the Cook County portions of the Poplar Creek, Flint Creek, Spring Creek, Brewster Creek, and West Branch DuPage River watersheds. The District has established boundaries of the Poplar Creek Watershed study area for purposes of its stormwater management program. The main stem of Poplar Creek has six major tributaries: Tributary A, Poplar Creek East Branch, Poplar Creek Schaumburg Branch, Railroad Tributary, Poplar Creek South Branch, and Lord's Park Tributary. Flint Creek Tributary is tributary to Flint Creek, exiting Cook County upstream of its confluence with Flint Creek. Locations with historical flooding and stream bank erosion problems on regional waterways exist throughout the watershed.

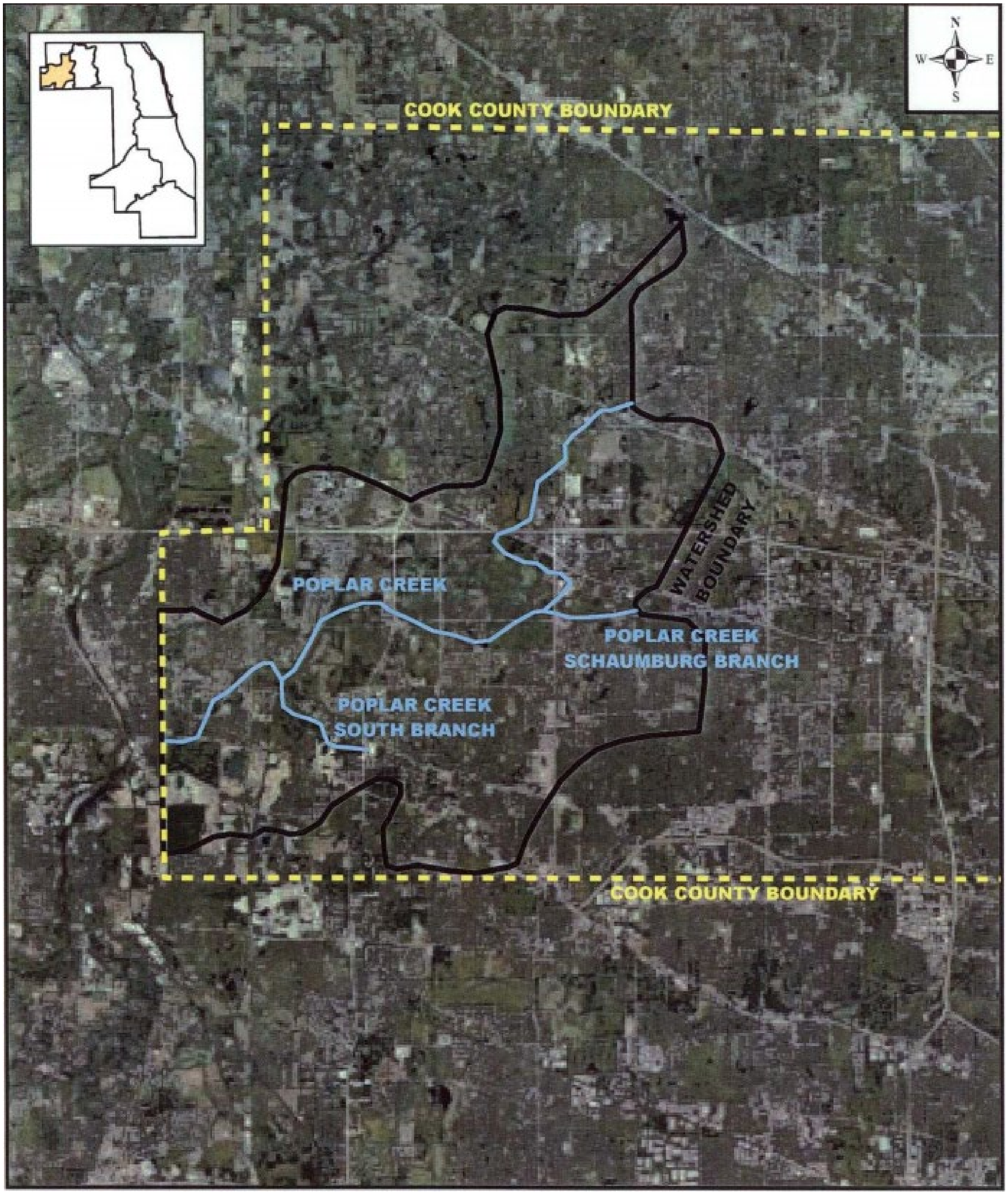


Figure: Poplar Creek Watershed (Cook County Stormwater Management Plan, 2014)

Upper Salt Creek Watershed

Salt Creek is divided into two hydrologic parts by Busse Woods Dam: Upper Salt Creek and Lower Salt Creek. In the DWP, "Upper Salt Creek" refers to the Salt Creek stream reaches and tributaries upstream of the DuPage County/Cook County border. The total watershed area is 55 square miles.

Land use is predominantly residential, with concentrations of commercial, light manufacturing and trucking facilities. Several large forest preserves are also present, notably Ned Brown Preserve (also known as Busse Woods), Paul Douglas Forest Preserve and Deer Grove Forest Preserve.

The watershed is composed of three sub-watersheds: the Arlington Heights branch, the Main Stem, and the West Branch. The Arlington Heights Branch sub-watershed covers the north and northeast portion of the watershed and flows directly into the main stem upstream of Algonquin Road in the City of Rolling Meadows. The West Branch sub-watershed covers the southwest portion of the watershed and joins the main stem at the Busse Woods Reservoir. Locations with historical flooding and stream bank erosion problems on regional waterways exist throughout the watershed.

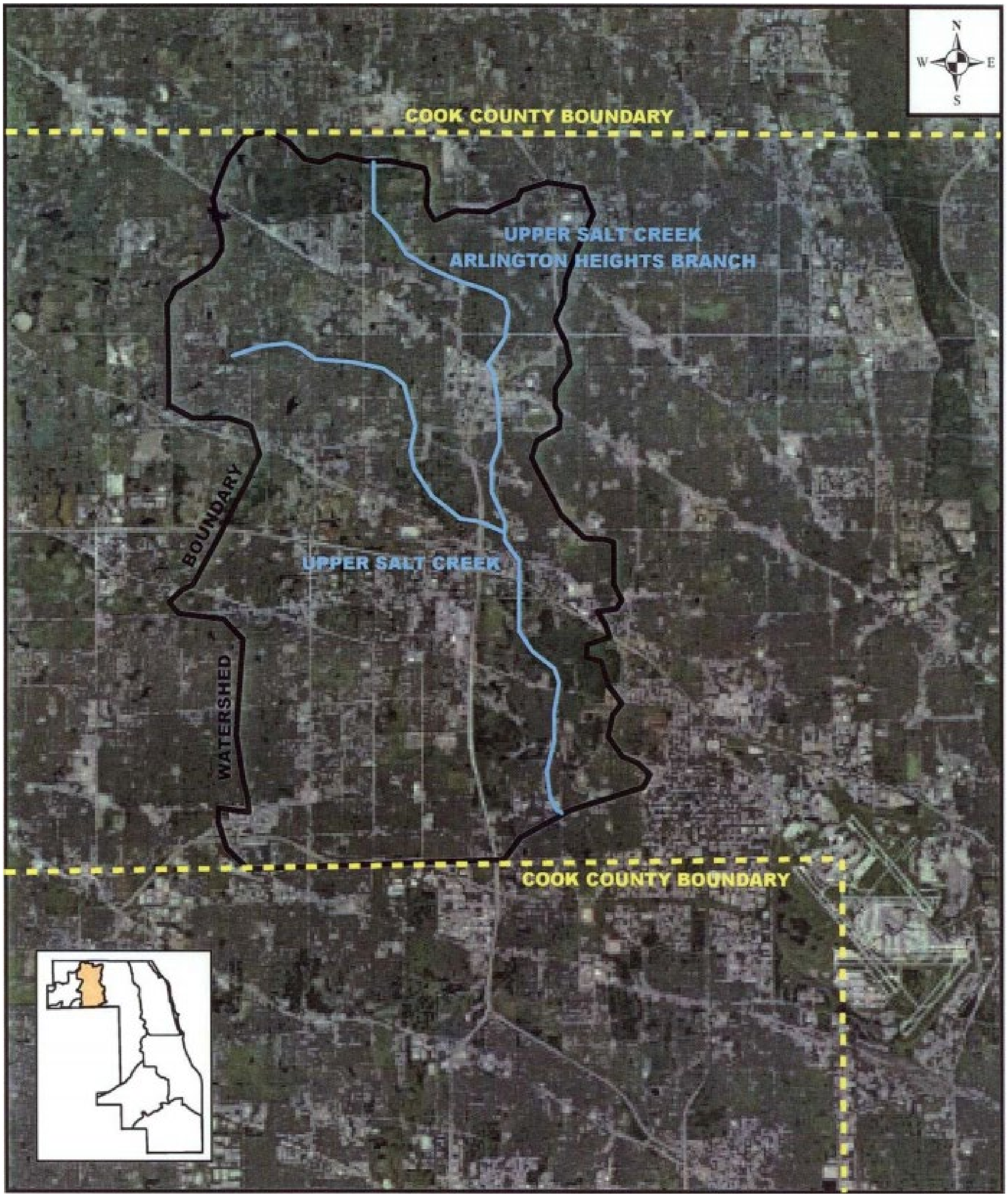


Figure: Upper Salt Creek Watershed (Cook County Stormwater Management Plan, 2014)

Combined Sewer Area

The combined sewer area is the conglomeration of all combined sewer areas within Cook County, rather than a geographical feature of the county as are the six watersheds listed above. The combined sewer area encompasses a significant portion of the City of Chicago and overlaps areas of four of the six primary watersheds listed above. Stormwater/urban drainage flooding issues are prevalent in this area, as indicated by a large number of individual assistance claims paid following the flooding in 2013 (see *Figure: Individual Assistance Claims for DR-4116*).

Overview of Existing Problems

During the development of the DWPs and Phase II Program, information on existing problem areas was solicited from Watershed Planning Council members, municipalities, townships, federal and state agencies, and other stakeholders. Responses were used to help identify locations of concern and where field assessment, surveys, and modeling were needed to support alternative solutions. A review of these identified problems found a consistent set of flooding issues across the watersheds:

- Undersized or restrictive sewers or culverts
- Undersized ditches
- Undersized detention basins
- Poorly managed stormwater facilities
- Clogged sewers or culverts
- Overgrowth in drainage ditches
- Overgrowth at outfalls of storm sewers
- Overbank flooding
- Erosion
- Ponding or flooding in streets, alleys, parking lots, or yards
- Structural flooding from ponding or sheet flow
- No detention because the area was developed before detention requirements.
- Basement backups and sanitary backups
- Sump pumps connected to sanitary sewers.
- Depressional areas with no overland drainage routes
- Lack of inlets in low-lying areas
- No storm sewers or ditches.

5.4.3 Hazard Extent/Intensity

The extent of flooding associated with a 1-percent annual probability of occurrence (the base flood or 100-year flood) is used as the regulatory boundary by many agencies. Also referred to as the special flood hazard area (SFHA), this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the elevation of water that will result from a given discharge level, which is one of the most important factors used in estimating flood damage.

The NFIP classifies floods through the use of recurrence intervals as seen in the figure below:

Flood Recurrence Interval	Chance of occurrence during any given year
5 year	20%
10 year	10%
50 year	2%
100 year	1%
500 year	0.20%

The federal standard for floodplain management under the National Flood Insurance Plan (NFIP) is the 100-year floodplain. This area is chosen using historical data such that in any given year there is a 1% chance of a "base flood (also known as 100-year flood or regulatory flood). A base flood is one that covers or exceeds the 100-year floodplain. A 500-year floodplain is an area with at least a .2% chance of flood occurrence in any given year.

When surface water runoff introduced into streams and rivers exceeds the capacity of the natural or constructed channels to accommodate the flow, water overflows the stream banks, spilling out into adjacent low-lying areas. Riverine flooding occurs as a consequence (FEMA).

Riverine flooding can cause two types of floods: overbank flooding and flash floods. Overbank flooding is the "increase in volume of water within a river channel and the overflow of water from the channel onto the adjacent floodplain (FEMA, 2024).

Flash flooding can occur suddenly within six hours of intense rainfall from a thunderstorm or several thunderstorms. Flash floods are common near canyons, cliffs, and creek beds, making these areas especially hazardous during rainfall.

NATIONAL WEATHER SERVICE – UNDERSTANDING FLOODING					
Urban/Small Stream Advisory	***Flood Watch***	***Flash Flood Watch***	***Flood Warning***	***Flash Flood Warning***	***Flash Flood Emergency***
WHAT IS IT?	**WHAT IS IT?**	**WHAT IS IT?**	**WHAT IS IT?**	**WHAT IS IT?**	**WHAT IS IT?**
Flooding of small streams, streets and low-lying areas.	Flooding is possible – typically within 6 to 48 hours before rain is expected to reach the area.	Flash flooding is possible – typically 6 to 48 hours before rain is expected to reach the area.	Flooding impacts are occurring or imminent.	Flooding impacts are occurring or imminent.	Flash flood situation that presents a clear threat to human life due to extremely dangerous flooding conditions.
WHAT TO DO?	**WHAT TO DO?**	**WHAT TO DO?**	**WHAT TO DO?**	**WHAT TO DO?**	**WHAT TO DO?**
Stay away from areas that are prone to flooding and stay clear of rapidly moving water.	Stay tuned to local river forecasts; prepared for areas near rivers to spread towards nearby roads and buildings	Have a way to receive local warnings, expect hazardous travel conditions and have alternate routes available	Stay ***alert*** for inundated roadways and follow all local signage. Additional impacts include homes and structures could become clouded and need to be evacuated.	Conditions will ***rapidly*** become hazardous! Do not cross flooded roadways or approach inundated areas as water may still be rising.	***Immediately*** reach higher ground by any means possible.
Flash floods are characterized by rapid rise of water on the order of a few minutes to 6 hours that can occur anywhere. A flood watch or warning pertains to larger streams and rivers that take much longer to respond (3 hours to weeks) but move much larger amounts of water through sensitive areas.					
Source: National Weather Service (2024)					

The HAZUS-MH flood model is designed to generate a flood depth grid and flood boundary polygon by deriving hydrologic and hydraulic information based on user-provided elevation data or by incorporating selected output from other flood models. HAZUS-MH also has the ability to clip a Digital Elevation Model (DEM) with a user-provided flood boundary, thus creating a flood depth grid. For Cook County, HAZUS-MH was used to extract flood depth by clipping the DEM with the DFIRMs Base Flood Elevation (BFE) boundary. The BFE is defined as the area that has a 1% chance of flooding in any given year.

Flood hazard scenarios were modeled using GIS analysis and Hazus-MH. The flood hazard modeling was based on historical occurrences and current threats. Existing flood maps were used to identify the areas of study. These digital files, although not official FIRMs, provided the boundary which was the basis for this analysis. Planning team input and a review of historical information provided additional information on specific flood events.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT				
Hazard Type	**Affected Jurisdictions**	**Extent (based on historical events)**		**Comments**
		Minimum	**Maximum**	
Flood (Riverine)	Jurisdictions near rivers, streams, and waterways	0-feet	See Peak Discharge Table below	

Flood (Flash)	County-wide	0 inches of rain	9.35 inches (24-hour)	August 13-14, 1987

The principal factors affecting flood damage are flood depth and velocity. The deeper and faster flood flows become, the more damage they can cause. Shallow flooding with high velocities can cause as much damage as deep flooding with slow velocity. This is especially true when a channel migrates over a broad floodplain, redirecting high-velocity flows and transporting debris and sediment. Flood severity is often evaluated by examining peak discharges; *Table: Summary Of Peak Discharges Within The Planning Area* lists some of the peak flows used by FEMA to map the floodplains of Cook County.

TABLE:
SUMMARY OF PEAK DISCHARGES WITHIN THE PLANNING AREA

Source/Location	Discharge (cubic feet/second)			
	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
79th Street Ditch				
At County Line Rd	91	141	165	226
Addison Creek				
At Confluence with Salt Creek	1,727	2,337	2,530	3,070
Approximately 650' downstream of Tri-state Tollway	517	802	951	1,370
Belaire Creek				
At confluence with Dixie Creek	68	103	119	154
Boca Rio Ditch				
Just downstream of 147th Street	336	490	562	730
Buffalo Creek				
At Elmhurst Rd.	870	1,430	1,680	2,470
At Lake-Cook Road	715	1,187	1,430	2,088
Buffalo Creek Tributary A				
At confluence with Buffalo Creek	370	580	690	940
At Staples Road	0	0	40	110
Butterfield Creek		--		
At confluence with Thorn Creek	1,720		2,740	3,725
At I-57	345		470	540
Butterfield Creek East Branch		--		
At confluence with Thorn Creek	1,000		1,400	1,715
Butterfield Creek Tributary No. 3				
Just upstream of confluence with Butterfield Creek	196	281	317	402
Calumet Sag Channel Tributary A				
At State Route 83	230	365	425	595
Calumet Sag Channel Tributary B				
At confluence with Calumet Sag Channel	213	411	545	716
Calumet Union Drainage Ditch				
At Halsted Street	415	746	1,024	1,460
At St. Louis Avenue	96	173	219	282
Calumet Union Drainage Ditch Southwest Branch				
At Central Park Avenue	360	660	920	1,330
Chicago River, North Branch				
At confluence of North Shore Channel	2,375	3,600	4,180	5,600
Just upstream of Glenview Road	1,830	1,967	2,361	2,897
Chicago River, North Branch, Middle Fork				

At confluence with Skokie River At Lake-Cook Road	418 521	847 879	1,004 1,098	1,479 1,569
Chicago River, North Branch, West Fork At confluence with Chicago River, North Branch At confluence of Underwriters Tributary	 741 364	 1,295 509	 1,494 593	 2,341 1,199
Crestwood Drainage Ditch West At State Route 83	 242	 343	 384	 500
Crystal Creek At the confluence with the Des Plaines River Approximately 900 feet upstream of Mannheim Road	 333 17	 469 28	 502 34	 590 51
Crystal Creek Tributary At confluence with Crystal Creek Just upstream of confluence of Sexton Ditch	 194 72	 271 83	 321 89	 389 100
Deer Creek At Young Street	 1,195	 1,810	 2,079	 2,800
Des Plaines River At Interstate Route 55 Approximately 1,600 feet downstream of Dundee Road	 6,000 3,727	 7,500 5,367	 8,400 6,018	 9,300 7,511
Dixie Creek At Dixie Highway	 66	 100	 135	 250
DuPage River West Branch At Irving Park Road	 322	 594	 807	 1,150
Farmer's Creek At confluence with Des Plaines River	 317	 505	 643	 1,987
Flag Creek At the mouth At 47th Street	 1,660 400	 2,650 620	 3,180 740	 4,500 1,020
Grand Calumet River At CSX Transportation	 415	 460	 470	 500
Hickory Creek At Harlem Avenue	 550	 860	 1,014	 1,400
Higgins Creek At Old Mt. Prospect Road At upstream side of Wille Road	 454 450	 503 755	 730 975	 1,666 1,365
Little Calumet River At confluence with Calumet-Sag Channel At Illinois/Indiana State Line	 3,090 1,010	 4,290 1,250	 4,670 1,290	 6,110 1,551
Long Run At State Street	 1,460	 2,300	 2,670	 3,500
Marley Creek At 179th Street	 530	 830	 976	 1,370
McDonald Creek At confluence with the Des Plaines River At Cornell Avenue	 535 115	 800 129	 913 141	 1,240 473
McDonald Creek North Branch Just upstream of Windsor Drive	 965	 1,443	 1,630	 2,220
McDonald Creek South Branch Upstream of Buffalo Grove Road	 902	 1,190	 1,261	 1,502
Midlothian Creek At mouth	 264	 495	 637	 951

At 84th Avenue	254	573	728	1,078
Midlothian Creek Western Branch At confluence with Midlothian Creek	155	225	255	335
Mill Creek At 119th Street At 131st Street	485 242	840 355	1,030 406	1,510 535
Mill Creek West Branch At 123rd Street, approximately 1,000 feet east of U.S. Route 45	295	415	469	600
Natalie Creek At Crawford Avenue	187	313	450	763
Navajo Creek At confluence with Calumet-Sag Channel	516	741	836	1,080
North Creek At confluence with Thorn Creek At Wentworth Avenue	722 28	1,127 44	1,332 51	1,891 62
Plum Creek At Steger Road	1,152	1,594	1,800	2,370
Poplar Creek At the mouth At Stover Road	1,085 76	1,709 119	2,010 140	2,794 195
Prairie Creek At Kennedy Drive	137	210	269	1,336
Salt Creek (Lower Reach) At the mouth At Elk Grove Village	1,570 1,653	2,780 2,300	3,400 2,590	4,920 3,350
Salt Creek (Upper Reach) At Golf Road Just upstream of confluence of Salt Creek Tributary B	1,136 69	1,845 130	2,221 169	3,031 256
Salt Creek, Arlington Heights Branch At confluence with Salt Creek (Upper Reach) At Quentin Road	446 57	686 149	818 210	1,174 359
Salt Creek Middle Fork At the mouth	45	82	100	110
Salt Creek South Fork At the mouth	38	47	64	130
Salt Creek West Branch At Interstate Route 290 At Wiley Road	674 50	1,197 94	1,505 122	2,200 185
Silver Creek At mouth at Des Plaines River At Railroad yard	465 350	712 535	842 640	1,125 850
Skokie River At Willow Road At Lake-Cook Road	429 1,084	1,202 1,559	1,624 1,844	2,197 2,401
Spring Creek At 118th Avenue	108	205	259	396
Stony Creek (East) At confluence with Calumet-Sag Channel At Cicero Avenue	260 50	395 75	459 100	620 150
Stony Creek (West)				

At the mouth At Norfolk & Western Railway	1,420 935	1,900 1,250	2,100 1,405	2,620 1,720
Third Creek Approximately 2,400 feet upstream of confluence with Deer Creek	98	172	221	325
Thorn Creek At the confluence with the Little Calumet River At Sauk Trail	1,156 525	2,020 880	2,870 1,100	5,450 1,520
Tinley Creek At confluence with Calumet-Sag Channel At 167th Street	1,368 127	1,665 204	1,770 253	2,005 360
Weller Creek Upstream entrance to diversion conduit	789	1,281	1,611	2,683
Willow Creek At confluence with the Des Plaines River Confluence of Willow Creek and Higgins Creek	1,337 1,348	1,670 1,960	1,800 2,206	3,055

Urban Flooding Susceptibility Index Chart

The chart below is based on the CMAP-developed urban flood susceptibility index (FSI). This was constructed with data from FEMA, counties, and the City of Chicago collected and put into an address-level database of documented flood locations. This database consisted of 165,000 unique locations, with the majority of these locations experiencing flooding between 2007 and 2017. The index is categorized into 10 risk levels based on the combined frequency ratio scores from the following flood-related factors: Topographic Wetness Index, combined sewer service areas, property elevation compared to nearest Base Flood Elevation, impervious coverage, age of first development, and precipitation variation. 1 is the lowest susceptibility and 10 is the highest.

Note: Because depth has not been recorded for incidents of urban flooding, this is considered a data deficiency, and new mitigation actions have been created related to high water markings throughout this plan.

TABLE: URBAN FLOODING SUSCEPTIBILITY INDEX CHART

Jurisdiction	FSI	Jurisdiction	FSI
Alsip	9	Lemont	5
Arlington Heights	7	Lincolnwood	9
Barrington	5	Lynwood	5
Barrington Hills	2	Lyons	10
Bartlett	4	Marionette Park	8
Bedford Park	9	Markham	7
Bellwood	8	Matteson	5
Bensenville	7	Maywood	10
Berkeley	7	McCook	8
Berwyn	10	Melrose Park	9
Blue Island	10	Midlothian	9
Bridgeview	9	Morton Grove	8
Broadview	9	Mount Prospect	8
Brookfield	10	Niles	9

Buffalo Grove	7	Norridge	8
Burbank	9	North Riverside	10
Burnham	8	Northbrook	4
Burr Ridge	N/A	Northfield	3
Calumet Park	10	Northlake	7
Chicago	10	Oak Brook	5
Chicago Heights	7	Oak Forest	7
Chicago Ridge	9	Oak Lawn	9
Cicero	10	Oak Park	10
Country Club Hills	6	Olympia Fields	5
Countryside	6	Orland Park	5
Crestwood	9	Orlando Hills	5
Deer Park	2	Palatine	5
Deerfield	3	Palos Heights	7
Des Plaines	8	Palos Hills	8
Dixmoor	10	Palos Park	4
Dolton	10	Park Forest	7
East Dundee	6	Park Ridge	10
East Hazel Crest	7	Phoenix	10
Elgin	6	Posen	10
Elk Grove Village	7	Prospect Heights	7
Elmhurst	6	Richton Park	5
Elmwood Park	10	River Forest	8
Evanston	8	River Grove	9
Evergreen Park	9	Riverdale	10
Flossmoor	5	Riverside	9
Ford Heights	4	Robbins	7
Forest Park	9	Rolling Meadows	6
Forest View	10	Roselle	5
Franklin Park	9	Rosemont	7
Glencoe	4	Sauk Village	7
Glenview	5	Schaumburg	6
Glenwood	7	Schiller Park	7
Golf	N/A	Skokie	9
Hanover Park	7	South Barrington	2
Harvey	10	South Chicago Heights	7
Harwood Heights	9	South Holland	9
Hazel Crest	8	Steger	3
Hickory Hills	8	Stickney	10
Hillside	7	Stone Park	7
Hinsdale	5	Streamwood	5
Hodgkins	7	Summit	9
Hoffman Estates	4	Thornton	5
Hometown	10	Tinley Park	6
Homewood	7	University Park	3

Indian Head	4	Westchester	7
Inverness	2	Western Springs	9
Justice	8	Wheeling	7
Kenilworth	8	Willow Springs	2
La Grange	9	Wilmette	7
La Grange Park	9	Winnetka	3
Lansing	9	Worth	9

5.4.4 Probability and Frequency

The frequency and severity of flooding are measured using a discharge probability, which is the probability that a certain river discharge (flow) level will be equaled or exceeded in a given year. Flood studies use historical records to determine the probability of occurrence for the different discharge levels. The flood frequency equals 100 divided by the discharge probability. For example, the 100-year discharge has a 1-percent chance of being equaled or exceeded in any given year. The "annual flood" is the greatest flood event expected to occur in a typical year. These measurements reflect statistical averages only; it is possible for two or more floods with a 100-year or higher recurrence interval to occur in a short time period. The same flood can have different recurrence intervals at different points on a river.

Riverine Flooding: Between 1997 and 2024, Cook County experienced 68 Riverine Flooding incidents. This equates to an average of 2.42857143 riverine flooding events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

Urban/Flash/Stormwater Flooding: Between 1996 and 2023, Cook County experienced 97 Urban/Flash/Stormwater Flooding incidents (as recorded by NOAA). This equates to an average of 3.46428571 urban/flash/stormwater flooding incidents/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

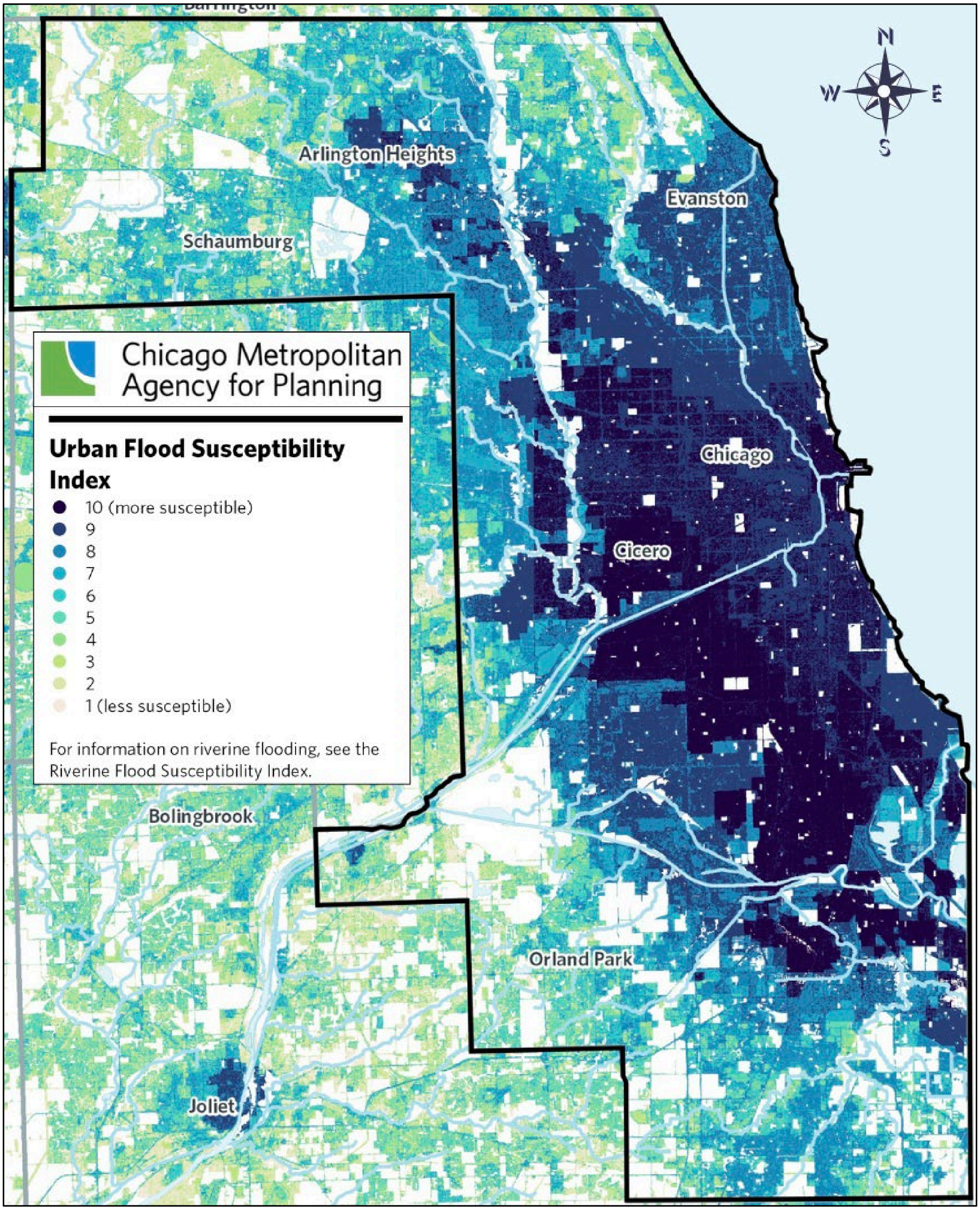
According to NOAA, the frequency of flash flooding depends on seasonal weather patterns. Flash flooding is typically caused by inadequate drainage following heavy rainfall or rapid snowmelt and is more likely to occur in spring when thunderstorms and snow melt are more prominent.

Urban areas (such as Chicago) are typically connected to municipal sewer systems (stormwater and/or sanitary sewer). For this reason, it is more probable that flash flooding will occur within this area.

The map below is based on the CMAP-developed urban flood susceptibility index (FSI). The FSI was constructed using a statistical method based on the observed relationship between the distribution of reported flood locations and a variety of flood-related factors. With data assistance from Federal Emergency Management Agency, counties, and the City of Chicago, CMAP created an address-level database of documented flood locations to cross-reference with flooding-related factors. CMAP's database consists of over 165,000 unique locations, with the majority of the reported locations experiencing flooding within the past ten years (2007-17).

The index is categorized into 10 risk levels based on the combined frequency ratio scores from the following flood-related factors: Topographic Wetness Index, combined sewer service areas, property elevation compared to nearest Base Flood Elevation, impervious coverage, age of first development, and precipitation variation. One is the lowest susceptibility and 10 is the highest.

More information about FSI methodology, as well as the FSI index rasters and flood-related factor data, are available for download on (CMAP).



Source: (CMAP) 2024

Costal/Shoreline Flooding: From 2013 through 2022, two Coastal Flooding incidents occurred in Cook County and were recorded by NOAA. This frequency averages to 0.2 flooding incidents annually and would indicate a similar trend moving forward.

In the image below, there is a 1% annual chance of coastal flooding. Flooding is shown along Cook and Lake counties' coastline (left), including Northwestern University's campus (top right), and residential structures in Chicago's South Shore neighborhood (bottom right) (2023 Illinois State HMP).

Source: (2023 Illinois State HMP)

5.4.5 National Flood Insurance Program (NFIP) Participation

The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. For most participating communities, FEMA has prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1-percent annual chance flood and the 0.2-percent annual chance flood (the 500-year flood). Base flood elevations and the boundaries of the 100- and 500-year floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tool for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities, they represent the minimum area of oversight under their floodplain management program.

Participants in the NFIP must, at a minimum, regulate development in floodplain areas in accordance with NFIP criteria. Before issuing a permit to build in a floodplain, participating jurisdictions must ensure that three criteria are met:

New buildings and those undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood.

New floodplain development must not aggravate existing flood problems or increase damage to other properties.

The communities in Cook County that participate in the NFIP are shown in *Table: NFIP Participating Communities in Cook County*.

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	**Community Name**	**County**	**Initial FIRM Identified**	**Current Effective Map Date**
170055J	ALSIP, VILLAGE OF	COOK COUNTY	09/17/80	11/1/19
170056#	ARLINGTON HEIGHTS, VILLAGE OF	LAKE COUNTY/COOK COUNTY	5/1/78	9/18/13
170057#	BARRINGTON, VILLAGE OF	LAKE COUNTY/COOK COUNTY	10/16/84	9/18/13
170059#	BARTLETT, VILLAGE OF	KANE COUNTY/DUPAGE COUNTY/COOK COUNTY	6/15/1981	8/1/2019
171007#	BEDFORD PARK, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08
170061#	BELLWOOD, VILLAGE OF	COOK COUNTY	12/4/79	08/19/08
170200#	BENSENVILLE, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	2/4/1981	8/1/2019
171039#	BERKELEY, VILLAGE OF	COOK COUNTY	11/6/00	(NSFHA)
171036#	BERWYN, CITY OF	COOK COUNTY	11/6/00	(NSFHA)
170064#	BLUE ISLAND, CITY OF	COOK COUNTY	07/02/80	08/19/08
170065#	BRIDGEVIEW, VILLAGE OF	COOK COUNTY	02/04/81	08/19/08
170067#	BROADVIEW, VILLAGE OF	COOK COUNTY	01/16/81	08/19/08

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	**Community Name**	**County**	**Initial FIRM Identified**	**Current Effective Map Date**
170066#	BROOKFIELD, VILLAGE OF	COOK COUNTY	12/16/80	08/19/08
170068#	BUFFALO GROVE, VILLAGE OF	LAKE COUNTY/COOK COUNTY	9/14/1979	9/18/2013
170069#	BURBANK, CITY OF	COOK COUNTY	11/6/00	(NSFHA)
170070#	BURNHAM, VILLAGE OF	COOK COUNTY	06/01/81	08/19/08
170071B	BURR RIDGE, VILLAGE OF	COOK COUNTY/DUPAGE COUNTY	10/15/81	08/01/19
170072#	CALUMET CITY, CITY OF	COOK COUNTY	04/01/80	08/19/08
170073#	CALUMET PARK, VILLAGE OF	COOK COUNTY	02/16/79	08/19/08
170074#	CHICAGO, CITY OF	DUPAGE COUNTY/COOK COUNTY	6/1/1981	9/10/2021
170075#	CHICAGO HEIGHTS, CITY OF	COOK COUNTY	11/15/79	08/19/08
170076#	CHICAGO RIDGE, VILLAGE OF	COOK COUNTY	11/19/80	08/19/08
170077#	CICERO, TOWN OF	COOK COUNTY	11/6/00	(NSFHA)
170054J	COOK COUNTY *	COOK COUNTY	04/15/81	09/10/21
170078#	COUNTRY CLUB HILLS, CITY OF	COOK COUNTY	07/16/80	08/19/08
170079#	COUNTRYSIDE, CITY OF	COOK COUNTY	09/03/80	08/19/08
170080J	CRESTWOOD, VILLAGE OF	COOK COUNTY	02/18/81	11/1/19
171028#	DEER PARK, VILLAGE OF	COOK COUNTY/LAKE COUNTY	09/03/97	09/18/13(M)
170361#	DEERFIELD, VILLAGE OF	COOK COUNTY/LAKE COUNTY	09/30/77	09/18/13
170081#	DES PLAINES, CITY OF	COOK COUNTY	06/15/81	08/19/08
170082#	DIXMOOR, VILLAGE OF	COOK COUNTY	06/04/80	08/19/08
170083#	DOLTON, VILLAGE OF	COOK COUNTY	07/16/80	08/19/08
170323#	EAST DUNDEE, VILLAGE OF	COOK COUNTY/KANE COUNTY	03/16/81	08/03/09
170085#	EAST HAZEL CREST, VILLAGE OF	COOK COUNTY	09/22/78	08/19/08
170087#	ELGIN, CITY OF	KANE COUNTY/COOK COUNTY	3/1/1982	6/2/2015
170088#	ELK GROVE, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	6/15/1979	8/1/2019

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	**Community Name**	**County**	**Initial FIRM Identified**	**Current Effective Map Date**
170205B	ELMHURST, CITY OF	COOK COUNTY/DUPAGE COUNTY	02/04/81	08/01/19
170089#	ELMWOOD PARK, VILLAGE OF	COOK COUNTY	08/15/80	08/19/08
170090J	EVANSTON, CITY OF	COOK COUNTY	11/26/82	09/10/21
170733#	EVERGREEN PARK, VILLAGE OF	COOK COUNTY	11/6/00	(NSFHA)
170091#	FLOSSMOOR, VILLAGE OF	COOK COUNTY	11/5/80	08/19/08
170084#	FORD HEIGHTS, VILLAGE OF	COOK COUNTY	09/29/78	08/19/08
170092#	FOREST PARK, VILLAGE OF	COOK COUNTY	09/22/78	08/19/08
170093#	FOREST VIEW, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08
170701B	FRANKFORT, VILLAGE OF	COOK COUNTY/WILL COUNTY	11/1/79	02/15/19
170094#	FRANKLIN PARK, VILLAGE OF	COOK COUNTY	09/15/78	08/19/08
170095J	GLENCOE, VILLAGE OF	COOK COUNTY	12/16/80	09/10/21
170096#	GLENVIEW, VILLAGE OF	COOK COUNTY	06/15/79	08/19/08
170097#	GLENWOOD, VILLAGE OF	COOK COUNTY	06/15/78	08/19/08
170098#	GOLF, VILLAGE OF	COOK COUNTY	11/15/79	08/19/08
170099#	HANOVER PARK, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	11/15/1978	8/1/2019
170100#	HARVEY, CITY OF	COOK COUNTY	04/17/78	08/19/08
170101#	HARWOOD HEIGHTS, VILLAGE OF	COOK COUNTY	11/6/00	(NSFHA)
170102#	HAZEL CREST, VILLAGE OF	COOK COUNTY	12/2/80	08/19/08
170103#	HICKORY HILLS, CITY OF	COOK COUNTY	07/16/80	08/19/08
170104#	HILLSIDE, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08
170105#	HINSDALE, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	1/16/1981	8/1/2019
170106#	HODGKINS, VILLAGE OF	COOK COUNTY	09/14/79	08/19/08
170107#	HOFFMAN ESTATES, VILLAGE OF	KANE COUNTY/COOK COUNTY	5/19/1981	8/3/2009
171080B	HOMER GLEN, VILLAGE OF	COOK COUNTY/WILL COUNTY	04/15/82	02/15/19
170109#	HOMEWOOD, VILLAGE OF	COOK COUNTY	08/15/77	08/19/08

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	Community Name	County	Initial FIRM Identified	Current Effective Map Date
170110#	INDIAN HEAD PARK, VILLAGE OF	COOK COUNTY	12/4/79	08/19/08
170111#	INVERNESS, VILLAGE OF	COOK COUNTY	06/01/81	08/19/08
170112#	JUSTICE, VILLAGE OF	COOK COUNTY	05/19/81	08/19/08
170113J	KENILWORTH, VILLAGE OF	COOK COUNTY	11/6/00	09/10/21
170115#	LA GRANGE PARK, VILLAGE OF	COOK COUNTY	11/15/78	08/19/08
170114#	LA GRANGE, VILLAGE OF	COOK COUNTY	11/9/79	08/19/08
170116#	LANSING, VILLAGE OF	COOK COUNTY	06/01/81	08/19/08
170117#	LEMONT, VILLAGE OF	WILL COUNTY/DUPAGE COUNTY/COOK COUNTY	6/30/1976	8/1/2019
171001#	LINCOLNWOOD, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08
170119#	LYNWOOD, VILLAGE OF	COOK COUNTY	08/03/81	08/19/08
170120#	LYONS, VILLAGE OF	COOK COUNTY	11/1/79	08/19/08
175169#	MARKHAM, CITY OF	COOK COUNTY	09/12/75	08/19/08
170123#	MATTESON, VILLAGE OF	COOK COUNTY	08/16/82	08/19/08
170124#	MAYWOOD, VILLAGE OF	COOK COUNTY	08/11/78	08/19/08
170121#	MCCOOK, VILLAGE OF	COOK COUNTY	07/16/91	08/19/08
170125#	MELROSE PARK, VILLAGE OF	COOK COUNTY	01/02/81	08/19/08
170126#	MERRIONETTE PARK, VILLAGE OF	COOK COUNTY	09/04/88	08/19/08
170127J	MIDLOTHIAN, VILLAGE OF	COOK COUNTY	08/01/79	11/1/19
170128#	MORTON GROVE, VILLAGE OF	COOK COUNTY	06/15/79	08/19/08
170129#	MOUNT PROSPECT, VILLAGE OF	COOK COUNTY	08/02/82	08/19/08
170130#	NILES, VILLAGE OF	COOK COUNTY	06/15/79	08/19/08
170131#	NORRIDGE, VILLAGE OF	COOK COUNTY	11/6/00	(NSFHA)
170135#	NORTH RIVERSIDE, VILLAGE OF	COOK COUNTY	12/16/80	08/19/08
170132#	NORTHBROOK, VILLAGE OF	LAKE COUNTY/COOK COUNTY	1/17/1979	9/18/2013
170133#	NORTHFIELD, VILLAGE OF	COOK COUNTY	12/18/79	08/19/08
170134#	NORTHLAKE, CITY OF	COOK COUNTY	01/03/86	08/19/08

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	**Community Name**	**County**	**Initial FIRM Identified**	**Current Effective Map Date**
170214B	OAK BROOK, VILLAGE OF	COOK COUNTY/DUPAGE COUNTY	02/18/81	08/01/19
170136J	OAK FOREST, CITY OF	COOK COUNTY	12/4/79	11/1/19
170137J	OAK LAWN, VILLAGE OF	COOK COUNTY	01/02/81	11/1/19
170139#	OLYMPIA FIELDS, VILLAGE OF	COOK COUNTY	08/01/80	08/19/08
170172J	ORLAND HILLS, VILLAGE OF	COOK COUNTY	03/15/82	11/1/19
170140#	ORLAND PARK, VILLAGE OF	WILL COUNTY/COOK COUNTY	2/4/1981	11/1/2019
175170#	PALATINE, VILLAGE OF	COOK COUNTY	12/31/74	08/19/08
170142J	PALOS HEIGHTS, CITY OF	COOK COUNTY	07/16/80	11/1/19
170143J	PALOS HILLS, CITY OF	COOK COUNTY	01/16/81	11/1/19
170144J	PALOS PARK, VILLAGE OF	COOK COUNTY	07/16/80	11/1/19
170145#	PARK FOREST, VILLAGE OF	WILL COUNTY/COOK COUNTY	7/16/1980	2/15/2019
170146#	PARK RIDGE, CITY OF	COOK COUNTY	11/6/00	08/19/08
170147#	PHOENIX, VILLAGE OF	COOK COUNTY	06/01/95	08/19/08
170148#	POSEN, VILLAGE OF	COOK COUNTY	02/27/84	08/19/08
170919#	PROSPECT HEIGHTS, CITY OF	COOK COUNTY	08/01/79	08/19/08
170149#	RICHTON PARK, VILLAGE OF	COOK COUNTY	01/16/81	08/19/08
170151#	RIVER FOREST, VILLAGE OF	COOK COUNTY	08/11/78	08/19/08
170152#	RIVER GROVE, VILLAGE OF	COOK COUNTY	12/16/80	08/19/08
170150#	RIVERDALE, VILLAGE OF	COOK COUNTY	09/29/78	08/19/08
170153#	RIVERSIDE, VILLAGE OF	COOK COUNTY	12/16/80	08/19/08
170154#	ROBBINS, VILLAGE OF	COOK COUNTY	09/29/78	08/19/08
170155#	ROLLING MEADOWS, CITY OF	COOK COUNTY	10/17/78	08/19/08
170216#	ROSELLE, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	5/19/1981	8/1/2019
170156#	ROSEMONT, VILLAGE OF	COOK COUNTY	11/15/79	08/19/08
170157#	SAUK, VILLAGE OF	WILL COUNTY/COOK COUNTY	5/5/1981	2/15/2019

TABLE: NFIP PARTICIPATING COMMUNITIES IN COOK COUNTY				
CID	Community Name	County	Initial FIRM Identified	Current Effective Map Date
170158#	SCHAUMBURG, VILLAGE OF	DUPAGE COUNTY/COOK COUNTY	2/15/1979	8/1/2019
170159#	SCHILLER PARK, VILLAGE OF	COOK COUNTY	09/15/78	08/19/08
171000#	SKOKIE, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08(M)
170161#	SOUTH BARRINGTON, VILLAGE OF	COOK COUNTY	07/16/81	08/19/08
170162#	SOUTH CHICAGO HEIGHTS, VILLAGE OF	COOK COUNTY	05/02/80	08/19/08
170163#	SOUTH HOLLAND, VILLAGE OF	COOK COUNTY	08/01/80	08/19/08
170713#	STEGER, VILLAGE OF	WILL COUNTY/COOK COUNTY	2/18/1983	2/15/2019
170164#	STICKNEY, VILLAGE OF	COOK COUNTY	11/6/00	08/19/08(M)
170165#	STONE PARK, VILLAGE OF	COOK COUNTY	07/16/80	08/19/08
170166#	STREAMWOOD, VILLAGE OF	COOK COUNTY	11/19/80	08/19/08
170167#	SUMMIT, VILLAGE OF	COOK COUNTY	05/01/94	08/19/08
170168#	THORNTON, VILLAGE OF	COOK COUNTY	08/01/80	08/19/08
170169#	TINLEY PARK, VILLAGE OF	WILL COUNTY/COOK COUNTY	12/4/1979	11/1/2019
170708B	UNIVERSITY PARK, VILLAGE OF	COOK COUNTY/WILL COUNTY	07/16/80	02/15/19
170170#	WESTCHESTER, VILLAGE OF	COOK COUNTY	06/04/80	08/19/08
170171#	WESTERN SPRINGS, VILLAGE OF	COOK COUNTY	01/02/81	08/19/08
170173#	WHEELING, VILLAGE OF	LAKE COUNTY/COOK COUNTY	9/15/1978	9/18/2013
170174#	WILLOW SPRINGS, VILLAGE OF	COOK COUNTY	07/16/79	08/19/08
170175J	WILMETTE, VILLAGE OF	COOK COUNTY	01/14/83	09/10/21
170176J	WINNETKA, VILLAGE OF	COOK COUNTY	11/19/80	09/10/21
170737#	WOODRIDGE, VILLAGE OF	WILL COUNTY/COOK COUNTY/DUPAGE COUNTY	6/15/1979	8/1/2019
170177J	WORTH, VILLAGE OF	COOK COUNTY	07/07/78	11/1/19

The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. Cook County entered the NFIP on April 15, 1981. The effective date for the current countywide Flood Insurance Rate Map is August 19, 2008. In addition to the County, most Cook County municipalities participate in the NFIP.

August 31, 2023: According to FEMA, Cook County has 12,083 flood insurance policies providing over $2.644 billion in insurance coverage. In comparison, the State of Illinois has 32,840 flood insurance policies providing over $7.06 billion in insurance coverage.

The table below illustrates Cook County flood insurance policies in force as of 8/31/23.

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	**Policies in Force**	**Insurance in force in $**	**Written Premium In-Force in $**
ALSIP, VILLAGE OF (170055)	14	3,666,000	31,107
ARLINGTON HEIGHTS, VILLAGE OF (170056)	57	16,196,000	36,330
ASHLAND, VILLAGE OF (171025)	1	329,000	2,778
BARRINGTON HILLS, VILLAGE OF (170058)	7	2,180,000	4,030
BARRINGTON, VILLAGE OF (170057)	7	2,404,000	4,550
BARTLETT, VILLAGE OF (170059)	4	816,000	1,729
BELLWOOD, VILLAGE OF (170061)	380	70,322,000	498,566
BENSENVILLE, VILLAGE OF (170200)	1	500,000	1,677
BERKELEY, VILLAGE OF (171039)	3	683,000	1,643
BERWYN, CITY OF (171036)	4	1,300,000	2,656
BLUE ISLAND, CITY OF (170064)	2	950,000	1,385
BRIDGEVIEW, VILLAGE OF (170065)	7	2,660,000	9,066
BROADVIEW, VILLAGE OF (170067)	21	7,953,000	33,639
BROOKFIELD, VILLAGE OF (170066)	35	9,254,000	24,667
BUFFALO GROVE, VILLAGE OF (170068)	19	4,402,000	22,338
BURBANK, CITY OF (170069)	8	1,482,000	7,216
BURNHAM, VILLAGE OF (170070)	2	378,000	913
BURR RIDGE, VILLAGE OF (170071)	7	2,257,000	6,159
CALUMET CITY, CITY OF (170072)	143	22,390,000	103,712

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	**Policies in Force**	**Insurance in force in $**	**Written Premium In-Force in $**
CALUMET PARK, VILLAGE OF (170073)	2	378,000	1,015
CHICAGO, CITY OF (170074)	811	198,295,000	552,036
CHICAGO HEIGHTS, CITY OF (170075)	15	3,251,000	18,195
CHICAGO RIDGE, VILLAGE OF (170076)	11	3,591,000	15,674
CICERO, TOWN OF (170077)	1	191,000	525
COOK COUNTY * (170054)	296	60,826,000	238,502
COOK COUNTY * (270619)	12	3,655,000	6,797
COUNTRY CLUB HILLS, CITY OF (170078)	15	2,548,000	9,288
COUNTRYSIDE, CITY OF (170079)	3	922,000	1,725
CRESTWOOD, VILLAGE OF (170080)	21	2,403,000	16,264
DEERFIELD, VILLAGE OF (170361)	1	500,000	959
DES PLAINES, CITY OF (170081)	1,110	248,320,000	546,321
DIXMOOR, VILLAGE OF (170082)	35	5,130,000	43,245
DOLTON, VILLAGE OF (170083)	13	3,213,000	17,249
ELGIN, CITY OF (170087)	17	3,297,000	24,945
ELK GROVE VILLAGE, VILLAGE OF (170088)	34	18,975,000	48,590
ELMWOOD PARK, VILLAGE OF (170089)	7	2,130,000	4,370
EVANSTON, CITY OF (170090)	59	16,819,000	34,915
EVERGREEN PARK, VILLAGE OF (170733)	1	42,000	294
FLOSSMOOR, VILLAGE OF (170091)	58	16,206,000	68,561
FORD HEIGHTS, VILLAGE OF (170084)	3	201,000	1,236
FOREST PARK, VILLAGE OF (170092)	3	728,000	1,675
FOREST VIEW, VILLAGE OF (170093)	16	4,107,000	11,137
FRANKLIN PARK, VILLAGE OF (170094)	150	33,031,000	234,656

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	Policies in Force	Insurance in force in $	Written Premium In-Force in $
GLENCOE, VILLAGE OF (170095)	32	10,009,000	16,290
GLENVIEW, VILLAGE OF (170096)	163	44,785,000	148,942
GLENWOOD, VILLAGE OF (170097)	8	2,427,000	7,804
HANOVER PARK, VILLAGE OF (170099)	10	2,136,000	5,425
HARVEY, CITY OF (170100)	89	11,790,000	102,559
HARWOOD HEIGHTS, VILLAGE OF (170101)	1	350,000	465
HAZEL CREST, VILLAGE OF (170102)	11	2,256,000	7,854
HICKORY HILLS, CITY OF (170103)	5	2,418,000	11,734
HILLSIDE, VILLAGE OF (170104)	14	5,130,000	8,121
HINSDALE, VILLAGE OF (170105)	1	350,000	631
HOFFMAN ESTATES, VILLAGE OF (170107)	53	10,793,000	19,970
HOMEWOOD, VILLAGE OF (170109)	28	6,316,000	43,524
HULL, VILLAGE OF (170553)	1	350,000	717
INDIAN HEAD PARK, VILLAGE OF (170110)	4	1,400,000	2,699
INVERNESS, VILLAGE OF (170111)	12	3,706,000	6,010
JUSTICE, VILLAGE OF (170112)	77	13,825,000	69,363
KENILWORTH, VILLAGE OF (170113)	6	2,100,000	2,436
LA GRANGE PARK, VILLAGE OF (170115)	16	4,790,000	10,470
LA GRANGE, VILLAGE OF (170114)	34	9,771,000	20,410
LANSING, VILLAGE OF (170116)	128	27,863,000	69,423
LEMONT, VILLAGE OF (170117)	3	1,050,000	1,898
LINCOLNWOOD, VILLAGE OF (171001)	15	4,365,000	8,998
LYNWOOD, VILLAGE OF (170119)	17	4,215,000	13,231
LYONS, VILLAGE OF (170120)	18	3,838,000	24,279

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	**Policies in Force**	**Insurance in force in $**	**Written Premium In-Force in $**
MARKHAM, CITY OF (175169)	10	1,660,000	8,149
MATTESON, VILLAGE OF (170123)	38	9,355,000	45,523
MAYWOOD, VILLAGE OF (170124)	8	1,661,000	5,065
MCCOOK, VILLAGE OF (170121)	1	500,000	3,301
MELROSE PARK, VILLAGE OF (170125)	158	33,897,000	275,469
MERRIONETTE PARK, VILLAGE OF (170126)	1	210,000	490
MIDLOTHIAN, VILLAGE OF (170127)	111	18,999,000	78,038
MORTON GROVE, VILLAGE OF (170128)	11	3,486,000	7,359
MOUNT PROSPECT, VILLAGE OF (170129)	85	21,818,000	54,880
NILES, VILLAGE OF (170130)	34	10,722,000	26,077
NORRIDGE, VILLAGE OF (170131)	4	1,031,000	2,140
NORTHBROOK, VILLAGE OF (170132)	114	34,977,000	75,624
NORTHFIELD, VILLAGE OF (170133)	122	33,348,000	99,277
NORTHLAKE, CITY OF (170134)	89	18,178,000	132,940
NORTH RIVERSIDE, VILLAGE OF (170135)	6	2,013,000	6,432
OAK FOREST, CITY OF (170136)	40	7,630,000	33,781
OAK LAWN, VILLAGE OF (170137)	349	54,447,000	195,528
OLYMPIA FIELDS, VILLAGE OF (170139)	14	4,763,000	20,825
ORLAND HILLS, VILLAGE OF (170172)	11	2,321,000	5,374
ORLAND PARK, VILLAGE OF (170140)	35	10,336,000	22,235
PALATINE, VILLAGE OF (175170)	70	18,198,000	34,967
PALOS HEIGHTS, CITY OF (170142)	20	4,951,000	23,183
PALOS HILLS, CITY OF (170143)	68	13,722,000	52,225
PALOS PARK, VILLAGE OF (170144)	16	4,465,000	10,537

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	**Policies in Force**	**Insurance in force in $**	**Written Premium In-Force in $**
PARK FOREST, VILLAGE OF (170145)	6	811,000	2,796
PARK RIDGE, CITY OF (170146)	80	21,656,000	46,952
POSEN, VILLAGE OF (170148)	50	7,131,000	78,816
PROSPECT HEIGHTS, CITY OF (170919)	632	67,338,000	102,038
RICHTON PARK, VILLAGE OF (170149)	12	2,869,000	10,138
RIVERDALE, VILLAGE OF (170150)	1	200,000	1,604
RIVER FOREST, VILLAGE OF (170151)	34	10,378,000	30,504
RIVER GROVE, VILLAGE OF (170152)	31	6,422,000	32,118
RIVERSIDE, VILLAGE OF (170153)	105	24,319,000	98,369
ROBBINS, VILLAGE OF (170154)	15	2,208,000	17,946
ROLLING MEADOWS, CITY OF (170155)	588	58,540,000	116,327
ROSELLE, VILLAGE OF (170216)	1	195,000	521
ROSEMONT, VILLAGE OF (170156)	15	6,480,000	33,155
SAUK VILLAGE, VILLAGE OF (170157)	7	1,589,000	3,286
SCHAUMBURG, VILLAGE OF (170158)	32	13,036,000	22,898
SCHILLER PARK, VILLAGE OF (170159)	18	3,707,000	16,362
SKOKIE, VILLAGE OF (171000)	45	11,848,000	31,731
SOUTH BARRINGTON, VILLAGE OF (170161)	8	2,350,000	4,794
SOUTH HOLLAND, VILLAGE OF (170163)	61	16,522,000	48,865
STEGER, VILLAGE OF (170713)	6	1,207,000	4,221
STICKNEY, VILLAGE OF (170164)	2	426,000	1,119
STONE PARK, VILLAGE OF (170165)	69	11,296,000	115,840
STREAMWOOD, VILLAGE OF (170166)	9	2,791,000	5,271
SUMMIT, VILLAGE OF (170167)	1	42,000	331

TABLE: COOK COUNTY FLOOD INSURANCE POLICIES			
Community Name/CID	**Policies in Force**	**Insurance in force in $**	**Written Premium In-Force in $**
TINLEY PARK, VILLAGE OF (170169)	153	30,995,000	67,814
WESTCHESTER, VILLAGE OF (170170)	227	45,074,000	261,239
WESTERN SPRINGS, VILLAGE OF (170171)	25	7,579,000	14,761
WHEELING, VILLAGE OF (170173)	177	41,860,000	186,426
WHITESIDE COUNTY* (170687)	1	196,000	1,755
WILLOW SPRINGS, VILLAGE OF (170174)	14	3,466,000	12,167
WILMETTE, VILLAGE OF (170175)	88	25,146,000	57,995
WINNETKA, VILLAGE OF (170176)	188	57,096,000	146,806
WORTH, VILLAGE OF (170177)	3	570,000	2,807
Unknown (Unknown)	3,799	890,727,000	2,777,498
TOTALS	**12,083**	**2,644,380,000**	**8,871,734**
Source: (FEMA NFIP 2024)			

The Community Rating System: The CRS is a voluntary program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions meeting the following three goals of the CRS:

- Reduce flood losses.
- Facilitate accurate insurance rating.
- Promote awareness of flood insurance.

For participating communities, flood insurance premium rates are discounted in increments of 5 percent. For example, a Class 1 community would receive a 45 percent premium discount, and a Class 9 community would receive a 5 percent discount. (Class 10 communities are those that do not participate in the CRS; they receive no discount.) The CRS classes for local communities are based on 18 creditable activities in the following categories:

- Public information
- Mapping and regulations
- Flood damage reduction
- Flood preparedness.

Although CRS communities represent only a small minority of the communities participating in the NFIP, more than 67 percent of all flood insurance policies are written in CRS communities. CRS activities can help to save lives and reduce property damage. Communities participating in the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks.

Communities participating in the CRS represent a significant portion of the nation's flood risk; over 66 percent of the NFIP's policy base is located in these communities. Communities receiving premium discounts through the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks.

As of March 17, 2022, there are 20 communities currently participating in CRS within the planning area. Each community CRS status is summarized in the table below. Many of the mitigation actions identified in Volume 2 of this plan are creditable activities under the CRS program. Therefore, successful implementation of this plan offers the potential for these communities to enhance their CRS classifications and for currently non-participating communities to join the program.

TABLE: CRS COMMUNITY STATUS IN THE PLANNING AREA						
Community	**CID#**	**CRS Entry Date**	**Current Effective Date**	**Current CRS Classification**	**% Disc SFHA**	**% Disc Non SFHA**
BARTLETT, VILLAGE OF	170059#	10/01/91	10/01/18	6	20%	10%
BUFFALO GROVE, VILLAGE OF	170068#	10/01/21	10/01/21	7	15%	05%
CALUMET CITY, CITY OF	170072#	10/01/00	04/01/22	5	25%	10%
COUNTRY CLUB HILLS, CITY OF	170078#	10/01/93	10/01/22	7	15%	05%
DEERFIELD, VILLAGE OF	170361#	10/01/95	05/01/08	6	20%	10%
DES PLAINES, CITY OF	170081#	10/01/93	04/01/24	5	25%	10%
FLOSSMOOR, VILLAGE OF	170091#	10/01/93	05/01/13	7	15%	05%
GLENVIEW, VILLAGE OF	170096#	10/01/11	10/01/20	6	20%	10%
HOFFMAN ESTATES, VILLAGE OF	170107#	10/01/92	04/01/23	7	15%	05%
LANSING, VILLAGE OF	170116#	10/01/93	04/01/22	5	25%	10%
MELROSE PARK, VILLAGE OF	170125#	10/01/15	10/01/21	7	15%	05%
MIDLOTHIAN, VILLAGE OF	170127J	05/01/18	10/01/23	6	20%	10%
MOUNT PROSPECT, VILLAGE OF	170129#	10/01/91	10/01/17	6	20%	10%
NILES, VILLAGE OF	170130#	10/01/13	10/01/19	5	25%	10%
NORTHBROOK, VILLAGE OF	170132#	10/01/94	04/01/21	7	15%	05%

TABLE: CRS COMMUNITY STATUS IN THE PLANNING AREA						
Community	**CID#**	**CRS Entry Date**	**Current Effective Date**	**Current CRS Classification**	**% Disc SFHA**	**% Disc Non SFHA**
NORTHFIELD, VILLAGE OF	170133#	10/01/16	10/01/16	7	15%	05%
OAK BROOK, VILLAGE OF	170214B	10/01/92	10/01/97	7	15%	05%
ORLAND HILLS, VILLAGE OF	170172J	10/01/96	10/01/02	5	25%	10%
PALATINE, VILLAGE OF	175170#	10/01/94	05/01/04	7	15%	05%
PROSPECT HEIGHTS, CITY OF	170919#	10/01/94	04/01/22	6	20%	10%
RIVER FOREST, VILLAGE OF	170151#	05/01/12	05/01/12	7	15%	05%
SOUTH HOLLAND, VILLAGE OF	170163#	10/01/92	10/01/02	5	25%	10%
TINLEY PARK, VILLAGE OF	170169#	10/01/05	04/01/22	6	20%	10%
WESTCHESTER, VILLAGE OF	170170#	10/01/12	05/01/20	7	15%	05%
WHEELING, VILLAGE OF	170173#	10/01/91	05/01/14	6	20%	10%
WINNETKA, VILLAGE OF	170176J	05/01/15	05/01/15	6	20%	10%

5.4.6 Past Flooding Events

Riverine Flooding

The table below illustrates all historical riverine flood events in Cook County recorded by NOAA between 1997-2024.

TABLE: RIVERINE FLOOD EVENTS IN COOK COUNTY (1997-2024)							
Location	**County**	**State**	**Date**	**Dth**	**Inj**	**PrD**	**CrD**
COOK (ZONE)	COOK (ZONE)	IL	02/20/1997	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	08/03/1998	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	08/04/1998	1	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	10/17/1998	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	04/27/1999	0	0	0.00K	0.00K
WILMETTE	COOK CO.	IL	09/11/2000	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	09/11/2000	0	0	0.00K	0.00K
ROLLING MEADOWS	COOK CO.	IL	08/22/2001	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	10/24/2001	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	06/04/2002	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	08/22/2002	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/28/2004	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/15/2005	0	0	0.00K	0.00K
MIDLOTHIAN	COOK CO.	IL	07/27/2006	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	10/02/2006	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	04/25/2007	0	0	0.00K	0.00K
MIDLOTHIAN	COOK CO.	IL	04/25/2007	0	0	0.00K	0.00K

TABLE: RIVERINE FLOOD EVENTS IN COOK COUNTY (1997-2024)							
Location	**County**	**State**	**Date**	**Dth**	**Inj**	**PrD**	**CrD**
LANSING	COOK CO.	IL	04/25/2007	0	0	0.00K	0.00K
RICHTON PARK	COOK CO.	IL	04/25/2007	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	05/26/2007	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	06/27/2007	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	07/18/2007	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	08/23/2007	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/23/2007	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	08/23/2007	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	08/23/2007	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	08/24/2007	0	0	100.00K	0.00K
FERNWAY	COOK CO.	IL	01/08/2008	0	0	0.00K	0.00K
GLENCOE	COOK CO.	IL	02/17/2008	0	0	2.000M	0.00K
TINLEY PARK	COOK CO.	IL	08/04/2008	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	08/04/2008	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	09/13/2008	0	0	0.00K	0.00K
KIMBERLY HGTS	COOK CO.	IL	09/13/2008	1	0	0.00K	0.00K
NORTH NORTHFIELD	COOK CO.	IL	09/13/2008	0	0	5.000M	0.00K
BRYN MAWR	COOK CO.	IL	09/14/2008	0	0	0.00K	0.00K
SAUK VLG	COOK CO.	IL	09/14/2008	0	0	0.00K	0.00K
SOUTH HOLLAND	COOK CO.	IL	09/14/2008	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	12/27/2008	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	12/27/2008	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	02/26/2009	0	0	0.00K	0.00K
COLEHOUR	COOK CO.	IL	03/08/2009	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	03/08/2009	0	0	0.00K	0.00K
CHIPPEWA	COOK CO.	IL	03/08/2009	0	0	0.00K	0.00K
MORGAN PARK	COOK CO.	IL	03/08/2009	0	0	0.00K	0.00K
TECHNY	COOK CO.	IL	03/10/2009	0	0	0.00K	0.00K
LAMBERT	COOK CO.	IL	03/10/2009	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	04/26/2009	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	04/27/2009	0	0	0.00K	0.00K
NOTTINGHAM PARK	COOK CO.	IL	05/26/2009	0	0	0.00K	0.00K
CHATHAM	COOK CO.	IL	06/11/2009	0	0	0.00K	0.00K
COLEHOUR	COOK CO.	IL	06/19/2009	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	06/19/2009	0	0	0.00K	0.00K
SPAULDING	COOK CO.	IL	06/19/2009	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	06/24/2009	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	06/24/2009	0	0	0.00K	0.00K
FOREST GLEN	COOK CO.	IL	07/23/2009	0	0	0.00K	0.00K
OAK LAWN	COOK CO.	IL	06/02/2010	0	0	0.00K	0.00K
CALUMET	COOK CO.	IL	06/23/2010	0	0	0.00K	0.00K
BROADVIEW	COOK CO.	IL	06/23/2010	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	07/24/2010	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	11/22/2010	0	0	0.00K	0.00K
THE GREENS	COOK CO.	IL	05/25/2011	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	05/29/2011	0	0	0.00K	0.00K
WESTERN SPGS	COOK CO.	IL	06/09/2011	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	06/09/2011	0	0	0.00K	0.00K
GOLDEN ACRES	COOK CO.	IL	07/22/2011	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	07/18/2012	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	05/20/2013	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	09/18/2013	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	09/18/2013	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	09/18/2013	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	11/17/2013	0	0	0.00K	0.00K

TABLE: RIVERINE FLOOD EVENTS IN COOK COUNTY (1997-2024)							
Location	County	State	Date	Dth	Inj	PrD	CrD
BERNICE	COOK CO.	IL	05/11/2014	0	0	100.00K	0.00K
CALUMET	COOK CO.	IL	05/20/2014	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/21/2014	0	0	0.00K	0.00K
ROSEMONT	COOK CO.	IL	07/01/2014	0	0	0.00K	0.00K
HAWTHORNE	COOK CO.	IL	07/12/2014	0	0	0.00K	0.00K
CONGRESS PARK	COOK CO.	IL	08/04/2014	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	07/07/2016	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	07/12/2017	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/21/2017	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/23/2017	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	10/14/2017	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	10/14/2017	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	05/02/2018	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
CUMBERLAND	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
SCHILLER PARK	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
RHODES	COOK CO.	IL	05/21/2018	0	0	0.00K	0.00K
SUTTON	COOK CO.	IL	05/30/2018	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/30/2018	0	0	0.00K	0.00K
WEBER	COOK CO.	IL	06/22/2018	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	09/02/2018	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	09/03/2018	0	0	0.00K	0.00K
BLUE IS	COOK CO.	IL	09/03/2018	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	05/01/2019	0	0	0.00K	0.00K
SHOREWOOD VLG	COOK CO.	IL	05/01/2019	0	0	0.00K	0.00K
LAMBERT	COOK CO.	IL	05/01/2019	0	0	0.00K	0.00K
VILLA WEST	COOK CO.	IL	05/01/2019	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	05/01/2019	0	0	0.00K	0.00K
PALOS HILLS	COOK CO.	IL	05/27/2019	0	0	0.00K	0.00K
HICKORY HILLS	COOK CO.	IL	05/27/2019	0	0	0.00K	0.00K
ENGLEWOOD	COOK CO.	IL	06/01/2019	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/05/2019	0	0	0.00K	0.00K
NORTHBROOK	COOK CO.	IL	06/05/2019	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	07/02/2019	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	07/02/2019	0	0	0.00K	0.00K
PHOENIX	COOK CO.	IL	07/13/2019	0	0	0.00K	0.00K
MC COOK	COOK CO.	IL	07/18/2019	0	0	0.00K	0.00K
HANSON PARK	COOK CO.	IL	08/18/2019	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	08/18/2019	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	08/18/2019	0	0	0.00K	0.00K
VALLEY	COOK CO.	IL	09/13/2019	0	0	0.00K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	10/02/2019	0	0	0.00K	0.00K
MANNHEIM	COOK CO.	IL	10/03/2019	0	0	0.00K	0.00K
ELK GROVE	COOK CO.	IL	10/26/2019	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	04/29/2020	0	0	0.00K	0.00K
BERKELEY	COOK CO.	IL	04/29/2020	0	0	0.00K	0.00K
JUSTICE	COOK CO.	IL	04/29/2020	0	0	0.00K	0.00K
CHIPPEWA	COOK CO.	IL	04/30/2020	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	04/30/2020	0	0	0.00K	0.00K
LAMBERT	COOK CO.	IL	04/30/2020	0	0	0.00K	0.00K
ELK GROVE	COOK CO.	IL	05/15/2020	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K

TABLE: RIVERINE FLOOD EVENTS IN COOK COUNTY (1997-2024)							
Location	County	State	Date	Dth	Inj	PrD	CrD
SPAULDING	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K
CLABURN	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K
ELK GROVE	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K
BROADVIEW	COOK CO.	IL	05/17/2020	0	0	0.00K	0.00K
CHICAGO HGTS	COOK CO.	IL	06/21/2020	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	06/26/2020	0	0	0.00K	0.00K
ENGLEWOOD	COOK CO.	IL	08/02/2020	0	0	0.00K	0.00K
NORTH AUSTIN	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
FULLER PARK	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
BRIGHTON PARK	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
FULLER PARK	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
EAST GARFIELD PARK	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
GOOSE ISLAND	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
BEDFORD PARK	COOK CO.	IL	10/22/2020	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	06/12/2021	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	06/20/2021	0	0	0.00K	0.00K
BRIGHTON PARK	COOK CO.	IL	06/20/2021	0	0	0.00K	0.00K
BRIGHTON PARK	COOK CO.	IL	08/10/2021	0	0	0.00K	0.00K
EDGEWATER	COOK CO.	IL	08/24/2021	0	0	0.00K	0.00K
RAVENSWOOD	COOK CO.	IL	08/24/2021	0	0	0.00K	0.00K
LINCOLN PARK	COOK CO.	IL	10/11/2021	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	10/24/2021	0	0	0.00K	0.00K
BROADVIEW	COOK CO.	IL	04/30/2022	0	0	0.00K	0.00K
EDGEBROOK	COOK CO.	IL	05/03/2022	0	0	0.00K	0.00K
ALPINE	COOK CO.	IL	05/03/2022	0	0	0.00K	0.00K
PORTAGE PARK	COOK CO.	IL	06/13/2022	0	0	0.00K	0.00K
ELSDON	COOK CO.	IL	07/23/2022	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	09/11/2022	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	03/31/2023	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	03/31/2023	0	0	0.00K	0.00K
KENILWORTH	COOK CO.	IL	03/31/2023	0	0	0.00K	0.00K
NORTHFIELD	COOK CO.	IL	03/31/2023	0	0	0.00K	0.00K
GOLF	COOK CO.	IL	03/31/2023	0	0	0.00K	0.00K
PLUM GROVE ESTATES	COOK CO.	IL	04/04/2023	0	0	0.00K	0.00K
SUMMIT	COOK CO.	IL	07/11/2023	0	0	0.00K	0.00K
HEGEWISCH	COOK CO.	IL	09/17/2023	0	0	0.00K	0.00K
PILSEN	COOK CO.	IL	09/26/2023	0	0	0.00K	0.00K
GREATER GRAND CROSSING	COOK CO.	IL	09/26/2023	0	0	0.00K	0.00K
KENWOOD	COOK CO.	IL	09/26/2023	0	0	0.00K	0.00K
ARCHER HEIGHTS	COOK CO.	IL	02/27/2024	0	0	0.00K	0.00K
BURR RIDGE	COOK CO.	IL	03/14/2024	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	03/14/2024	0	0	0.00K	0.00K
ENGLEWOOD	COOK CO.	IL	03/14/2024	0	0	0.00K	0.00K

Urban/Flash/Stormwater Flooding

The table below illustrates all historical urban/flash/stormwater flood events in Cook County recorded by NOAA between 1996-2023.

TABLE: FLASH FLOOD EVENTS IN COOK COUNTY (1996-2023)								
Location	County	State	Date	Type	Dth	Inj	PrD	CrD
NORTHERN	COOK CO.	IL	05/20/1996	Flash Flood	0	0	0.00K	0.00K
SOUTHERN	COOK CO.	IL	05/28/1996	Flash Flood	0	0	0.00K	0.00K
SOUTHERN	COOK CO.	IL	06/17/1996	Flash Flood	0	0	0.00K	0.00K
SOUTHERN	COOK CO.	IL	07/17/1996	Flash Flood	0	0	44.700 M	0.00K
COUNTYWIDE	COOK CO.	IL	08/16/1997	Flash Flood	0	0	0.00K	0.00K
SOUTH PORTION	COOK CO.	IL	05/06/1998	Flash Flood	0	0	0.00K	0.00K
SOUTHWEST PORTION	COOK CO.	IL	07/21/2001	Flash Flood	0	0	500.00 K	0.00K
COUNTYWIDE	COOK CO.	IL	08/02/2001	Flash Flood	0	0	37.000 M	0.00K
NORTH PORTION	COOK CO.	IL	08/30/2001	Flash Flood	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	10/13/2001	Flash Flood	0	0	0.00K	0.00K
NORTH CENTRAL PORTION	COOK CO.	IL	08/22/2002	Flash Flood	0	0	0.00K	0.00K
SOUTH PORTION	COOK CO.	IL	07/27/2003	Flash Flood	0	0	1.000M	0.00K
NORTH CENTRAL PORTION	COOK CO.	IL	08/03/2003	Flash Flood	0	0	1.000M	0.00K
CENTRAL PORTION	COOK CO.	IL	11/04/2003	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	05/13/2004	Flash Flood	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/20/2004	Flash Flood	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	05/21/2004	Flash Flood	0	0	0.00K	0.00K
SOUTH PORTION	COOK CO.	IL	05/22/2004	Flash Flood	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/30/2004	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	05/30/2004	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	COOK CO.	IL	06/10/2004	Flash Flood	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	06/11/2004	Flash Flood	0	0	0.00K	0.00K
SOUTHEAST PORTION	COOK CO.	IL	04/17/2006	Flash Flood	0	0	1.000M	0.00K
ORLAND PARK	COOK CO.	IL	07/27/2006	Flash Flood	0	0	0.00K	0.00K
SOUTH CENTRAL PORTION	COOK CO.	IL	08/10/2006	Flash Flood	0	0	50.00K	0.00K
MATTESON	COOK CO.	IL	08/28/2006	Flash Flood	0	0	250.00 K	0.00K
SOUTH PORTION	COOK CO.	IL	09/13/2006	Flash Flood	0	0	250.00 K	0.00K
NORTH PORTION	COOK CO.	IL	09/22/2006	Flash Flood	0	0	100.00 K	0.00K

TABLE: FLASH FLOOD EVENTS IN COOK COUNTY (1996-2023)								
Location	County	State	Date	Type	Dth	Inj	PrD	CrD
NORTHFIELD	COOK CO.	IL	10/02/2006	Flash Flood	0	0	250.00 K	0.00K
CHICAGO	COOK CO.	IL	06/26/2007	Flash Flood	0	0	1.000M	0.00K
STONE PARK	COOK CO.	IL	06/27/2007	Flash Flood	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	07/18/2007	Flash Flood	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	08/22/2007	Flash Flood	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	07/18/2008	Flash Flood	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	08/04/2008	Flash Flood	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	09/13/2008	Flash Flood	0	0	1.000M	0.00K
BRYN MAWR	COOK CO.	IL	09/13/2008	Flash Flood	1	0	35.000 M	0.00K
BRYN MAWR	COOK CO.	IL	09/14/2008	Flash Flood	0	0	0.00K	0.00K
BRYN MAWR	COOK CO.	IL	09/14/2008	Flash Flood	0	0	20.000 M	0.00K
CHIPPEWA	COOK CO.	IL	12/27/2008	Flash Flood	0	0	0.00K	0.00K
GOLDEN ACRES	COOK CO.	IL	02/26/2009	Flash Flood	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	02/26/2009	Flash Flood	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	06/19/2009	Flash Flood	0	0	0.00K	0.00K
BARRINGTON HILLS	COOK CO.	IL	06/19/2009	Flash Flood	0	0	500.00 K	0.00K
SCHILLER PARK	COOK CO.	IL	06/19/2009	Flash Flood	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	05/13/2010	Flash Flood	0	0	50.00K	0.00K
WESTERN SPGS	COOK CO.	IL	06/15/2010	Flash Flood	0	0	100.00 K	0.00K
MANNHEIM	COOK CO.	IL	06/23/2010	Flash Flood	0	0	500.00 K	0.00K
CHATHAM	COOK CO.	IL	06/27/2010	Flash Flood	0	0	1.000M	0.00K
BRYN MAWR	COOK CO.	IL	07/24/2010	Flash Flood	0	0	253.38 0M	0.00K
MC COOK	COOK CO.	IL	08/03/2010	Flash Flood	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	08/03/2010	Flash Flood	0	0	500.00 K	0.00K
BAY COLONY	COOK CO.	IL	05/29/2011	Flash Flood	0	0	0.00K	0.00K
LAMBERT	COOK CO.	IL	06/09/2011	Flash Flood	0	0	0.00K	0.00K
BEVERLY HILLS	COOK CO.	IL	06/09/2011	Flash Flood	0	0	1.000M	0.00K
PARK FOREST SOUTH	COOK CO.	IL	06/09/2011	Flash Flood	0	0	0.00K	0.00K
SPAULDING	COOK CO.	IL	07/23/2011	Flash Flood	0	0	20.000 M	0.00K
ELK GROVE	COOK CO.	IL	07/23/2011	Flash Flood	0	0	10.000 M	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	07/29/2011	Flash Flood	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	05/03/2012	Flash Flood	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	05/03/2012	Flash Flood	0	0	0.00K	0.00K
ENGLEWOO D	COOK CO.	IL	05/03/2012	Flash Flood	0	0	0.00K	0.00K
BROOKFIELD	COOK CO.	IL	05/03/2012	Flash Flood	0	0	0.00K	0.00K

TABLE: FLASH FLOOD EVENTS IN COOK COUNTY (1996-2023)								
Location	County	State	Date	Type	Dth	Inj	PrD	CrD
OAK LAWN	COOK CO.	IL	05/03/2012	Flash Flood	0	0	0.00K	0.00K
GLENCOE	COOK CO.	IL	07/18/2012	Flash Flood	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	08/26/2012	Flash Flood	0	0	0.00K	0.00K
GLENCOE	COOK CO.	IL	04/18/2013	Flash Flood	0	0	12.000 M	0.00K
ELK GROVE	COOK CO.	IL	04/18/2013	Flash Flood	0	0	6.000M	0.00K
CLABURN	COOK CO.	IL	04/18/2013	Flash Flood	0	0	0.00K	0.00K
HILLSIDE	COOK CO.	IL	05/28/2013	Flash Flood	0	0	0.00K	0.00K
HASTINGS	COOK CO.	IL	05/28/2013	Flash Flood	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
(NBU)GLENVIEW NAS	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
EDGEBROOK	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
CUMBERLAND	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
BAY COLONY	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	06/26/2013	Flash Flood	0	0	0.00K	0.00K
STICKNEY	COOK CO.	IL	06/27/2013	Flash Flood	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	10/05/2013	Flash Flood	0	0	0.00K	0.00K
WESTERN SPGS	COOK CO.	IL	05/11/2014	Flash Flood	0	0	0.00K	0.00K
HUBBARD WOODS	COOK CO.	IL	05/12/2014	Flash Flood	0	0	0.00K	0.00K
EAST HAZEL CREST	COOK CO.	IL	05/20/2014	Flash Flood	0	0	20.00K	0.00K
HAWTHORNE	COOK CO.	IL	05/20/2014	Flash Flood	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	06/21/2014	Flash Flood	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	06/21/2014	Flash Flood	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	06/24/2014	Flash Flood	0	0	0.00K	0.00K
BELLWOOD	COOK CO.	IL	06/24/2014	Flash Flood	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	06/30/2014	Flash Flood	0	0	0.00K	0.00K
STICKNEY	COOK CO.	IL	06/30/2014	Flash Flood	0	0	0.00K	0.00K
CONGRESS PARK	COOK CO.	IL	06/30/2014	Flash Flood	0	0	0.00K	0.00K
STONE PARK	COOK CO.	IL	07/01/2014	Flash Flood	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	08/04/2014	Flash Flood	0	0	150.00 K	0.00K
JUSTICE	COOK CO.	IL	08/22/2014	Flash Flood	0	0	50.000 M	0.00K
COLEHOUR	COOK CO.	IL	08/22/2014	Flash Flood	0	0	50.00K	0.00K
MAYWOOD	COOK CO.	IL	08/22/2014	Flash Flood	0	0	0.00K	0.00K
SCHILLER PARK	COOK CO.	IL	06/13/2015	Flash Flood	0	0	0.00K	0.00K
SCHILLER PARK	COOK CO.	IL	06/15/2015	Flash Flood	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	06/15/2015	Flash Flood	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	08/17/2015	Flash Flood	0	0	0.00K	0.00K
BRAINERD	COOK CO.	IL	09/18/2015	Flash Flood	0	0	10.00K	0.00K
KENILWORTH	COOK CO.	IL	07/23/2016	Flash Flood	0	0	0.00K	0.00K

TABLE: FLASH FLOOD EVENTS IN COOK COUNTY (1996-2023)								
Location	County	State	Date	Type	Dth	Inj	PrD	CrD
NORTHFIELD	COOK CO.	IL	07/23/2016	Flash Flood	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/24/2016	Flash Flood	0	0	0.00K	0.00K
BERGER	COOK CO.	IL	07/29/2016	Flash Flood	0	0	0.00K	0.00K
NORTHFIELD	COOK CO.	IL	08/18/2016	Flash Flood	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	10/14/2017	Flash Flood	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	05/30/2018	Flash Flood	0	0	50.00K	0.00K
DUNHURST	COOK CO.	IL	06/09/2018	Flash Flood	0	0	0.00K	0.00K
BLUE IS JCT	COOK CO.	IL	07/04/2018	Flash Flood	0	0	0.00K	0.00K
ELK GROVE	COOK CO.	IL	08/07/2018	Flash Flood	0	0	100.00 K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	09/03/2018	Flash Flood	0	0	0.00K	0.00K
(IGQ) LANSING MUNICIPAL ...	COOK CO.	IL	06/26/2019	Flash Flood	0	0	0.00K	0.00K
OLYMPIA FIELDS	COOK CO.	IL	06/26/2019	Flash Flood	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	06/27/2019	Flash Flood	0	0	0.00K	0.00K
CHICAGO HEIGHTS	COOK CO.	IL	06/27/2019	Flash Flood	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	07/02/2019	Flash Flood	0	0	0.00K	0.00K
WESTCHESTE R	COOK CO.	IL	07/02/2019	Flash Flood	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	09/27/2019	Flash Flood	0	0	0.00K	0.00K
HANSON PARK	COOK CO.	IL	10/02/2019	Flash Flood	0	0	0.00K	0.00K
BERKELEY	COOK CO.	IL	05/14/2020	Flash Flood	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	05/14/2020	Flash Flood	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/15/2020	Flash Flood	0	0	0.00K	0.00K
WILLOW SPGS	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
HAWTHORNE	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
HASTINGS	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
BERKELEY	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
BROADVIEW	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
HAWTHORNE	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
ROBBINS	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	05/17/2020	Flash Flood	0	0	0.00K	0.00K
AUSTIN PARK	COOK CO.	IL	06/26/2020	Flash Flood	0	0	0.00K	0.00K
JEFFERSON PARK	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
NORTH AUSTIN	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K

TABLE: FLASH FLOOD EVENTS IN COOK COUNTY (1996-2023)								
Location	**County**	**State**	**Date**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
AVONDALE	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
HOMEWOOD	COOK CO.	IL	06/26/2021	Flash Flood	0	0	0.00K	0.00K
EDGEWATER	COOK CO.	IL	08/24/2021	Flash Flood	0	0	0.00K	0.00K
GOOSE ISLAND	COOK CO.	IL	08/24/2021	Flash Flood	0	0	0.00K	0.00K
EAST GARFIELD PARK	COOK CO.	IL	08/24/2021	Flash Flood	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	08/07/2022	Flash Flood	0	0	0.00K	0.00K
ROBBINS	COOK CO.	IL	08/07/2022	Flash Flood	0	0	0.00K	0.00K
MONT CLARE	COOK CO.	IL	09/11/2022	Flash Flood	0	0	3.100M	0.00K
MAYWOOD	COOK CO.	IL	09/11/2022	Flash Flood	0	0	0.00K	0.00K
ARCHER HEIGHTS	COOK CO.	IL	07/02/2023	Flash Flood	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	07/02/2023	Flash Flood	0	0	500.000M	0.00K
CALUMET PARK	COOK CO.	IL	07/05/2023	Flash Flood	0	0	0.00K	0.00K
BROOKFIELD	COOK CO.	IL	07/05/2023	Flash Flood	0	0	0.00K	0.00K
CALUMET CITY	COOK CO.	IL	07/05/2023	Flash Flood	0	0	0.00K	0.00K
LANSING	COOK CO.	IL	07/05/2023	Flash Flood	0	0	0.00K	0.00K
GARFIELD PARK	COOK CO.	IL	08/14/2023	Flash Flood	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	09/06/2023	Flash Flood	0	0	0.00K	0.00K
WEST TOWN	COOK CO.	IL	09/17/2023	Flash Flood	0	0	0.00K	0.00K
HEGEWISCH	COOK CO.	IL	09/17/2023	Flash Flood	0	0	50.000M	0.00K

Coastal Flooding

The table below illustrates all historical coastal flooding events in Cook County recorded by NOAA between 2013-2022.

Location	County	State	Date	Time	Type	Dth	Inj	PrD	CrD
COOK (ZONE)	COOK (ZONE)	IL	11/26/18	1:30	Coastal Flood	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	6/13/19	10:00	Coastal Flood	0	0	0.00K	0.00K
Totals:						**0**	**0**	**0.00K**	**0.00K**

5.4.7 Vulnerability and Impacts

Impacted FEMA Community Lifelines		
Safety and Security	**Safety and Security** Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	Significant
Food, Hydration, Shelter	**Food, Hydration, Shelter** Food, Hydration, Shelter, Agriculture	Moderate
Health and Medical	**Health and Medical** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	Moderate
Energy (Power & Fuel)	**Energy** Power Grid, Fuel	Moderate
Communications	**Communications** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	Moderate
Transportation	**Transportation** Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	Moderate
Hazardous Materials	**Hazardous Materials** Facilities, HAZMAT, Pollutants, Contaminants	Significant
Water Systems	**Water Systems** Potable Water Infrastructure, Wastewater Management	Significant
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown		

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health: Safety and health concerns during a flood range greatly. One of the primary issues communities experience, especially during flash floods, is vehicles getting stuck and/or swept away by rapidly moving waters. These scenarios also present danger to first responders and bystanders attempting to rescue vehicle occupants.

According to FEMA:

- Six inches of water will reach the bottom of most passenger cars, causing loss of control and potential stalling.
- A foot of water will float many vehicles.
- Two feet of rushing water will carry away most vehicles, including SUVs and pickups.

Just as vehicles are recommended to stay away from standing and/or moving flood waters, the same is recommended for individuals. Flood waters can be both unsanitary and dangerous. When individuals do get stuck within flood waters, some experience heart attacks and other medical conditions while trying to free themselves from the water. Contact with flood waters can increase the possibility of contracting a communicable disease (and other medical issues due to pollutants, chemicals, waste, and an increased number of insects) (CDC, 2024).

When receding, flood waters can also saturate the ground, leading to infiltration into sanitary sewer lines. When wastewater treatment facilities are flooded, there is often nowhere for the treated sewage to be discharged or inflowing sewage to be stored. Infiltration and lack of treatment lead to overloaded sewer lines, which back up into low-lying areas and some homes. Even though diluted by flood waters, raw sewage can be a breeding ground for bacteria, such as E. coli, and other disease-causing agents. Because of this threat, tetanus shots are given to people affected by a flood (CDC).

Stagnant water is often a perfect breeding ground for insects, specifically mosquitoes, known to carry and distribute various types of diseases. Standing water also creates mold, which can be a health issue for everyone but is an extreme hazard to those with breathing issues, children, and the elderly. If forced-air systems are affected by floods and are not subsequently cleaned properly, individuals may inadvertently breathe in pollutants. If the water system loses pressure, a boil order may be issued to protect people and animals from contaminated water (CDC).

The force of flood waters can damage gas lines, which creates the potential for secondary hazards such as gas leaks and fires. This force, along with standing water, can also damage the structural integrity of buildings, which can cause injuries if issues go unnoticed or unrepaired. While fires have not resulted from flooding within Cook County, history shows that floods can prevent fire departments and protection agencies from successfully combating and sometimes even accessing a fire, allowing it to spread (CDC).

According to FEMA, flooding can also disproportionately impact disadvantaged or challenged communities in the following ways:

- Lack of Resilience Infrastructure: Disadvantaged communities often lack the infrastructure necessary to mitigate flood impacts, such as well-maintained levees, flood barriers, and stormwater management systems. The absence of these protective measures can make these areas more susceptible to flooding and its consequences.
- Inadequate Housing: Residents of disadvantaged communities may be more likely to live in substandard or low-lying areas prone to flooding. Such housing may lack flood-resistant construction and provide inadequate protection during floods.

- Limited Financial Resources: These communities often have fewer financial resources to prepare for, respond to, and recover from flooding. This can lead to difficulty purchasing flood insurance, repairing flood-damaged homes, or accessing emergency resources.
- Health Vulnerabilities: Residents of disadvantaged communities may have higher rates of pre-existing health conditions or limited access to healthcare services. Flooding can exacerbate these health vulnerabilities, especially if contaminated floodwater spreads diseases or disrupts medical care.
- Transportation Challenges: Limited access to reliable transportation can hinder evacuation efforts during flooding events, placing residents in these areas at greater risk. Public transportation options may be insufficient or inaccessible, leaving residents stranded.
- Information Access: Disadvantaged communities may have limited access to timely, accurate information about flood risks and preparedness measures. This lack of information can lead to delayed or inadequate responses to flood warnings.
- Environmental Justice Concerns: Flooding can lead to the release of hazardous materials, contaminating soil and water. Disadvantaged communities are likelier to be located near industrial sites or toxic facilities, exacerbating environmental justice concerns.
- Community Disruption: Flooding can displace residents from their homes, disrupting communities and increasing social and economic hardships. The recovery and rebuilding process may take longer in these areas due to limited resources.

Warning Time: Floods are generally classed as either slow-rise or flash floods. Due to the sequential pattern of meteorological conditions needed to cause serious slow-rise flooding, it is unusual for a slow-rise flood to occur without warning. Slow-rise floods may be preceded by a warning time from several hours, to days, to possibly weeks. Evacuation and sandbagging for a slow-rise flood may lessen flood damage.

Flash floods are more difficult to prepare for, due to the extremely short warning time given, if any. Flash flood warnings usually require evacuation within an hour. However, potential hazard areas can be warned in advance of potential flash flooding danger.

The potential warning time a community has to respond to a flooding threat is a function of the time between the first measurable rainfall and the first occurrence of flooding. The time it takes to recognize a flooding threat reduces the potential warning time that a community has to take actions to protect lives and property. Another element that characterizes a community's flood threat is the length of time floodwaters remain above flood stage.

The Cook County flood threat system consists of a network of precipitation gages throughout the watershed and stream gages at strategic locations that constantly monitor and report stream levels. Stream gage networks and hydrograph models are available on the major streams for Cook County, including the Des Plaines River, Salt Creek, Little Calumet River, Thorn Creek, Plum Creek, and the Chicago River, North Branch. This information is fed into USGS forecasting models that assess the flood threat based on the amount of flow in the stream (measured in cubic feet per second). In addition to this program, data and flood warning information are provided by the National Weather Service.

All of this information is analyzed to evaluate the flood threat and possible evacuation needs. It is monitored by agencies in the planning area such as Cook County DEMRS and Metropolitan Water

Reclamation District. Data is used for the operation of flood control facilities in Cook County. The response to warnings from these systems is also dictated by emergency response plans developed by the County and municipalities.

Secondary Hazards

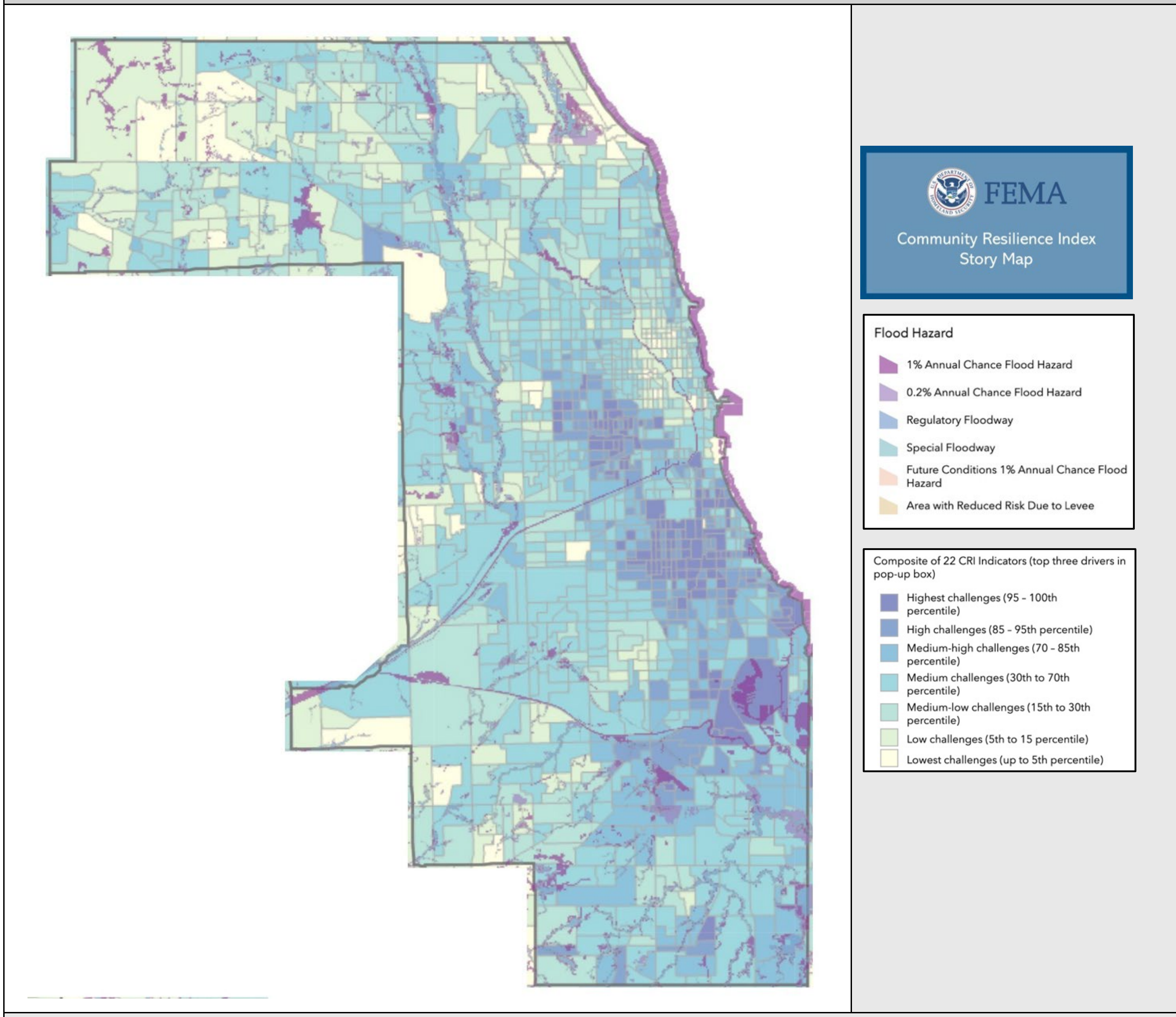
One of the most problematic secondary hazards for flooding is bank erosion, which in some cases can be more harmful than the actual flooding itself. This is especially true in the upper courses of rivers with steep gradients, where floodwaters may pass quickly and without much damage, but scour the banks, edging properties closer to the floodplain or causing them to fall in. This may also happen in areas with soft soils that are prone to erosion. Hazardous materials spills are also a secondary hazard of flooding if storage tanks rupture and spill into streams, rivers, or storm sewers.

The FEMA Community Resilience Challenges Index (CRCI) provides a relative assessment of a community's potential resilience and gives insights into population and community characteristics from which to build emergency operations plans and targeted outreach strategies. The figure below illustrates the impact of flooding on Cook County.

A FEMA Community Resilience Index Story Map of Cook County is shown below.

FEMA COMMUNITY RESILIENCE INDEX STORY MAP

COOK COUNTY, ILLINOIS



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

Property Damage and Critical Infrastructure: A HAZUS analysis was conducted for a 100-year and 500-year flood to examine the exposure and damages of buildings to flooding.

100-year Flood Analysis:
HAZUS estimates that about 2,952 buildings will be at least moderately damaged. This is over 67% of the total number of buildings in the scenario.

TABLE: HAZUS 100-year Expected Building Damage by Occupancy												
Damage Level	**1-10**		**11-20**		**21-30**		**31-40**		**41-50**		**>50**	
Occupancy	**Count**	**%**	**Count**	**%**	**Coun t**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Agriculture	0	0	1	100	0	0	0	0	0	0	0	0
Commercial	297	78	76	20	3	1	4	1	3	1	0	0
Education	4	100	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	122	62	68	35	5	3	1	1	0	0	0	0
Religion	5	83	1	17	0	0	0	0	0	0	0	0
Residential	5,588	67	2,255	27	361	4	110	1	41	0	23	0
Total	**6,016**	**-**	**2,401**	**-**	**369**	**-**	**115**	**-**	**44**	**-**	**23**	**-**

TABLE: HAZUS 100-year Expected Damage to # of Essential Facilities				
	Total	**At Least Moderate**	**At Least Substantial**	**Loss of Use**
Emergency Operations Center	15	0	0	0
Fire Stations	328	0	0	0
Hospitals	82	0	0	0
Police Stations	175	0	0	0
Schools	1,985	0	0	0

TABLE: HAZUS 100-year Building-Related Economic Loss Estimates *(millions of dollars)*						
	Area	**Residential**	**Commercial**	**Industrial**	**Others**	**Total**
Building Loss	Building	598.09	139.11	125.43	37.77	900.38
	Content	369.80	374.82	272.25	239.44	1,256.30
	Inventory	0.00	71.99	32.11	4.88	108.98
	Subtotal	**967.89**	**585.91**	**429.78**	**282.08**	**2,265.66**
Business Interruption	Income	18.32	385.25	8.44	261.38	673.39
	Relocation	278.88	128.90	18.90	118.62	545.30
	Rental Income	217.23	95.46	3.16	8.29	324.13
	Wage	43.09	358.71	14.06	680.79	1,096.64
	Subtotal	**557.51**	**968.33**	**44.55**	**1,069.08**	**2,639.47**
All	**Total**	**1,525.40**	**1,554.24**	**474.34**	**1,351.16**	**4,905.13**

The total economic loss estimated for the flood is $4,905.13 million, representing 11.52% of the total replacement value of the scenario buildings.

The total building-related losses were $2,265.66 million. 54% of the estimated losses were related to business interruption in the region. The residential occupancies made up 31.10% of the total loss.

HAZUS estimates the number of households expected to be displaced due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates that 24,605 households (73,816 people) will be displaced due to the flood. Displacement includes households evacuated from within or very near the inundated area. Of these, 11,729 (out of a total population of 5,272,775) will seek temporary shelter in public shelters.

500-year Flood Analysis:
HAZUS estimates that about 3,890 buildings will be at least moderately damaged. This is over 74% of the total number of buildings in the scenario.

TABLE: HAZUS 500-year Expected Building Damage by Occupancy

Damage Level	1-10		11-20		21-30		31-40		41-50		50>	
Occupancy	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Agriculture	1	100	0	0	0	0	0	0	0	0	0	0
Commercial	434	78	104	19	9	2	3	1	3	1	0	0
Education	8	100	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	151	62	84	34	7	3	2	1	0	0	0	0
Religion	7	88	1	13	0	0	0	0	0	0	0	0
Residential	8,914	71	2,896	23	516	4	173	1	54	0	38	0
Total												

TABLE: HAZUS 500-year Expected Damage to # of Essential Facilities

	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operations Center	15	0	0	0
Fire Stations	328	0	0	0
Hospitals	82	0	0	0
Police Stations	175	0	0	0
Schools	1,985	0	0	0

TABLE: HAZUS 500-year Building-Related Economic Loss Estimates
(millions of dollars)

	Area	Residential	Commercial	Industrial	Others	Total
Building Loss	Building	823.15	190.72	156.38	46.85	1217.10
	Content	493.70	511.86	344.50	268.85	1618.91
	Inventory	0.00	106.38	40.16	6.11	152.65
	Subtotal	**1316.84**	**808.96**	**541.04**	**321.81**	**2,988.65**
Business Interruption	Income	20.15	465.83	9.83	268.25	764.06
	Relocation	367.24	165.97	21.65	130.33	685.19

	Rental Income	286.19	122.68	3.62	8.36	420.85
	Wage	47.41	449.91	16.26	709.35	1222.93
	Subtotal	**720.98**	**1204.39**	**51.36**	**1116.30**	**3093.03**
All	**Total**	**2037.82**	**2013.36**	**592.40**	**1438.10**	**6081.68**

The total economic loss estimated for the flood is $6,081.68 million, representing 13.01% of the full replacement value of the scenario buildings.

The total building-related losses were $2,988.65 million. 51% of the estimated losses were related to business interruption in the region. The residential occupancies made up 33.51% of the total loss.

HAZUS estimates the number of households expected to be displaced due to a flood and the associated potential evacuation. HAZUS also estimates the number of people requiring accommodations in temporary public shelters. The model estimates that 32,237 households (96,710 people) will be displaced due to a flood. Displacement includes households evacuated from within or very near the inundated area. Of these, 14,917 people are expected to seek temporary shelter in public shelters.

Repetitive Loss Properties*:* There are several different definitions of a "repetitive loss property." The current FEMA definition of a repetitive loss property is:

"**Repetitive Loss Structure:** An NFIP-insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978" (FEMA).

Additionally, the definitions of a severe repetitive loss building, and severe repetitive loss property are:

"Severe Repetitive Loss Building: Any building that:

1. Is covered under a Standard Flood Insurance Policy made available under this title.
2. Has incurred flood damage for which:

   a. Four or more separate claim payments have been made under a Standard Flood Insurance Policy issued pursuant to this title, with the amount of each such claim exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or
   b. At least two separate claims payments have been made under a Standard Flood Insurance Policy, with the cumulative amount of such claim payments exceeding the fair market value of the insured building on the day before each loss" (FEMA).

"Severe Repetitive Loss Property: Either a severe repetitive loss building or the contents within a severe repetitive loss building, or both" (FEMA).

FEMA encourages the mitigation of severe repetitive loss and repetitive loss properties through the distribution of mitigation grants, the NFIP's Increased Cost of the Compliance program, and the Community Rating System (CRS) program. Depending on the number of repetitive loss properties within a CRS community, the community may be required to develop a specific plan to determine the causes of the repetitive claims and ways to mitigate the causes of the repetitive claims. At a minimum, each CRS community must conduct an annual outreach project to these properties advising the owners of their location in the regulatory floodplain, property protection measures, and any funding options for property protection and flood insurance.

FEMA offers several programs to support communities in identifying and addressing the root causes of their repetitive losses. One such program is the Community Rating System (CRS).

FEMA-sponsored programs, such as the CRS, require participating communities to identify repetitive loss areas. A repetitive loss area is the portion of a floodplain holding structures that FEMA has identified as meeting the definition of repetitive loss. Identifying repetitive loss areas helps to identify structures that are at risk but are not on FEMA's list of repetitive loss structures because no flood insurance policy was in force at the time of loss. FEMA's list of repetitive loss properties identifies 1,741 such properties in the planning area as of May 2024. The breakdown of the properties by jurisdiction is presented in *Table: Repetitive Loss Properties*. A request was made to receive a more up-to-date breakdown of repetitive loss information, but at the time of publication, this data has not been made available. A review of the data indicated the following key findings:

TABLE: REPETITIVE LOSS PROPERTIES

Jurisdiction	Repetitive Loss Properties	Severe Repetitive Loss Properties	Number of Properties Mitigated
Arlington Heights	3 (2 Single Family, 1 Other Residential)	0	(1 Single Family, 1 Two-Four Family Residence, 1 Other Residential, 1 Business-Nonresidential)
Barrington	2 (2 Single Family)	0	0
Bellwood	240 (231 Single Family, 5 Two-Four Family Residence, 2 Other Residential, 2 Business-Nonresidential)	5 (5 Single Family)	0
Bensenville	12 (7 Single Family, 4 Other Residential, 1 Business-Nonresidential)	4 (1 Single Family, 2 Other Residential, 1 Business-Nonresidential)	0
Berwyn	2 (1 Single Family, 1 Other Residential)	0	0
Bridgeview	1 (1 Business-Nonresidential)	0	0
Broadview	3 (3 Single Family)	1 (1 Single Family)	0

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Brookfield	9 (4 Single Family, 3 Two-Four Family Residence, 2 Business-Nonresidential)	3 (3 Single Family)	0
Buffalo Grove	1 (1 Single Family)	0	0
Burbank	4 (4 Single Family)	0	0
Bur Ridge	0	1 (1 Business-Nonresidential)	0
Calumet City	24 (22 Single Family, 1 Other Residential, 1 Other Nonresidential)	1 (1 Single Family)	0
Chicago Heights	4 (3 Single Family, 1 Two-Four Family Residence)	0	1
Chicago	70 (45 Single Family, 10 Two-Four Family Residence, 14 Other Residential, 1 Other-Nonresidential)	0	1
Cook County	101 (91 Single Family, 5 Two-Four Family Residence, 3 Other Residential, 2 Other-Nonresidential)	12 (11 Single Family, 1 Two-Four Family Residence)	1
Country Club Hills	1 (1 Single Family)	0	0
Crestwood	1 (1 Single Family)	0	0
Deerfield	11 (11 Single Family)	0	0
Des Plaines	223 (195 Single Family, 7 Two-Four Family Residence, 6 Other Residential, 7 Other-Nonresidential, 8 Business-Nonresidential)	17 (12 Single Family, 1 Two-Four Family Residence, 1 Other Residential, 3 Other-Nonresidential)	28

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Dixmoor	4 (4 Single Family)	0	0
Dolton	34 (32 Single Family, 2 Two-Four Family Residence)	2 (2 Single Family)	0
Elgin	20 (19 Single Family, 1 Two-Four Family Residence)	3 (2 Single Family, 1 Other-Nonresidential)	0
Elk Grove Village	5 (5 Other-Nonresidential)	1 (1 Single Family)	0
Elmhurst	17 (15 Single Family, 2 Other-Nonresidential)	0	0
Elmwood Park	15 (13 Single Family, 2 Two-Four Family Residence)	1 (1 Two-Four Family)	0
Flossmoor	10 (10 Single Family)	0	0
Ford Heights	9 (8 Single Family, 1 Two-Four Family Residence)	1 (1 Single Family)	0
Franklin Park	33 (27 Single Family, 6 Other-Nonresidential)	2 (2 Single Family)	0
Glencoe	2 (2 Single Family)	0	0
Glenview	30 (29 Single Family, 1 Other-Nonresidential)	2 (1 Single Family, 1 Other Residential)	7
Glenwood	3 (3 Single Family)	0	0
Hanover Park	1 (1 Single Family)	1 (1 Single Family)	0
Harvey	33 (27 Single Family, 5 Two-Four Family Residence, 1 Other Residential)	0	0
Hazel Crest	2 (2 Single Family)	0	0

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Hinsdale	8 (2 Single Family, 6 Other Residential)	2 (2 Other Residential)	0
Homewood	6 (6 Single Family)	0	0
Inverness	3 (3 Single Family)	0	0
Justice	2 (1 Single Family, 1 Two-Four Family Residence)	0	0
LaGrange	7 (7 Single Family)	0	0
Lansing	15 (14 Single Family, 1 Other-Nonresidential)	0	0
Lincolnwood	2 (2 Single Family)	0	0
Lynwood	1 (1 Single Family)	0	0
Lyons	12 (8 Single Family, 4 Two-Four Family Residence)	4 (2 Single Family, 2 Two-Four Family Residence)	0
Markham	v	1 (1 Other Nonresidential)	0
Matteson	2 (2 Single Family)	0	0
Maywood	8 (8 Single Family)	0	0
Melrose Park	63 (49 Single Family, 8 Two-Four Family Residence, 3 Other Residential, 2 Business-Nonresidential, 1 Other-Nonresidential)	5 (4 Single Family, 1 Other Nonresidential)	0
Midlothian	6 (6 Single Family)	0	0
Morton Grove	3 (3 Single Family)	0	0
Mount Prospect	5 (5 Single Family)	3 (3 Single Family)	1

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Niles	16 (12 Single Family, 3 Other Residential, 1 Other-Nonresidential)	2 (2 Other Residential)	0
North Riverside	1 (1 Single Family)	1 (1 Business-Nonresidential)	0
Northbrook	7 (6 Single Family, 1 Two-Four Family Residence)	1 (1 Two-Four Family Residence)	1
Northfield	21 (15 Single Family, 6 Two-Four Family Residence)	0	1
Northlake	38 (35 Single Family, 2 Two-Four Family Residence, 1 Other Residential)	5 (5 Single Family)	0
Oak Brook	1 (1 Other-Nonresidential)	3 (3 Single Family)	1
Oak Forest	11 (11 Single Family)	1 (1 Single Family)	0
Oak Lawn	6 (6 Single Family)	1 (1 Single Family)	0
Olympia Fields	0	0	0
Orland Park	5 (5 Single Family)	1 (1 Single Family)	0
Palatine	3 (3 Single Family)	0	0
Palos Hills	3 (2 Single Family, 1 Other-Nonresidential)	0	0
Palos Park	2 (2 Single Family)	0	0
Park Ridge	17 (16 Single Family, 1 Other-Nonresidential)	0	0
Posen	4 (2 Single Family, 1 Two-Four Family Residence, 1 Business-Nonresidential)	0	0

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Prospect Heights	5 (4 Single Family, 1 Other Residential)	0	0
Richton Park	1 (1 Single Family)	0	0
River Grove	26 (23 Single Family, 2 Two-Four Family Residence, 1 Business-Nonresidential)	4 (2 Single Family, 1 Two-Four Family Residence, 1 Business Nonresidential)	0
Riverside	32 (26 Single Family, 3 Two-Four Family Residence, 3 Other-Residential)	3 (2 Single Family, 1 Other Residential)	0
Robbins	5 (5 Single Family)	0	0
Rolling Meadows	2 (2 Single Family)	0	0
Rosemont	3 (1 Single Family, 2 Other Residential)	0	0
Schaumburg	2 (1 Single Family, 1 Other Residential)	1 (1 Single Family)	0
Schiller Park	19 (19 Single Family)	6 (5 Single Family, 1 Two-Four Family Residence)	0
Skokie	23 (22 Single Family, 1 Two-Four Family Residence)	2 (2 Other-Residential)	0
South Holland	22 (21 Single Family, 1 Other Nonresidential)	1 (1 Single Family)	1
Steger	1 (1 Single Family)	0	0
Stone Park	73 (54 Single Family, 17 Two-Four Family Residence, 2 Business-Nonresidential)	23 (16 Single Family, 6 Two-Four Family Residence, 1 Other-Residential)	0
Summit	1 (1 Single Family)	0	0

TABLE: REPETITIVE LOSS PROPERTIES			
Jurisdiction	**Repetitive Loss Properties**	**Severe Repetitive Loss Properties**	**Number of Properties Mitigated**
Westchester	89 (88 Single Family, 1 Other-Nonresidential)	1 (1 Single Family)	0
Western Springs	1 (1 Single Family)	0	0
Wheeling	17 (16 Single Family, 1 Other-Nonresidential)	1 (1 Single Family)	2
Wilmette	17 (15 Single Family, 2 Other Residential)	0	0
Winnetka	25 (25 Single Family)	0	0
Total	**1612**	**129**	45

5.4.8 Critical Facilities and Infrastructure

Flooding can also disproportionately damage property and critical infrastructure within disadvantaged or challenged communities. Here are some of the ways in which flooding can affect these communities more severely:

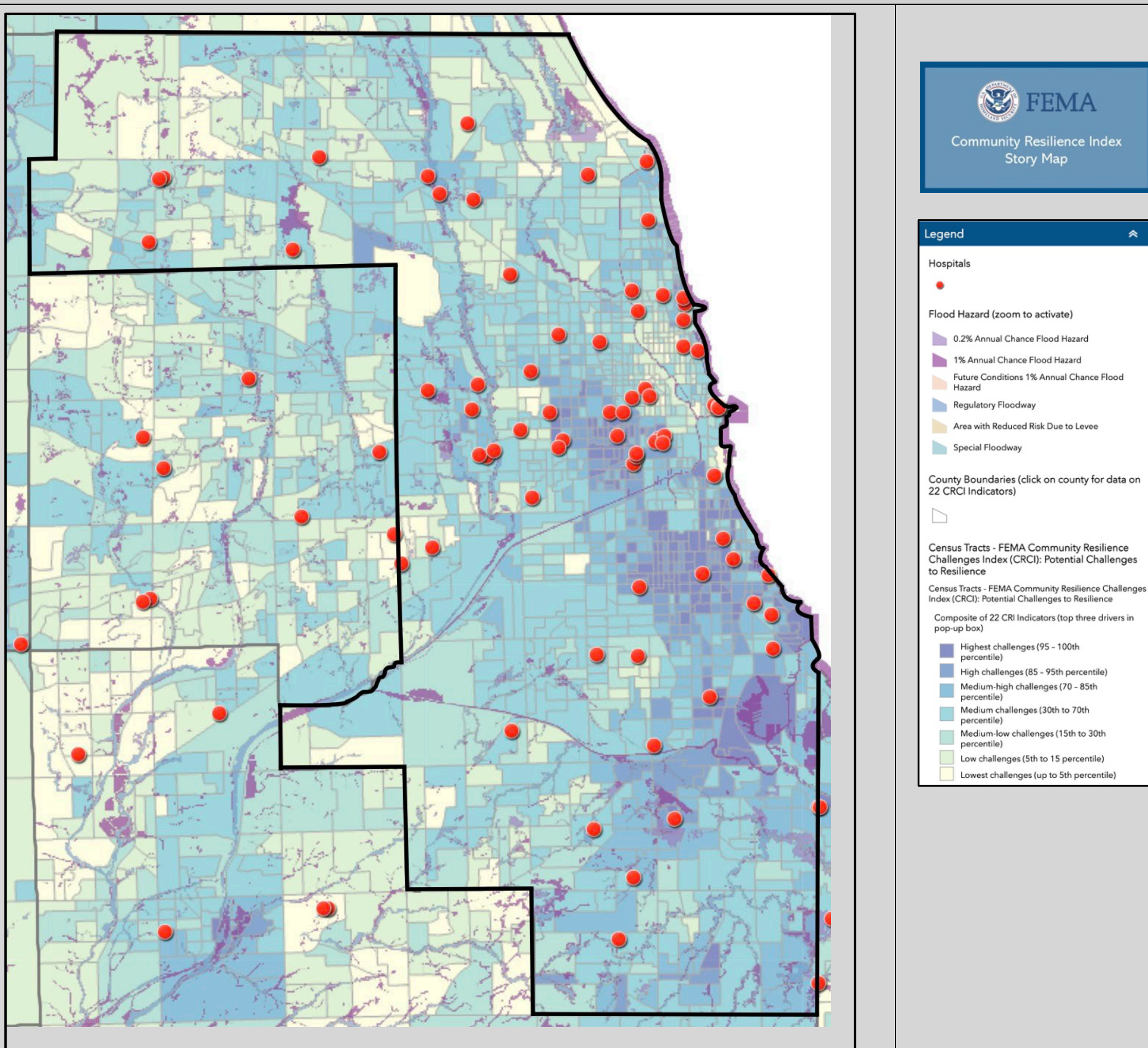
- Housing Vulnerability: Disadvantaged communities often have a higher percentage of residents living in substandard or poorly constructed housing. These homes are more susceptible to flood damage, leading to significant property losses and displacement of residents.
- Limited Insurance Coverage: Residents in disadvantaged communities may be less likely to have flood insurance, either due to affordability issues or lack of awareness. This leaves property owners financially vulnerable when flooding occurs, resulting in a heavier burden of property damage.
- Inadequate Infrastructure: Critical infrastructure, such as roads, bridges, sewage systems, and utilities, may be subpar or outdated in disadvantaged areas. Flooding can damage or disrupt these systems, impeding emergency response efforts and hindering recovery.
- Healthcare Facilities: These communities may have limited access to healthcare facilities and services. Flooding can damage or inundate healthcare facilities, making it challenging for residents to access medical care during and after a flood event.
- Schools and Education: Flood damage to schools can disrupt education for children in these communities. It may take longer for schools to reopen, affecting students' academic progress and overall well-being.
- Economic Impact: Flooding can devastate local economies, including small businesses, which are often the backbone of disadvantaged communities. Loss of income and job displacement can have long-lasting economic consequences.

- Transportation Disruptions: Inadequate transportation infrastructure can be overwhelmed by floodwaters, making it difficult for residents to evacuate or access emergency services. This can also impede the delivery of essential supplies and aid.

The following figures also illustrate critical facilities in Cook County according to FEMA.

FIGURE: HOSPITALS IN COOK COUNTY, ILLINOIS

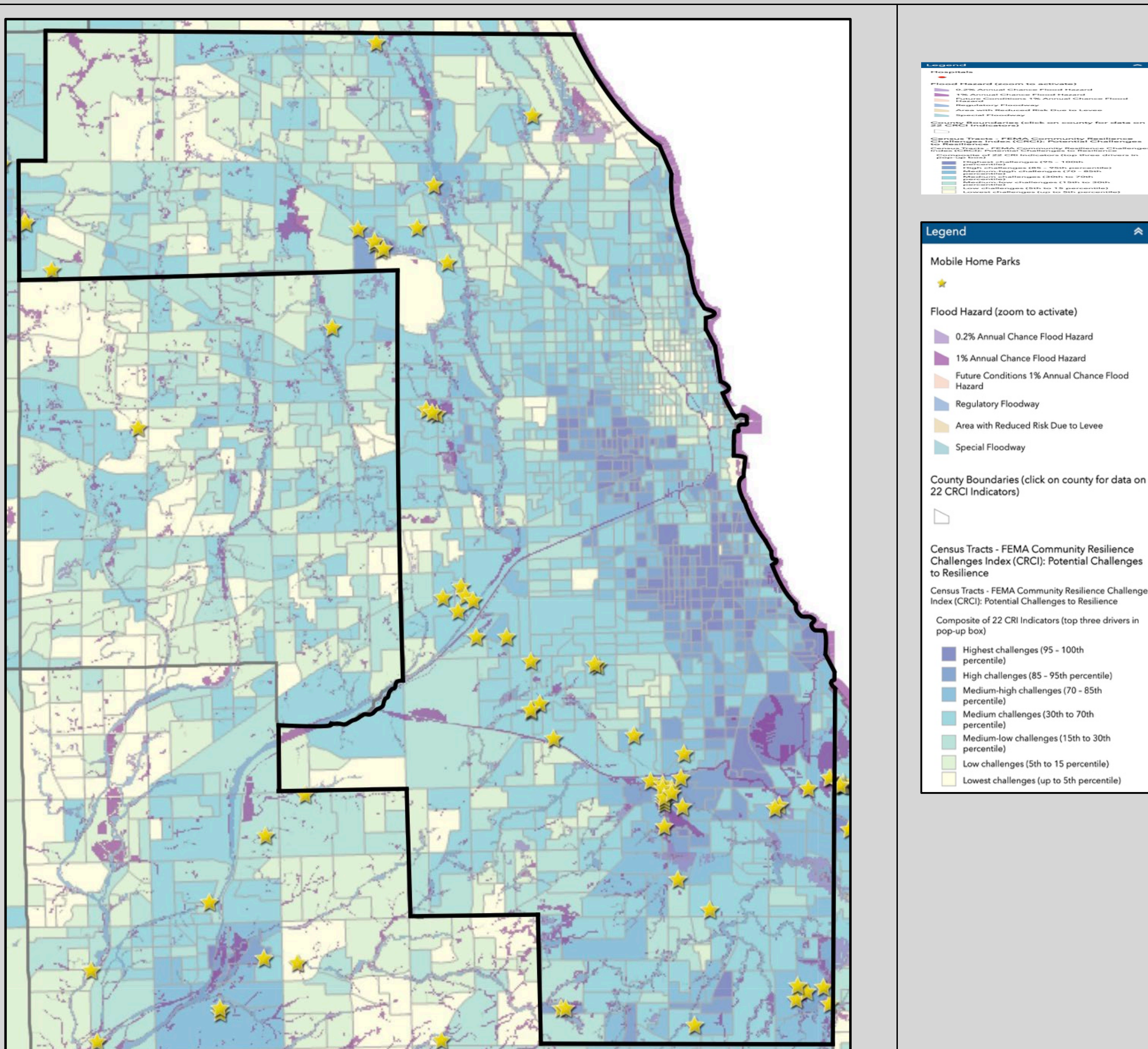
FEMA COMMUNITY RESILIENCE INDEX STORY MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

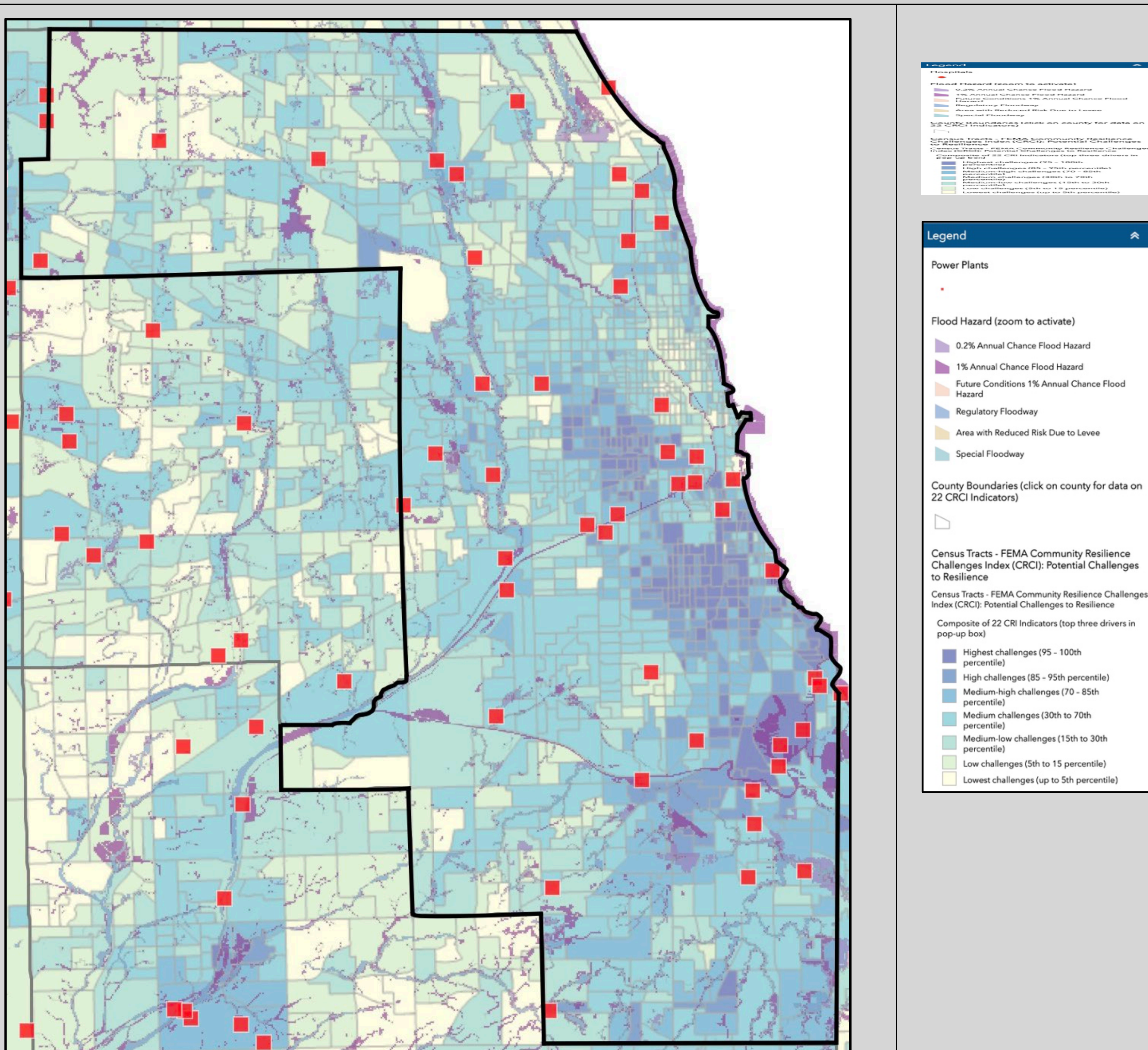
FIGURE: MANUFACTURED HOMES IN COOK COUNTY, ILLINOIS

FEMA COMMUNITY RESILIENCE INDEX STORY MAP



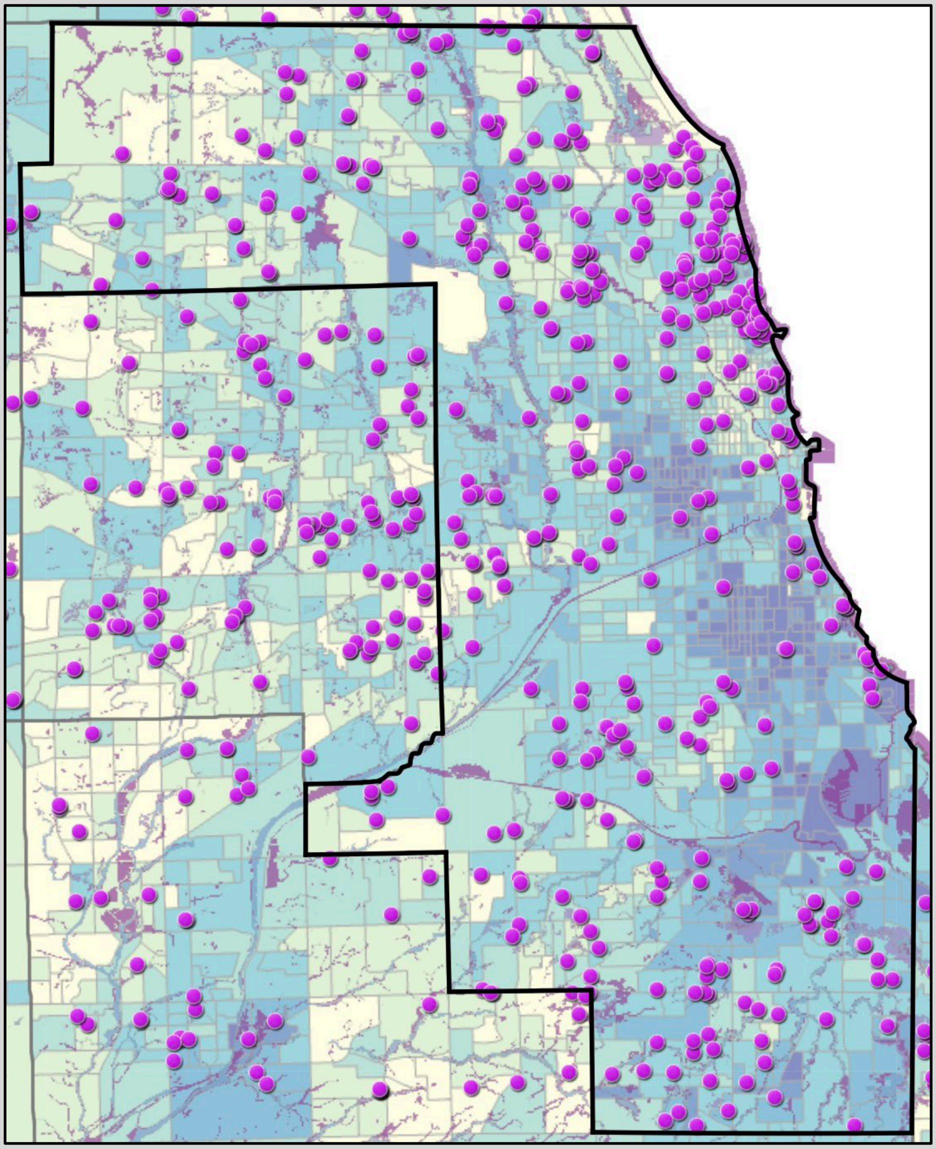
Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

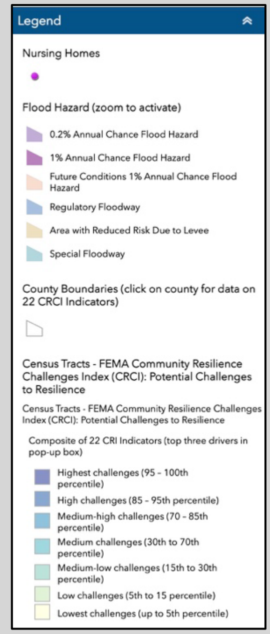
FIGURE: POWER PLANTS IN COOK COUNTY, ILLINOIS
FEMA COMMUNITY RESILIENCE INDEX STORY MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

FIGURE: NURSING HOMES IN COOK COUNTY, ILLINOIS
FEMA COMMUNITY RESILIENCE INDEX STORY MAP





Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

Economy: The economic impacts of flooding in Cook County include significant property damage and substantial financial losses. Urban areas within the county are highly susceptible to flooding, which can lead to costly disruptions. The severity of these impacts is influenced by various factors, including the density of the population and infrastructure. Effective management and mitigation strategies are crucial to reducing the economic burden of flooding events in this region (Urban Flooding Impacts in Cook County).

Another economic impact includes local area property values and insurance rates. Properties located in flood-prone areas may decline in value, and insurance rates may increase as the risk of flooding increases. This can make it more difficult for homeowners and businesses to secure loans and other forms of financing.

Changes in Development and Impact of Future Development: The risks associated with flooding are directly related to the population and infrastructure located within the boundaries of the riverine floodplains. Development should be limited in these potential impact areas. Infrastructure improvements should also consider potential impacts. Existing floodplain and construction regulations are in place to help reduce the impacts of flooding. Stormwater infrastructure should also be looked at to determine the impact of flash flooding. This infrastructure does not always take into effect the growth of a community. Increasing impervious surfaces (e.g., concrete parking lots) may cause increased stormwater runoff during short rain events.

Effects of Climate Change on Severity of Impacts: According to NOAA, climate change impacts flooding by increasing the frequency and intensity of extreme weather events. This results in more severe and frequent flooding, affecting ecosystems, communities, and infrastructure. Climate change also leads to sea level rise and more intense precipitation events, further exacerbating the risk and impact of floods (NOAA).

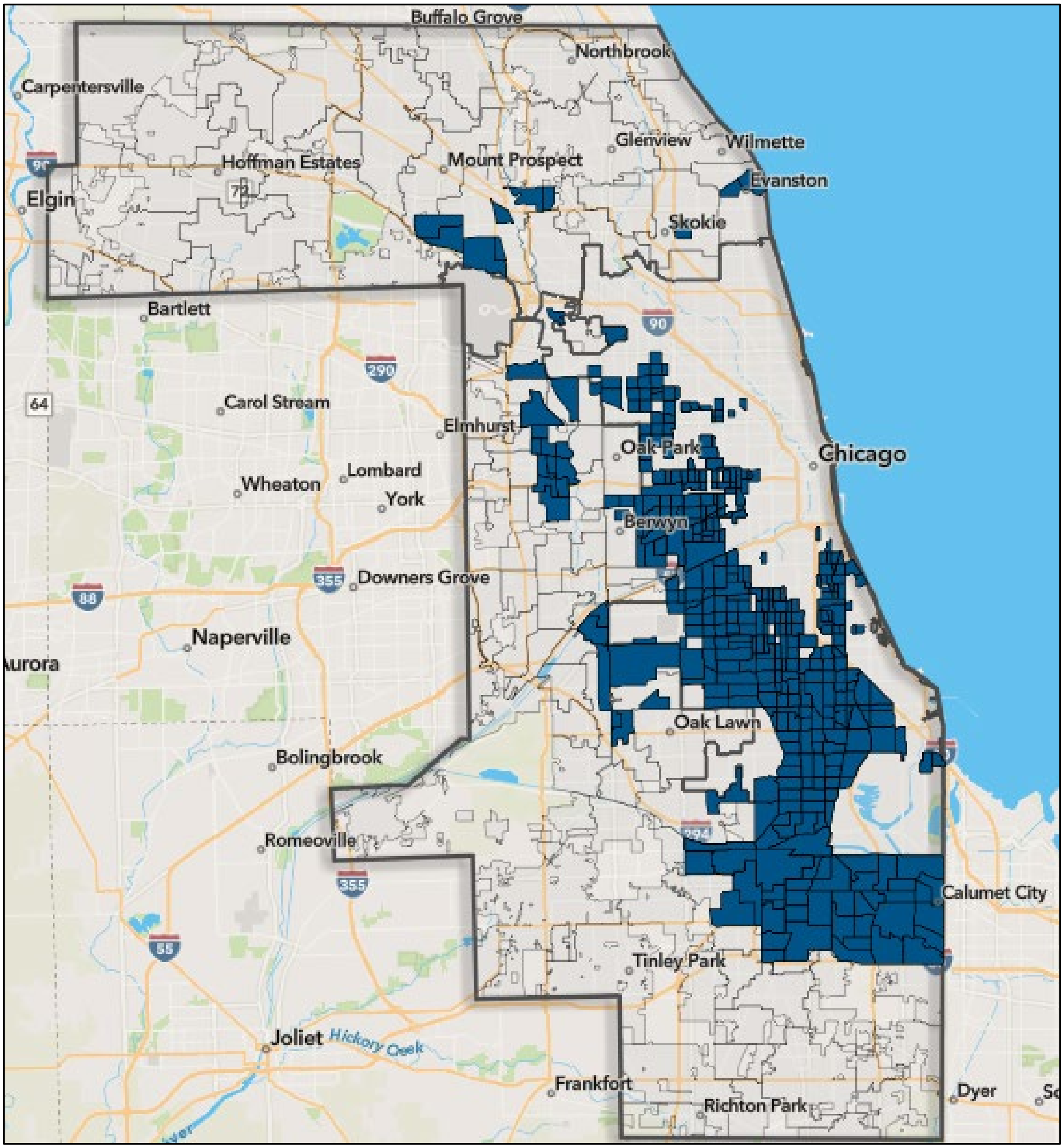
Heavy precipitation leads to riverine flooding and flash floods as the ground fails to absorb the high volume of precipitation that falls in a short period. Increasing annual precipitation contributes to sustained flooding (Neighborhoods At Risk).

TABLE: 25-YEAR PRECIPITATION PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience a **10% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.8" increase** (from 36.9" to 37.7") in average annual precipitation.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience a **1% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.1" decrease** (from 37.3" to 37.2") in average annual precipitation.
Source: Neighborhoods at Risk: (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40“**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation (Wet Days)	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Maximum Period of Consecutive Wet Days	**10 days**	**10 days**	**10 days**	**10 days**	**11 days**	**10 days**	**10 days**
	10-12	9-12	9-12	9-12	9-12	9-12	9-13
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**4 days**	**5 days**	**5 days**	**5 days**	**5 days**	**5 days**	**6 days**
	3-5	4-6	4-6	4-6	4-7	4-7	5-9
Annual Days With Total Precipitation > 2 inches	**0 days**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**
	0-1	0-1	0-1	0-1	0-1	0-1	0-2
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**5 days**	**6 days**	**6 days**	**7 days**	**7 days**	**7 days**	**8 days**
	5-7	5-8	5-8	6-8	6-9	6-9	7-10
*Days With Maximum Temperature Below 32*F*	**41 days**	**30 days**	**28 days**	**25 days**	**22 days**	**21 days**	**12 days**
	37-44	17-40	21-37	13-36	11-32	10-32	2-24
Source: Climate Mapping for Resilience and Adaptation (2024)							

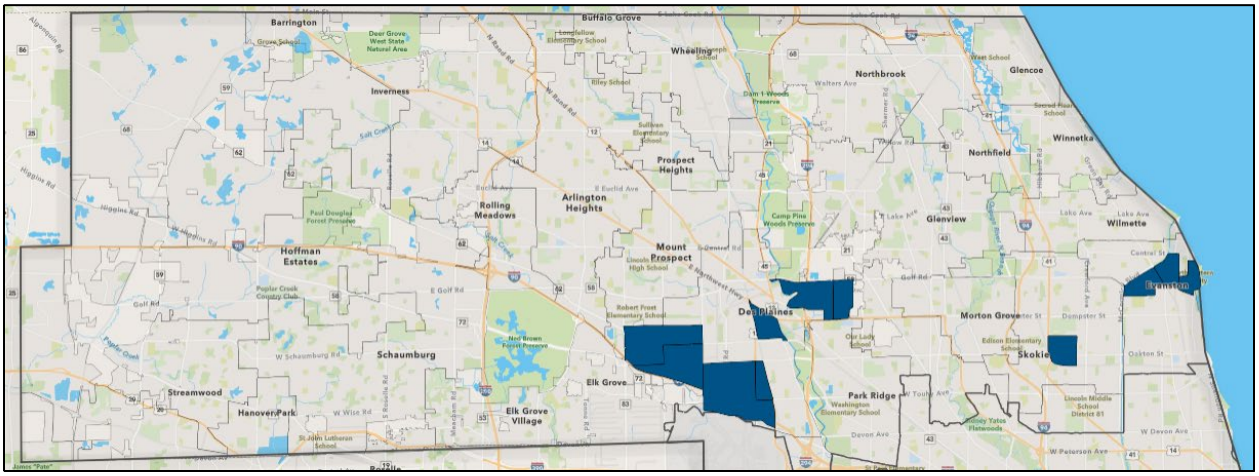
The figure below highlights the highest risk census tracts for flood mitigation and flood risk intervention and associated challenges that communities face from climate change. The resulting data examines where census tracts with the highest flood susceptibility overlap with one of six key variables from the CDC social vulnerability index, which were selected as those most likely to influence a population's vulnerability to extreme or prolonged flood events caused by climate change.

Climate Change Impact: High Flood Risk Areas for Cook County



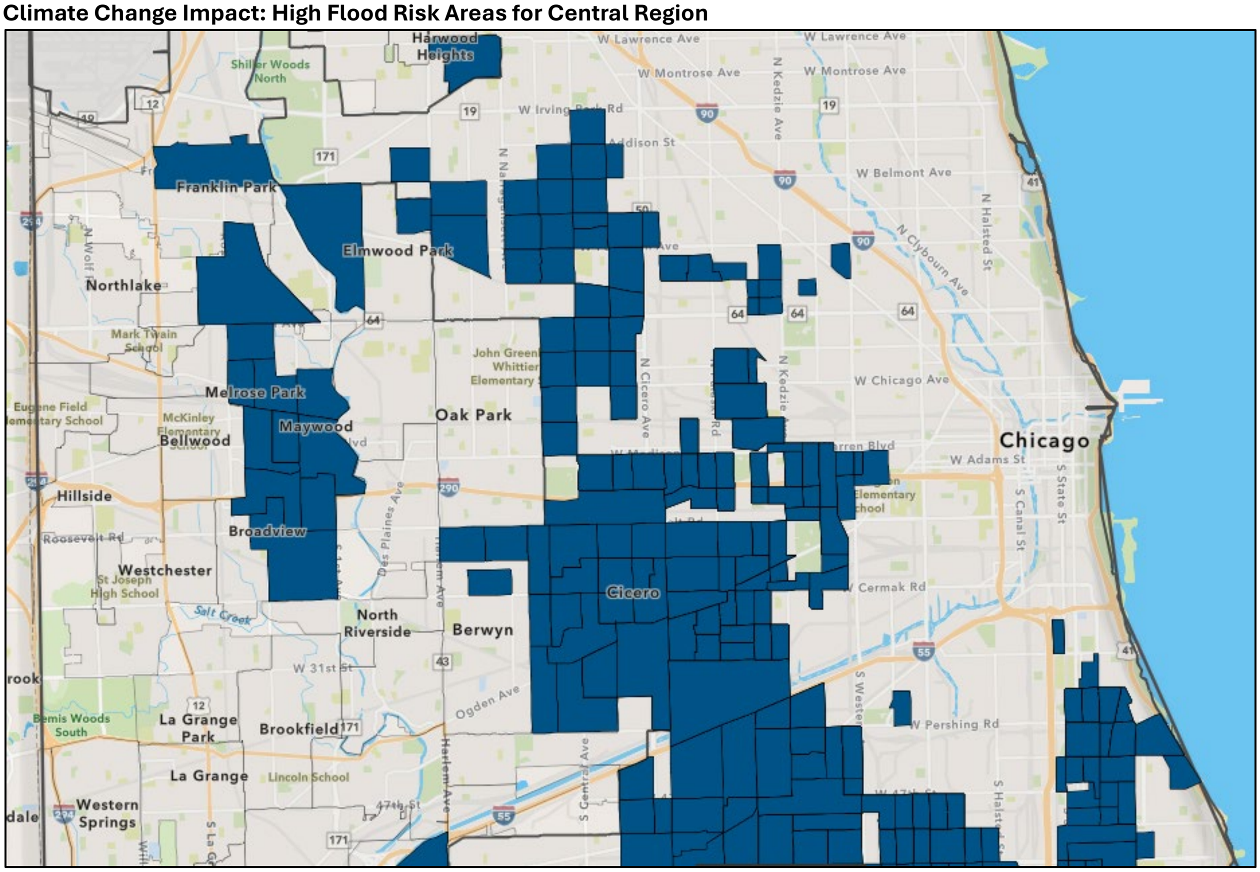
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Flood Risk Areas for North Region



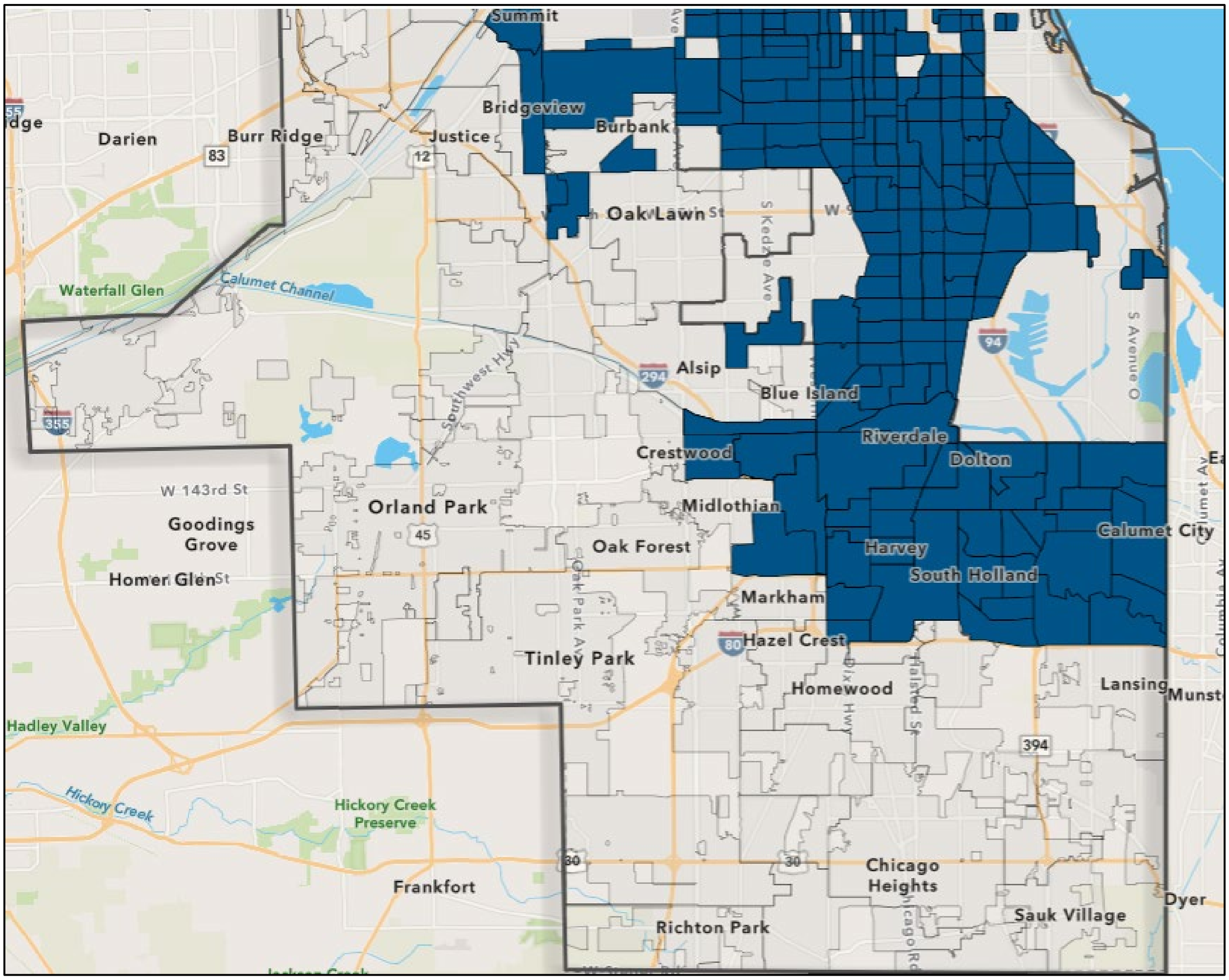
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Flood Risk Areas for Central Region



Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Flood Risk Areas for South Region



5.4.9 FEMA NRI Expected Annual Loss Estimates

TABLE: COOK COUNTY, IL EXPECTED ANNUAL LOSS TABLE FOR RIVERINE FLOODING EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
5.9 events per year	0.12	$1,382,439	$26,195,222	$223,649	$27,801,310	Relatively High	99.0
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

TABLE: COOK COUNTY, IL EXPECTED ANNUAL LOSS TABLE FOR COSTAL FLOODING EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0 events per year	0.0	$438	$45,638	N/A	$46,076	Very Low	44.4
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

Note: *The FEMA National Risk Index does not assess Urban/Flash/Stormwater Flooding.*

5.4.10 FEMA Hazard-Specific Risk

TABLE: COOK COUNTY, IL FEMA HAZARD SPECIFIC RISK INDEX – RIVERINE FLOODING				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$27,801,310	Very High	Relatively High	$34,280,232	99.2
*FEMA Hazard-Type **Risk Index Scores** are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type **Social Vulnerability Score** represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type **Community Resilience Score** represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

TABLE: COOK COUNTY, IL FEMA HAZARD SPECIFIC RISK INDEX – COSTAL FLOODING				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$46,076	Very High	Relatively High	$59,601	44.3
*FEMA Hazard-Type **Risk Index Scores** are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type **Social Vulnerability Score** represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type **Community Resilience Score** represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

Note: *The FEMA National Risk Index does not assess Urban/Flash/Stormwater Flooding*

5.4.11 FEMA NRI Exposure Values

TABLE: COOK COUNTY, IL EXPOSURE VALUE TABLE FOR RIVERINE FLOODING EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Riverine Flooding	$751,804,205,845	$12,301,603,335	$739,498,813,627	63,749.90	$3,788,883

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).*
Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

TABLE: COOK COUNTY, IL EXPOSURE VALUE TABLE FOR COSTAL FLOODING EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Coastal Flooding	$19,767,211,679	$233,718,088	$19,533,493,591	1,683.92	N/A

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).*
Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

5.5 Severe Weather

5.5.1 Hazard Description

In this *Plan*, Severe Weather is considered to be extreme heat, lightning, hailstorms, dense fog, and strong wind.

Extreme Heat: A period of excessively high temperatures that significantly exceeds the long-term average for a particular location. This definition takes into account the local climate and expected temperature ranges for a given region. Extreme heat events are typically characterized by several consecutive days of high temperatures that can pose significant health and safety risks. NOAA often uses specific temperature thresholds, such as heat indices or heat advisories, to define extreme heat conditions. During such events, there is an increased likelihood of heat-related illnesses, including heat exhaustion and heatstroke, as well as potential stress on critical infrastructure, power grids, and water resources. Extreme heat events are becoming more frequent and severe due to climate change, making them a growing concern for public health and safety.

Lightning: A giant spark of electricity in the atmosphere or between the atmosphere and the ground. It occurs when the differences in electrical charges become too great, and the air's insulating capacity breaks down, leading to a rapid discharge of electricity. This discharge is what we see as lightning during thunderstorms, which is typically associated with heavy rainfall and sometimes other weather phenomena like hail. Lightning is an essential component that defines a thunderstorm.

Hailstorms: A form of precipitation that occurs when thunderstorm updrafts carry raindrops upward into extremely cold areas of the atmosphere, where they freeze into ice balls. Hail can damage aircraft, homes, and cars and kill livestock and people. The table below illustrates potential hail sizes and describes physical items for comparison.

TABLE: NATIONAL WEATHER SERVICE HAIL DESCRIPTIONS	
DESCRIPTION	**DIAMETER (INCHES)**
Pea	0.25”
Marble or Mothball	0.5”
Penny or Dime	0.75”
Nickel	0.88”
Quarter	1.0”
Half Dollar	1.25”
Walnut or Ping Pong Ball	1.5”
Golf Ball	1.75”
Hen’s Egg	2.0”
Tennis Ball	2.5”
Baseball	2.75”
Teacup	3.0”
Grapefruit	4.0”
Softball	4.5”
SOURCE: National Weather Service (2024)	

Hailstones grow by colliding with supercooled water drops. Supercooled water will freeze in contact with ice crystals, frozen raindrops, dust, or some other nuclei. Thunderstorms with a strong updraft keep lifting the hailstones to the top of the cloud, where they encounter more supercooled water and continue to grow. The hail falls when the thunderstorm's updraft can no longer support the weight of the ice, or the updraft weakens. Subsequently, the stronger the updraft, the more significant the hailstone can grow before falling to the ground.

"Hailstones can have layers like an onion if they travel up and down in an updraft, or they can have few or no layers if they are "balanced" in an updraft. Counting the layers, one can tell how many times a hailstone traveled to the top of the storm. In addition, hailstones can begin to melt and re-freeze together – forming large and very irregularly shaped hail.

Dense Fog: A weather condition that reduces visibility to less than ¼ mile. This can severely impact transportation and safety, making driving, boating, and flying conditions dangerous due to the significantly reduced visibility. Dense fog advisories are often issued to alert the public and mitigate risks associated with such low visibility conditions.

Strong Wind: Defined as wind gusts that are significant enough to cause damage. When measured, NOAA often categorizes winds as "strong" when they are between 39 mph and 57 mph. These are non-tornadic winds, referred to as "straight-line" winds, which can originate from thunderstorms and are powerful enough to cause substantial damage to structures and natural environments. This type of wind is distinguished from more severe gusts that can exceed these speeds, which are categorized separately under severe weather criteria.

5.5.2 Hazard Location

Severe weather could occur anywhere in Cook County, Illinois.

5.5.3 Hazard Extent/Intensity

Extreme Heat: When an extreme heat event occurs, the National Weather Service (NWS) may issue an excessive heat warning, an excessive heat watch, a heat advisory, or a heat outlook. The NWS defines these as the following:

- Excessive Heat Warning – Take Action. An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least two days and nighttime air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you may become seriously ill or die (NOAA).
- Excessive Heat Watches—Be Prepared. Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain (NOAA).
- Heat Advisory – Take Action. A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least two days, and nighttime air temperatures will not drop below 75°; however, these criteria vary across the

country, especially for areas that are not used to dangerous heat conditions. Take precautions to avoid heat illness. If you don't take precautions, you may become seriously ill or even die (NOAA).

- Excessive Heat Outlooks are issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event (NOAA).

NWS Heat Index — Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Source: (NOAA)

Lightning: The extent and intensity of lightning is measured using the NWS Lightning Activity Level (LAL). The LAL is a scale that describes the frequency of lightning strikes in a specific area. The Lightning Activity Level scale below describes the extent of lightning activity.

Lightning Activity Level (LAL)	
Is a scale which describes lightning activity. Values are labeled 1-6:	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater then 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Hailstorms: The TORRO Hailstorm Intensity Scale was developed by Jonathan Webb to measure and categorize hailstorms. It extends from H0 (hard hail, no damage) to H10 (super hailstorm, extensive structural damage, risk of severe/fatal injuries) with its increments of intensity or damage potential related to hail size (distribution and maximum), texture, numbers, fall speed, speed of storm translation, and strength of the accompanying wind. The scale could be modified depending on factors such as building materials and types (e.g., whether roofing tiles are predominantly slate, shingle, or concrete).

The TORRO Hailstorm Intensity Scale is shown below.

Scale	Intensity category	Typical hail diameter (mm)*	Probable kinetic energy J m^{-2}	Typical damage impacts
H0	Hard hail	5	0-20	No damage
H1	Potentially damaging	5-15	>20	Slight general damage to plants, crops
H2	Significant	10-20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75		Severe roof damage, risk of serious injuries
H8	Destructive	60-90		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Hail is considered severe when reaching a size of 0.75 inches in diameter or greater. The NWS Severe Hail Threat Level scale outlines different hail sizes with a description for comparison.

The NWS also defines the local threat of severe hail for specified areas based on the likelihood that severe hail will occur combined with the anticipated size or diameter of the largest hailstones illustrated in the chart below.

Severe Hail Threat Level	Threat Level Descriptions
Extreme	**"An Extreme Threat to Life and Property from Severe Hail."** Within 12 miles of a location, a moderate likelihood or greater (16% probability or greater) of severe hail, with storms capable of baseball to softball sized stones. *See diameter description below.* AND/OR...a high likelihood or greater (26% probability or greater) of severe hail, with storms capable of golf ball to baseball sized hail stones. *See diameter description below.* AND/OR...a very high likelihood (36% or greater) of severe hail, with storms capable of quarter to golf ball sized hail stones. *See diameter description below.*
High	**"A High Threat to Life and Property from Severe Hail."** Within 12 miles of a location, a low likelihood (6% to 15% probability) of severe hail, with storms capable of baseball to softball sized stones. *See diameter description below.* AND/OR...a moderate likelihood (16% to 25% probability) of very large hail (golf ball to baseball sized hail stones). *See diameter description below.* AND/OR...a high likelihood (26% to 35% probability) of large hail (quarter to golf ball sized hail stones). *See diameter description below.*
Moderate	**"A Moderate Threat to Life and Property from Severe Hail."** Within 12 miles of a location, a very low likelihood (2% to 5% probability) of severe hail, with storms capable of baseball to softball sized stones. *See description below.* AND/OR...a low likelihood (6% to 15% probability) of severe hail, with storms capable of golf ball to baseball sized hail stones. *See description below.* AND/OR...a moderate likelihood (16% to 25% probability) of severe hail, with storms capable of quarter to golf ball sized hail stones. *See diameter description below.*
Low	**"A Low Threat to Life and Property from Severe Hail."** Within 12 miles of a location, a very low likelihood (2% to 5% probability) of severe hail, with storms capable of golf ball to baseball sized hail stones. *See diameter description below.* AND/OR...a low likelihood (6% to 15% probability) of severe hail, with storms capable of quarter to golf ball sized hail stones. *See diameter description below.*
Very Low	**" A Very Low Threat to Life and Property from Severe Hail."** Within 12 miles of a location, a very low likelihood (2% to 5% probability) of severe hail, with storms capable of nickel to golf ball sized hail stones. *See diameter description below.* AND/OR...a low likelihood or greater (6% or greater) of small hail (less than 1 inch). *See diameter description below.*
Non-Threatening	**" No Discernable Threat to Life and Property from Severe Hail."** Within 12 miles of a location, environmental conditions do not support the occurrence of severe hail.

Note: To be considered severe, hail stones must be at least 1 inch in diameter.

Dense Fog: The intensity and extent of dense fog are generally measured by visibility. Dense fog specifically refers to conditions where visibility is reduced to 1/4 mile (0.4 kilometers) or less. This measurement of visibility determines the severity of the fog, with lower visibility indicating denser fog, which can significantly impact transportation and safety due to reduced sight distances.

The Dense Fog/Smoke Hazard chart below depicts the threat of dense fog or smoke for an impacted area. It is largely based on coverage and visibility.

Dense Fog/Smoke Threat Level	Threat Level Descriptions
Extreme	**"An Extreme Threat to Life and Property from Dense Fog or Smoke."** Widespread very dense fog or smoke with the predominate visibility near zero and the coverage greater than 55% within a defined area, persisting for at least 1 hour.
High	**"A High Threat to Life and Property from Dense Fog or Smoke."** Areas of very dense fog or smoke with the visibility near zero and the coverage 25 - 54% within a defined area, persisting for at least 1 hour.
Moderate	**"A Moderate Threat to Life and Property from Dense Fog or Smoke."** Widespread dense fog or smoke with the predominate visibility 1/8 - 1/4 mile and the coverage greater than 55% within a defined area, persisting for at least 1 hour...OR...patchy very dense fog or smoke with the visibility near zero and the coverage less than 25% within a defined area, persisting for at least 1 hour. Surrounding fog may or may not be present.
Low	**"A Low Threat to Life and Property from Dense Fog or Smoke."** Areas of dense fog or smoke with the visibility 1/8 - 1/4 mile and the coverage 25 - 54% within a defined area, persisting for at least 1 hour.
Very Low	**" A Very Low Threat to Life and Property from Dense Fog or Smoke."** Patchy dense fog or smoke with the visibility 1/8 - 1/4 mile and the coverage less than 25% within a defined area, persisting for at least 1 hour.
Non-Threatening	**" No Discernable Threat to Life and Property from Dense Fog or Smoke."** Visibility greater than 1/4 mile and non-threatening. Fog/smoke may still be present, but not dense.

Note: Fog or smoke becomes hazardous when it is considered "dense" and obscures visibility to 1/4 mile or less. This results in decreased response time for operators of motor vehicles, especially at higher speeds. Motorists should adjust driving speed accordingly, while using low-beam headlights.

Source: National Weather Service (2024)

Strong Winds: The NOAA Beaufort Wind Scale (shown in the table below) is a system used to estimate wind speeds based on observed sea conditions or the effects of the wind on land features. The scale ranges from 0 to 12, with each number corresponding to a specific range of wind speeds and associated sea or land conditions.

TABLE: NOAA BEAUFORT WIND SCALE				
ESTIMATING WIND SPEED AND SEA STATE WITH VISUAL CLUES				
Beaufort Number	Wind Description	Wind Speed (Knots)	Wave Height	Visual Clues
0	Calm	0 kts	0 feet	Sea is like a mirror. Smoke rises vertically.
1	Light Air	1-3 kts	< 1/2	Ripples with the appearance of scales are formed, but without foam crests. Smoke drifts from funnel.

TABLE: NOAA BEAUFORT WIND SCALE				
ESTIMATING WIND SPEED AND SEA STATE WITH VISUAL CLUES				
Beaufort Number	**Wind Description**	**Wind Speed (Knots)**	**Wave Height**	**Visual Clues**
2	Light breeze	4-6 kts	1/2 ft (max 1)	Small wavelets, still short but more pronounced, crests have glassy appearance and do not break. Wind felt on face. Smoke rises at about 80 degrees.
3	Gentle Breeze	7-10 kts	2 ft (max 3)	Large wavelets and crests begin to break. Foam of glassy appearance. Perhaps scattered white horses (white caps). Wind extends light flags and pennants. Smoke rises at about 70 deg.
4	Moderate Breeze	11-16 kts	3 ft (max 5)	Small waves, becoming longer. Fairly frequent white horses (white caps). Wind raises dust and loose paper on the deck. Smoke rises at about 50 deg. No noticeable sound in the rigging. Slack halyards curve and sway. Heavy flag flaps limply.
5	Fresh Breeze	17-21 kts	6 ft (max 8)	Moderate waves, taking more pronounced long form. Many white horses (white caps) are formed (chance of some spray). Wind felt strongly on face. Smoke rises at about 30 deg. Slack halyards whip while bending continuously to leeward. Taut halyards maintain slightly bent position. Low whistle in the rigging. Heavy flag doesn't extend but flaps over entire length.
6	Strong Breeze	22-27 kts	9 ft (max 12)	Large waves begin to form. White foam crests are more extensive everywhere (probably some spray). Wind stings face in temperatures below 35 deg F (2C). Slight effort in maintaining balance against wind. Smoke rises at about 15 deg. Both slack and taut halyards whip slightly in bent position. Low moaning, rather than whistle, in the rigging. Heavy flag extends and flaps more vigorously.
7	Near Gale	28-33 kts	13 ft (max 19)	The sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of wind. It is necessary to lean slightly into the wind to maintain balance. Smoke rises at about 5 to 10 deg. Higher pitched moaning and whistling heard from rigging. Halyards still whip slightly. Heavy flag extends fully and flaps only at the end. Oilskins and loose clothing inflate and pull against the body.
8	Gale	34-40 kts	18 ft (max 25)	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind. Head pushed back by the force of the wind if allowed to relax. Oilskins and loose clothing inflate and pull strongly. Halyards rigidly bent. Loud whistle from rigging. Heavy flag straight out and whipping.
9	Strong Gale	41-47 kts	23 ft (max 32)	High waves. Dense streaks of foam along the direction of wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.
10	Storm	48-55 kts	29 ft (max 41)	Very high waves with long overhanging crests. The resulting foam, in great patches, is blown in dense streaks along the direction of the wind. On the whole, the sea takes on a whitish appearance. Tumbling of the sea becomes heavy and shock-like. Visibility affected.
11	Violent Storm	56-63 kts	37 ft (max 52)	Exceptionally high waves (small and medium-sized ships might be for time lost to view behind the waves). The sea is completely covered with long white patches of foam lying in the direction of

TABLE: NOAA BEAUFORT WIND SCALE				
ESTIMATING WIND SPEED AND SEA STATE WITH VISUAL CLUES				
Beaufort Number	**Wind Description**	**Wind Speed (Knots)**	**Wave Height**	**Visual Clues**
				the wind. Everywhere, the edges of the wave crests are blown into froth. Visibility greatly affected.
12	Hurricane	64+ kts	45+ ft	The air is filled with foam and spray. The sea is completely white with driving spray. Visibility is seriously affected.
Source: National Weather Service (2024)				

TABLE: COOK COUNTY JURISDICTIONAL EXTENT				
Hazard Type	**Affected Jurisdictions**	**Extent (based on historical events)**		**Comments**
		Minimum	**Maximum**	
Severe Weather (Lightning, Hail, Fog, High Winds)	County-wide	No Property Damage Recorded	$100,000	Multiple severe weather events have occurred throughout Cook County (2018-2023), ranging from 1.00 in. Hail to 70kts. Thunderstorm wind. A notable storm in 2018 caused $100,000 worth of damage to the affected area.

- **Extreme Heat:** Excessive heat events typically occur in the summer months. The extent of Extreme Heat Events varies in terms of the Heat Index and duration of the event.
- **Extreme Cold**: Extreme cold events typically occur in the winter months. The extent of extreme cold varies in terms of the Wind Chill Temperature and duration of the event.
- **High Winds:** The extent of the hazard varies in terms of the extent of the path and the wind speed. Extent is addressed at the county level due to the nature of the hazard.
- **Thunderstorms, Lightning, and Hail:** The extent of the historical thunderstorms varies in terms of the size of the storm, the wind speed, and the size of hailstones. Thunderstorms can occur at any location within the county.
- **Precipitation:** Precipitation (rainfall) occurs year-round. The extent of rainfall varies depending on seasonal patterns such as dryer or wetter months of the year.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT – Extreme Temperatures				
Hazard Type	**Affected Jurisdictions**	**Extent (based on historical events)**		**Comments**
		Minimum	**Maximum**	
Extreme Heat & Extreme Cold	Arlington Heights	-3°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 17°F to 84°F and is rarely below -3°F or above 93°F.
Extreme Heat & Extreme Cold	Alsip	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course

				of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Barrington	-7°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *14°F* to *85°F* and is rarely below *-7°F* or above *93°F*.
Extreme Heat & Extreme Cold	Bedford Park			Not Available
Extreme Heat & Extreme Cold	Bellwood	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Berkeley	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Berwyn	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Blue Island	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Bridgeview	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *85°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Broadview	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Brookfield	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from

				19°F to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Buffalo Grove	-3°F	93°F	the summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-3°F* or above *93°F*.
Extreme Heat & Extreme Cold	Burbank	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Burnham	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Calumet City	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Calumet Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Chicago Heights	-1°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Chicago Ridge	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Cicero	3°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *3°F* or above *92°F*.

Extreme Heat & Extreme Cold	City of Chicago	5°F	91°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *22°F* to *83°F* and is rarely below *5°F* or above *91°F*.
Extreme Heat & Extreme Cold	Country Club Hills	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Countryside	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Crestwood	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Des Plaines	-1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Dixmoor	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Dolton	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	East Hazel Crest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Elgin	-4°F	91°F	The summers are long, warm, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *16°F* to *84°F* and is rarely below *-4°F* or above *91°F*.
Extreme Heat & Extreme Cold	Elk Grove Village	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Elmwood Park	2°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Evanston	4°F	90°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *4°F* or above *90°F*.
Extreme Heat & Extreme Cold	Evergreen Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Flossmoor	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Ford Heights	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.
Extreme Heat & Extreme Cold	Forest Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Forest View			Not Available
Extreme Heat & Extreme Cold	Franklin Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Glencoe	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.
Extreme Heat & Extreme Cold	Glenview	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Glenwood	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Golf			Not Available
Extreme Heat & Extreme Cold	Hanover Park	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *84°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Harvey	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Harwood Heights	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.
Extreme Heat & Extreme Cold	Hazel Crest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hickory Hills	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from

				19°F to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Hillside	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hodgkins	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hoffman Estates	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Hometown	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Homewood	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Indian Head Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Inverness	-5°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *15°F* to *85°F* and is rarely below *-5°F* or above *93°F*.
Extreme Heat & Extreme Cold	Justice	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.

Extreme Heat & Extreme Cold	Kenilworth	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	LaGrange			Not Available
Extreme Heat & Extreme Cold	LaGrange Park			Not Available
Extreme Heat & Extreme Cold	Lansing	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Lemont	-1°F	92°F	The summers are long, warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Lincolnwood	3°F	90°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *3°F* or above *90°F*.
Extreme Heat & Extreme Cold	Lynwood	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.
Extreme Heat & Extreme Cold	Lyons	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Markham	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Matteson	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Maywood	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	McCook			Not Available
Extreme Heat & Extreme Cold	Melrose Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Merrionette Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Midlothian	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Morton Grove	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.
Extreme Heat & Extreme Cold	Mount Prospect	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	MWRD			Not Available
Extreme Heat & Extreme Cold	Niles	1°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *1°F* or above *91°F*.

Extreme Heat & Extreme Cold	Norridge	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	North Riverside	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northbrook	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northfield	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northlake	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Oak Forest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Oak Lawn	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Oak Park	3°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *3°F* or above *92°F*.
Extreme Heat & Extreme Cold	Olympia Fields	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Orland Hills	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Orland Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palatine	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Palos Heights	0°F	°92F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palos Hills	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palos Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Park Forest	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Park Ridge	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.

Extreme Heat & Extreme Cold	Phoenix	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Posen	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Prospect Heights	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Richton Park	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	River Forest	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	River Grove	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Riverdale	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Riverside	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Robbins	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Rolling Meadows	-3°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *85°F* and is rarely below *-3°F* or above *93°F*.
Extreme Heat & Extreme Cold	Rosemont	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Sauk Village	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.
Extreme Heat & Extreme Cold	Schaumburg	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Schiller Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Skokie	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *83°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	South Barrington	-6°F	94°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *15°F* to *85°F* and is rarely below *-6°F* or above *94°F*.
Extreme Heat & Extreme Cold	South Chicago Heights	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.

Extreme Heat & Extreme Cold	South Holland	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Steger	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Stickney	2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Stone Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Streamwood	-4°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *84°F* and is rarely below *-4°F* or above *92°F*.
Extreme Heat & Extreme Cold	Summit	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *85°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Thornton	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Tinley Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	University Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Unincorporated Cook County			Not Available
Extreme Heat & Extreme Cold	Westchester	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Western Springs	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Wheeling	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Willow Springs	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Wilmette	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *83°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	Winnetka	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *82°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	Worth	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Cook County Forest Preserve District (New for 2024)			Not Available

Source: https://weatherspark.com/

TABLE: COOK COUNTY JURISDICTIONAL EXTENT – Rain Events				
Hazard Type	**Affected Jurisdictions**	**Extent (based on historical events)**		**Comments**
		Minimum	**Maximum**	
Precipitation (Rainfall)	Arlington Heights	0.8 inches	3.6 inches	Rain falls throughout the year in Arlington Heights. The month with the most rain in Arlington Heights is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Arlington Heights is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Alsip	1.0 inches.	3.6 inches.	Rain falls throughout the year in Alsip. The month with the most rain in Alsip is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Alsip is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Barrington	0.7 inches.	3.7 inches.	Rain falls throughout the year in Barrington. The month with the most rain in Barrington is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Barrington is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Bedford Park			Not Available
Precipitation (Rainfall)	Bellwood	0.9 inches.	3.6 inches.	Rain falls throughout the year in Bellwood. The month with the most rain in Bellwood is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Bellwood is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Berkeley	0.9 inches.	3.6 inches.	Rain falls throughout the year in Berkeley. The month with the most rain in Berkeley is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Berkeley is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Berwyn	0.9 inches.	3.5 inches.	Rain falls throughout the year in Berwyn. The month with the most rain in Berwyn is *June*, with an average rainfall of *3.5 inches*.

				The month with the least rain in Berwyn is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Blue Island	1.0 inches.	3.6 inches.	Rain falls throughout the year in Blue Island. The month with the most rain in Blue Island is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Blue Island is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Bridgeview	0.9 inches.	3.6 inches.	Rain falls throughout the year in Bridgeview. The month with the most rain in Bridgeview is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Bridgeview is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Broadview	0.9 inches.	3.6 inches.	Rain falls throughout the year in Broadview. The month with the most rain in Broadview is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Broadview is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Brookfield	0.9 inches.	3.6 inches.	Rain falls throughout the year in Brookfield. The month with the most rain in Brookfield is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Brookfield is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Buffalo Grove	0.8 inches.	3.6 inches.	Rain falls throughout the year in Buffalo Grove. The month with the most rain in Buffalo Grove is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Buffalo Grove is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Burbank	0.9 inches.	3.6 inches.	Rain falls throughout the year in Burbank. The month with the most rain in Burbank is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Burbank is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	Burnham	1.0 inches.	3.6 inches.	Rain falls throughout the year in Burnham. The month with the most rain in Burnham is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Burnham is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Calumet City	1.0 inches.	3.6 inches.	Rain falls throughout the year in Calumet City. The month with the most rain in Calumet City is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Calumet City is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Calumet Park	1.0 inches.	3.6 inches.	Rain falls throughout the year in Calumet Park. The month with the most rain in Calumet Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Calumet Park is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Chicago Heights	1.0 inches.	3.7 inches.	Rain falls throughout the year in Chicago Heights. The month with the most rain in Chicago Heights is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Chicago Heights is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Chicago Ridge	0.9 inches.	3.6 inches.	Rain falls throughout the year in Chicago Ridge. The month with the most rain in Chicago Ridge is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Chicago Ridge is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Cicero	0.9 inches.	3.5 inches.	Rain falls throughout the year in Cicero. The month with the most rain in Cicero is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Cicero is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	City of Chicago	1.0 inches.	3.5 inches.	Rain falls throughout the year in Chicago. The month with the most rain

				in Chicago is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Chicago is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Country Club Hills	1.0 inches.	3.7 inches.	Rain falls throughout the year in Country Club Hills. The month with the most rain in Country Club Hills is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Country Club Hills is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Countryside	0.9 inches.	3.6 inches.	Rain falls throughout the year in Countryside. The month with the most rain in Countryside is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Countryside is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Crestwood	1.0 inches.	3.6 inches.	Rain falls throughout the year in Crestwood. The month with the most rain in Crestwood is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Crestwood is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Des Plaines	0.8 inches.	3.6 inches.	Rain falls throughout the year in Des Plaines. The month with the most rain in Des Plaines is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Des Plaines is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Dixmoor	1.0 inches.	3.6 inches.	Rain falls throughout the year in Dixmoor. The month with the most rain in Dixmoor is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Dixmoor is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Dolton	1.0 inches.	3.6 inches.	Rain falls throughout the year in Dolton. The month with the most rain in Dolton is *June*, with an average rainfall of *3.6 inches*.

				The month with the least rain in Dolton is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	East Hazel Crest	1.0 inches.	3.6 inches.	Rain falls throughout the year in East Hazel Crest. The month with the most rain in East Hazel Crest is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in East Hazel Crest is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Elgin	0.7 inches.	3.7 inches.	Rain falls throughout the year in Elgin. The month with the most rain in Elgin is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Elgin is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Elk Grove Village	0.8 inches.	3.6 inches.	Rain falls throughout the year in Elk Grove Village. The month with the most rain in Elk Grove Village is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Elk Grove Village is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Elmwood Park	0.9 inches.	3.5 inches.	Rain falls throughout the year in Elmwood Park. The month with the most rain in Elmwood Park is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Elmwood Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Evanston	0.9 inches.	3.5 inches.	Rain falls throughout the year in Evanston. The month with the most rain in Evanston is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Evanston is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Evergreen Park	1.0 inches.	3.6 inches.	Rain falls throughout the year in Evergreen Park. The month with the most rain in Evergreen Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Evergreen Park is *January*, with an average rainfall of *1.0 inches*.

Precipitation (Rainfall)	Flossmoor	1.0 inches.	3.7 inches.	Rain falls throughout the year in Flossmoor. The month with the most rain in Flossmoor is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Flossmoor is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Ford Heights	1.0 inches.	3.7 inches.	Rain falls throughout the year in Ford Heights. The month with the most rain in Ford Heights is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Ford Heights is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Forest Park	0.9 inches.	3.5 inches.	Rain falls throughout the year in Forest Park. The month with the most rain in Forest Park is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Forest Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Forest View			Not Applicable
Precipitation (Rainfall)	Franklin Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Franklin Park. The month with the most rain in Franklin Park is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Franklin Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Glencoe	0.9 inches.	3.5 inches.	Rain falls throughout the year in Glencoe. The month with the most rain in Glencoe is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Glencoe is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Glenview	0.9 inches.	3.5 inches.	Rain falls throughout the year in Glenview. The month with the most rain in Glenview is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Glenview is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	Glenwood	1.0 inches.	3.7 inches.	Rain falls throughout the year in Glenwood. The month with the most rain in Glenwood is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Glenwood is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Golf			Not Available
Precipitation (Rainfall)	Hanover Park	0.8 inches.	3.7 inches.	Rain falls throughout the year in Hanover Park. The month with the most rain in Hanover Park is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Hanover Park is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Harvey	1.0 inches.	3.6 inches.	Rain falls throughout the year in Harvey. The month with the most rain in Harvey is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Harvey is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Harwood Heights	0.9 inches.	3.6 inches.	Rain falls throughout the year in Harwood Heights. The month with the most rain in Harwood Heights is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Harwood Heights is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Hazel Crest	1.0 inches.	3.7 inches.	Rain falls throughout the year in Hazel Crest. The month with the most rain in Hazel Crest is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Hazel Crest is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Hickory Hills	0.9 inches.	3.6 inches.	Rain falls throughout the year in Hickory Hills. The month with the most rain in Hickory Hills is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Hickory Hills is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	Hillside	0.9 inches.	3.6 inches.	Rain falls throughout the year in Hillside. The month with the most rain in Hillside is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Hillside is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Hodgkins	0.9 inches.	3.6 inches.	Rain falls throughout the year in Hodgkins. The month with the most rain in Hodgkins is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Hodgkins is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Hoffman Estates	0.7 inches.	3.6 inches.	Rain falls throughout the year in Hoffman Estates. The month with the most rain in Hoffman Estates is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Hoffman Estates is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Hometown	1.0 inches.	I3.6nches.	Rain falls throughout the year in Hometown. The month with the most rain in Hometown is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Hometown is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Homewood	1.0 inches.	3.7 inches.	Rain falls throughout the year in Homewood. The month with the most rain in Homewood is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Homewood is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Indian Head Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Indian Head Park. The month with the most rain in Indian Head Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Indian Head Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Inverness	0.7 inches.	3.7 inches.	Rain falls throughout the year in Inverness. The month with the most rain

				in Inverness is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Inverness is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Justice	0.9 inches.	3.6 inches.	Rain falls throughout the year in Justice. The month with the most rain in Justice is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Justice is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Kenilworth	0.9 inches.	3.5 inches.	Rain falls throughout the year in Kenilworth. The month with the most rain in Kenilworth is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Kenilworth is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	LaGrange			Not Available.
Precipitation (Rainfall)	LaGrange Park			Not Available.
Precipitation (Rainfall)	Lansing	1.0 inches.	3.6 inches.	Rain falls throughout the year in Lansing. The month with the most rain in Lansing is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Lansing is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Lemont	0.9 inches.	3.7 inches.	Rain falls throughout the year in Lemont. The month with the most rain in Lemont is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Lemont is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Lincolnwood	0.9 inches.	3.6 inches.	Rain falls throughout the year in Lincolnwood. The month with the most rain in Lincolnwood is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Lincolnwood is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	Lynwood	1.0 inches.	3.7 inches.	Rain falls throughout the year in Lynwood. The month with the most rain in Lynwood is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Lynwood is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Lyons	0.9 inches.	3.6 inches.	Rain falls throughout the year in Lyons. The month with the most rain in Lyons is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Lyons is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Markham	1.0 inches.	3.6 inches.	Rain falls throughout the year in Markham. The month with the most rain in Markham is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Markham is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Matteson	1.0 inches.	3.7 inches.	Rain falls throughout the year in Matteson. The month with the most rain in Matteson is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Matteson is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Maywood	0.9 inches.	3.5 inches.	Rain falls throughout the year in Maywood. The month with the most rain in Maywood is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Maywood is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	McCook			Not Available.
Precipitation (Rainfall)	Melrose Park	0.9 inches.	3.5 inches.	Rain falls throughout the year in Melrose Park. The month with the most rain in Melrose Park is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Melrose Park is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	Merrionette Park	1.0 inches.	3.6 inches.	Rain falls throughout the year in Merrionette Park. The month with the most rain in Merrionette Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Merrionette Park is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Midlothian	1.0 inches.	3.6 inches.	Rain falls throughout the year in Midlothian. The month with the most rain in Midlothian is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Midlothian is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Morton Grove	0.9 inches.	3.5 inches.	Rain falls throughout the year in Morton Grove. The month with the most rain in Morton Grove is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Morton Grove is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Mount Prospect	0.8 inches.	3.6 inches.	Rain falls throughout the year in Mount Prospect. The month with the most rain in Mount Prospect is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Mount Prospect is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	MWRD			Not Available.
Precipitation (Rainfall)	Niles	0.9 inches.	3.9 inches.	Rain falls throughout the year in Niles. The month with the most rain in Niles is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Niles is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Norridge	0.9 inches.	3.6 inches.	Rain falls throughout the year in Norridge. The month with the most rain in Norridge is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Norridge is *January*, with an average rainfall of *0.9 inches*.

Precipitation (Rainfall)	North Riverside	0.9 inches.	3.5 inches.	Rain falls throughout the year in North Riverside. The month with the most rain in North Riverside is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in North Riverside is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Northbrook	0.8 inches.	3.5 inches.	Rain falls throughout the year in Northbrook. The month with the most rain in Northbrook is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Northbrook is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Northfield	0.9 inches.	3.5 inches.	Rain falls throughout the year in Northfield. The month with the most rain in Northfield is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Northfield is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Northlake	0.9 inches.	3.6 inches.	Rain falls throughout the year in Northlake. The month with the most rain in Northlake is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Northlake is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Oak Forest	1.0 inches.	3.6 inches.	Rain falls throughout the year in Oak Forest. The month with the most rain in Oak Forest is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Oak Forest is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Oak Lawn	0.9 inches.	3.6 inches.	Rain falls throughout the year in Oak Lawn. The month with the most rain in Oak Lawn is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Oak Lawn is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Oak Park	0.9 inches.	3.5 inches.	Rain falls throughout the year in Oak Park. The month with the most rain in

				Oak Park is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Oak Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Olympia Fields	1.0 inches.	3.6 inches.	Rain falls throughout the year in Olympia Fields. The month with the most rain in Olympia Fields is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Olympia Fields is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Orland Hills	0.9 inches.	3.7 inches.	Rain falls throughout the year in Orland Hills. The month with the most rain in Orland Hills is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Orland Hills is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Orland Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Orland Park. The month with the most rain in Orland Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Orland Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Palatine	0.7 inches.	3.6 inches.	Rain falls throughout the year in Palatine. The month with the most rain in Palatine is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Palatine is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Palos Heights	0.9 inches.	3.6 inches.	Rain falls throughout the year in Palos Heights. The month with the most rain in Palos Heights is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Palos Heights is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Palos Hills	0.9 inches.	3.6 inches.	Rain falls throughout the year in Palos Hills. The month with the most rain in Palos Hills is *June*, with an average rainfall of *3.6 inches*.

				The month with the least rain in Palos Hills is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Palos Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Palos Park. The month with the most rain in Palos Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Palos Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Park Forest	0.9 inches.	3.5 inches.	Rain falls throughout the year in Forest Park. The month with the most rain in Forest Park is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Forest Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Park Ridge	0.9 inches.	3.6 inches.	Rain falls throughout the year in Park Ridge. The month with the most rain in Park Ridge is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Park Ridge is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Phoenix	1.0 inches.	3.6 inches.	Rain falls throughout the year in Phoenix. The month with the most rain in Phoenix is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Phoenix is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Posen	1.0 inches.	3.6 inches.	Rain falls throughout the year in Posen. The month with the most rain in Posen is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Posen is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Prospect Heights	3.6 inches.	0.8 inches.	Rain falls throughout the year in Prospect Heights. The month with the most rain in Prospect Heights is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Prospect Heights is *January*, with an average rainfall of *0.8 inches*.

Precipitation (Rainfall)	Richton Park	1.0 inches.	3.7 inches.	Rain falls throughout the year in Richton Park. The month with the most rain in Richton Park is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Richton Park is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	River Forest	0.9 inches.	3.5 inches.	Rain falls throughout the year in River Forest. The month with the most rain in River Forest is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in River Forest is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	River Grove	0.9 inches.	3.5 inches.	Rain falls throughout the year in River Grove. The month with the most rain in River Grove is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in River Grove is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Riverdale	1.0 inches.	3.6 inches.	Rain falls throughout the year in Riverdale. The month with the most rain in Riverdale is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Riverdale is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Riverside	0.9 inches.	3.6 inches.	Rain falls throughout the year in Riverside. The month with the most rain in Riverside is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Riverside is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Robbins	1.0 inches.	3.6 inches.	Rain falls throughout the year in Robbins. The month with the most rain in Robbins is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Robbins is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Rolling Meadows	0.8 inches.	3.6 inches.	Rain falls throughout the year in Rolling Meadows. The month with the most rain

				in Rolling Meadows is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Rolling Meadows is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Rosemont	0.9 inches.	3.6 inches.	Rain falls throughout the year in Rosemont. The month with the most rain in Rosemont is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Rosemont is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Sauk Village	1.0 inches.	3.7 inches.	Rain falls throughout the year in Sauk Village. The month with the most rain in Sauk Village is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Sauk Village is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Schaumburg	0.7 inches.	3.7 inches.	Rain falls throughout the year in Schaumburg. The month with the most rain in Schaumburg is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Schaumburg is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Schiller Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Schiller Park. The month with the most rain in Schiller Park is *August*, with an average rainfall of *3.6 inches*. The month with the least rain in Schiller Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Skokie	0.9 inches.	3.5 inches.	Rain falls throughout the year in Skokie. The month with the most rain in Skokie is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Skokie is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	South Barrington	0.7 inches.	3.7 inches.	Rain falls throughout the year in South Barrington. The month with the most rain in South Barrington is *June*, with an average rainfall of *3.7 inches*.

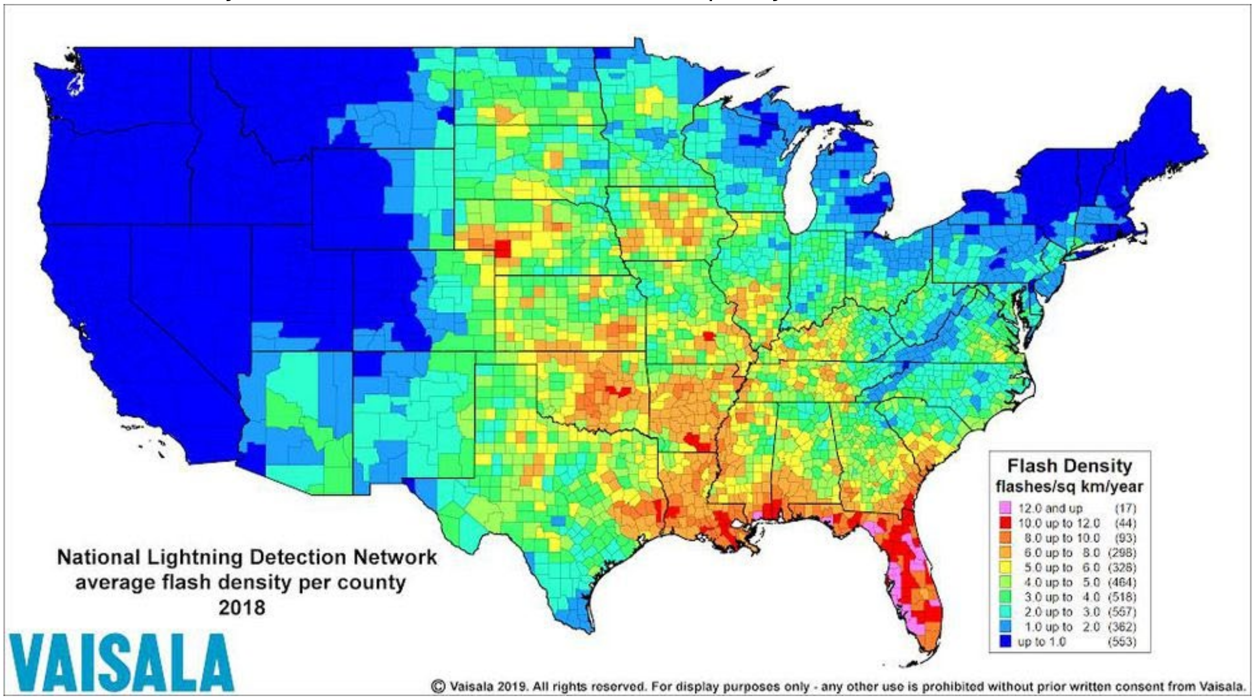
				The month with the least rain in South Barrington is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	South Chicago Heights	1.0 inches.	3.7 inches.	Rain falls throughout the year in South Chicago Heights. The month with the most rain in South Chicago Heights is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in South Chicago Heights is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	South Holland	1.0 inches.	3.6 inches.	Rain falls throughout the year in South Holland. The month with the most rain in South Holland is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in South Holland is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Steger	1.0 inches.	3.7 inches.	Rain falls throughout the year in Steger. The month with the most rain in Steger is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Steger is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Stickney	0.9 inches.	3.5 inches.	Rain falls throughout the year in Stickney. The month with the most rain in Stickney is *June*, with an average rainfall of *3.5 inches*. The month with the least rain in Stickney is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Stone Park	0.9 inches.	3.6 inches.	Rain falls throughout the year in Stone Park. The month with the most rain in Stone Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Stone Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Streamwood	0.7 inches.	3.7 inches.	Rain falls throughout the year in Streamwood. The month with the most rain in Streamwood is *June*, with an average rainfall of *3.7 inches*.

				The month with the least rain in Streamwood is *January*, with an average rainfall of *0.7 inches*.
Precipitation (Rainfall)	Summit	0.9 inches.	3.6 inches.	Rain falls throughout the year in Summit. The month with the most rain in Summit is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Summit is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Thornton	1.0 inches.	3.6 inches.	Rain falls throughout the year in Thornton. The month with the most rain in Thornton is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Thornton is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Tinley Park	0.9 inches.	3.7 inches.	Rain falls throughout the year in Tinley Park. The month with the most rain in Tinley Park is *June*, with an average rainfall of *3.7 inches*. The month with the least rain in Tinley Park is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	University Park	1.0 inches.	3.6 inches.	Rain falls throughout the year in University Park. The month with the most rain in University Park is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in University Park is *January*, with an average rainfall of *1.0 inches*.
Precipitation (Rainfall)	Unincorporated Cook County			Not Available.
Precipitation (Rainfall)	Westchester	0.9 inches.	3.6 inches.	Rain falls throughout the year in Westchester. The month with the most rain in Westchester is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Westchester is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Western Springs	0.9 inches.	3.6 inches.	Rain falls throughout the year in Western Springs. The month with the most rain in Western Springs is *June*, with an average rainfall of *3.6 inches*.

				The month with the least rain in Western Springs is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Wheeling	0.8 inches.	3.6 inches.	Rain falls throughout the year in Wheeling. The month with the most rain in Wheeling is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Wheeling is *January*, with an average rainfall of *0.8 inches*.
Precipitation (Rainfall)	Willow Springs	0.9 inches.	3.6 inches.	Rain falls throughout the year in Willow Springs. The month with the most rain in Willow Springs is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Willow Springs is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Wilmette	0.9 inches.	3.5 inches.	Rain falls throughout the year in Wilmette. The month with the most rain in Wilmette is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Wilmette is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Winnetka	0.9 inches.	3.5 inches.	Rain falls throughout the year in Winnetka. The month with the most rain in Winnetka is *August*, with an average rainfall of *3.5 inches*. The month with the least rain in Winnetka is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Worth	0.9 inches.	3.6 inches.	Rain falls throughout the year in Worth. The month with the most rain in Worth is *June*, with an average rainfall of *3.6 inches*. The month with the least rain in Worth is *January*, with an average rainfall of *0.9 inches*.
Precipitation (Rainfall)	Cook County Forest Preserve District (New for 2024)			Not Available.

Source: https://weatherspark.com/

Below is a map depicting the average lightning flash density per county in the United States. Flash density is defined as the number of flashes of a specific type occurring on or over unit area in unit time. Cook County is between a 4.0 and 5.0 in flashes/sq.km/year



5.5.4 Probability and Frequency

Extreme Heat Probability: NOAA measures the probability of extreme heat by integrating meteorological tools and data analysis. This includes closely monitoring temperature forecasts, heat index values, and the output of advanced meteorological models to assess the potential for extreme heat events. Comparisons to historical climate data help determine the likelihood of such events. NOAA also considers the duration and intensity of extreme heat conditions, with a focus on nighttime warmth, which can significantly affect public health. Collaboration with public health agencies contributes to the analysis of heat-related illnesses. Ultimately, NOAA issues Heat Advisories and Excessive Heat Warnings to provide the public with information on the probability of extreme heat, associated health risks, and recommended safety measures.

Extreme Heat Frequency: Between 2007 and 2023, Cook County experienced 15 extreme heat events. This equates to an average of 0.88235294 extreme heat events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

Lightning Probability: NOAA measures the probability of lightning using observations of current weather conditions, data from the Geostationary Lightning Mapper (GLM), and advanced forecasting models that utilize machine learning. The GLM, positioned on geostationary satellites, detects lightning activity across the Americas and provides data to predict future lightning strikes. This tool is also capable of forecasting lightning occurrences up to 60 minutes before it happens, enhancing weather prediction accuracy and public safety measures. NOAA also uses climatology data to map lightning activity patterns and probabilities, to support long-term planning and immediate weather forecasting. The combination of real-time data from satellite observations and historical lightning data enables NOAA to create reliable forecasts of where and when lightning is likely to occur.

Lightning Frequency: Between 1996 and 2022, Cook County experienced 47 lightning events. This equates to an average of 1.74074074 lightning events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

Hailstorms Probability: NOAA assesses the probability of hail through atmospheric data from weather satellites, radar systems, and ground stations. This data provides insights into conditions conducive to hail formation, such as temperature, humidity, wind patterns, and atmospheric pressure. Additionally, data feeds into advanced weather prediction models that simulate potential weather scenarios, using complex mathematical equations to foresee changes in weather conditions, including the likelihood of hail.

NOAA presents hail probabilities as percentages to indicate the chance of hail occurring in a particular area and timeframe, taking into account the inherent uncertainties of weather forecasting. When conditions indicate the potential for hail, NOAA issues warnings and alerts particularly in areas where hail poses a substantial threat to property and agriculture.

Hailstorms Frequency: Between 1955 and 2023, Cook County experienced 216 hailstorms. This equates to an average of 3.17647059 hailstorms/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

Dense Fog Probability: NOAA measures the probability of dense fog through weather observations and forecasting models. NWS, issues Dense Fog Advisories when visibility is expected to frequently drop to one-quarter of a mile or less, using data from ground-based observations and satellite images. Advanced models and tools are utilized to predict fog development based on current weather patterns and historical data, enhancing the accuracy of fog forecasts.

Dense Fog Frequency: According to NOAA, Cook County did not record any dense fog events between 2014-2023.

Strong Wind Probability: NOAA utilizes data from atmospheric weather satellites, radar systems, ground-based stations, and weather balloons. This collected data includes temperature, humidity, atmospheric pressure, and wind speed and direction at various altitudes. NOAA analyzes this data to identify conditions that may lead to strong winds, focusing on indicators like pressure gradients, the presence of strong weather fronts, jet stream patterns, and approaching storm systems.

The probability of strong winds is often expressed as a percentage, reflecting the likelihood of occurrence within a specific area and timeframe, and accounting for the uncertainties inherent in weather forecasting. When there is significant risk, NOAA issues wind advisories, watches, or warnings through the NWS.

Strong Wind Frequency: Between 1996 and 2024, Cook County experienced 49 strong wind events. This equates to an average of 1.75 strong wind events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

5.5.5 Past Events

TABLE: EXTREME HEAT EVENTS IN COOK COUNTY (2007-2023)									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**36**	**0**	**750.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	06/14/2007	10:00	Excessive Heat	4	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/08/2007	08:00	Excessive Heat	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	06/22/2009	12:00	Excessive Heat	3	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	08/09/2009	10:00	Excessive Heat	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	08/12/2010	13:00	Excessive Heat	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/04/2012	12:00	Excessive Heat	23	0	750.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/19/2013	00:00	Excessive Heat	3	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	06/16/2018	15:53	Excessive Heat	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	06/29/2018	11:53	Excessive Heat	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/01/2018	00:00	Excessive Heat	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	07/18/2019	17:00	Excessive Heat	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	06/13/2022	16:00	Excessive Heat	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	07/26/2023	15:00	Excessive Heat	0	0	0.00K	0.00K
SOUTHERN COOK	SOUTHERN COOK COUNTY (ZO...	IL	07/26/2023	15:00	Excessive Heat	0	0	0.00K	0.00K

TABLE: EXTREME HEAT EVENTS IN COOK COUNTY (2007-2023)									
Location	County	State	Date	Time	Type	Dth	Inj	PrD	CrD
COUNTY (ZO...									
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	07/26/2023	15:00	Excessive Heat	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	08/23/2023	11:00	Excessive Heat	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	08/23/2023	11:00	Excessive Heat	0	0	0.00K	0.00K
SOUTHERN COOK COUNTY (ZO...	SOUTHERN COOK COUNTY (ZO...	IL	08/23/2023	11:00	Excessive Heat	0	0	0.00K	0.00K

TABLE: LIGHTNING EVENTS IN COOK COUNTY (1996-2022)									
Location	County	State	Date	Time	Type	Dth	Inj	PrD	CrD
Totals:						**3**	**18**	**6.537M**	**0.00K**
NORTHBROOK	COOK CO.	IL	05/09/1996	21:00	Lightning	1	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	05/24/1996	12:45	Lightning	0	1	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/24/1996	13:00	Lightning	0	1	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	06/17/1996	17:00	Lightning	1	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	09/07/1996	13:00	Lightning	0	1	0.00K	0.00K
CHICAGO	COOK CO.	IL	09/19/1997	14:30	Lightning	0	1	0.00K	0.00K
CHICAGO	COOK CO.	IL	06/11/1999	15:30	Lightning	0	2	0.00K	0.00K
PALOS HGTS	COOK CO.	IL	06/21/2000	14:00	Lightning	0	1	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	07/21/2001	17:15	Lightning	0	0	20.00K	0.00K
MAYWOOD	COOK CO.	IL	07/22/2001	15:00	Lightning	1	0	0.00K	0.00K
CALUMET CITY	COOK CO.	IL	07/23/2001	15:30	Lightning	0	1	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	01/22/2002	21:30	Lightning	0	1	5.00K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	04/04/2003	15:30	Lightning	0	1	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	05/09/2003	23:10	Lightning	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	07/20/2003	22:00	Lightning	0	0	25.00K	0.00K
WORTH	COOK CO.	IL	08/03/2003	17:20	Lightning	0	0	5.00K	0.00K
CHICAGO	COOK CO.	IL	05/11/2005	06:00	Lightning	0	1	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	07/25/2005	18:30	Lightning	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	08/02/2006	20:27	Lightning	0	1	25.00K	0.00K
CHICAGO	COOK CO.	IL	08/02/2006	20:30	Lightning	0	0	10.00K	0.00K
TINLEY PARK	COOK CO.	IL	08/02/2006	20:41	Lightning	0	1	50.00K	0.00K
SCHILLER PARK	COOK CO.	IL	09/22/2006	17:15	Lightning	0	0	3.00K	0.00K
MC COOK	COOK CO.	IL	10/18/2007	18:00	Lightning	0	1	0.00K	0.00K
BARTLETT	COOK CO.	IL	05/02/2008	10:58	Lightning	0	0	10.00K	0.00K
HEALY	COOK CO.	IL	08/04/2008	07:00	Lightning	0	0	10.00K	0.00K
CRAGIN	COOK CO.	IL	07/24/2009	22:55	Lightning	0	0	20.00K	0.00K
BARTLETT	COOK CO.	IL	04/05/2010	21:30	Lightning	0	0	5.00K	0.00K
BARRINGTON	COOK CO.	IL	05/26/2010	15:20	Lightning	0	0	200.00K	0.00K
WILMETTE	COOK CO.	IL	06/18/2010	15:15	Lightning	0	0	100.00K	0.00K

TABLE: LIGHTNING EVENTS IN COOK COUNTY (1996-2022)									
Location	County	State	Date	Time	Type	Dth	Inj	PrD	CrD
LA GRANGE PARK	COOK CO.	IL	07/23/2010	17:10	Lightning	0	0	30.00K	0.00K
PARK RIDGE	COOK CO.	IL	10/13/2010	08:18	Lightning	0	0	2.00K	0.00K
INVERNESS	COOK CO.	IL	05/12/2011	04:19	Lightning	0	0	15.00K	0.00K
PALATINE	COOK CO.	IL	05/12/2011	04:19	Lightning	0	0	35.00K	0.00K
TECHNY	COOK CO.	IL	05/22/2011	21:10	Lightning	0	0	250.00K	0.00K
NORTH RIVERSIDE	COOK CO.	IL	06/09/2011	00:30	Lightning	0	0	15.00K	0.00K
CONGRESS PARK	COOK CO.	IL	06/20/2011	06:00	Lightning	0	0	10.00K	0.00K
HANSON PARK	COOK CO.	IL	07/11/2011	08:10	Lightning	0	0	10.00K	0.00K
GLENCOE	COOK CO.	IL	07/23/2011	02:00	Lightning	0	0	1.000M	0.00K
ELK GROVE VLG	COOK CO.	IL	07/23/2011	02:30	Lightning	0	0	3.500M	0.00K
VILLA WEST	COOK CO.	IL	07/24/2011	09:00	Lightning	0	0	20.00K	0.00K
BROOKFIELD	COOK CO.	IL	07/28/2011	23:20	Lightning	0	0	250.00K	0.00K
PALATINE	COOK CO.	IL	07/29/2011	08:00	Lightning	0	0	5.00K	0.00K
PALATINE	COOK CO.	IL	08/20/2011	09:27	Lightning	0	0	150.00K	0.00K
HAWTHORNE	COOK CO.	IL	05/20/2014	20:00	Lightning	0	0	500.00K	0.00K
SCHAUMBURG	COOK CO.	IL	06/19/2014	00:30	Lightning	0	0	50.00K	0.00K
INVERNESS	COOK CO.	IL	06/30/2014	18:30	Lightning	0	0	50.00K	0.00K
PALATINE	COOK CO.	IL	06/30/2014	18:30	Lightning	0	0	25.00K	0.00K
HAWTHORNE	COOK CO.	IL	06/30/2014	19:00	Lightning	0	1	50.00K	0.00K
MT PROSPECT	COOK CO.	IL	04/09/2015	09:42	Lightning	0	0	50.00K	0.00K
WILMETTE	COOK CO.	IL	07/18/2015	14:45	Lightning	0	0	15.00K	0.00K
MAYWOOD	COOK CO.	IL	08/17/2015	19:26	Lightning	0	0	2.00K	0.00K
DEERING	COOK CO.	IL	07/04/2018	21:00	Lightning	0	1	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	07/04/2018	21:30	Lightning	0	1	0.00K	0.00K
BROOKFIELD	COOK CO.	IL	09/03/2018	13:00	Lightning	0	0	5.00K	0.00K
DUNNING	COOK CO.	IL	09/03/2018	13:25	Lightning	0	0	10.00K	0.00K
GARFIELD PARK	COOK CO.	IL	08/03/2022	12:54	Lightning	0	1	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
Totals:						**0**	**0**	**18.839M**	**0.00K**
COOK CO.	COOK CO.	IL	03/03/1955	16:00	2.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/05/1956	23:02	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/06/1956	18:00	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/19/1956	16:50	1.25 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/12/1957	17:00	1.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/02/1957	15:30	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	10/09/1958	00:45	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/03/1959	17:25	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/15/1960	14:00	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/24/1961	17:30	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/22/1962	14:45	2.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/17/1963	15:04	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/17/1963	16:25	1.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/10/1963	14:00	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/21/1963	18:00	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/22/1963	17:30	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/16/1963	23:00	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
COOK CO.	COOK CO.	IL	11/17/1963	19:45	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/24/1964	16:45	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/05/1965	15:33	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/08/1965	17:00	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	11/12/1965	14:30	1.25 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/21/1966	17:55	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/18/1966	18:00	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/10/1967	13:00	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/16/1967	12:10	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/16/1967	18:04	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/11/1967	14:00	0.60 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/11/1967	14:00	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/15/1968	11:45	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/19/1969	22:17	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/29/1970	23:45	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	02/19/1971	13:55	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	09/28/1972	19:20	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/03/1974	13:30	1.25 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/03/1974	14:00	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/21/1974	12:05	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/20/1974	18:49	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/20/1975	14:55	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/20/1975	16:06	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/20/1975	16:58	1.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/04/1975	17:45	1.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/20/1975	13:30	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/20/1975	13:30	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/24/1975	14:25	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/11/1975	14:35	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/01/1976	16:35	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/13/1976	18:35	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/05/1977	20:00	1.25 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/08/1977	13:37	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/07/1978	17:52	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/13/1980	21:23	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/01/1982	21:15	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/01/1982	21:30	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/06/1983	17:22	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/29/1983	12:00	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	09/18/1983	18:45	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/29/1984	21:20	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/20/1984	16:25	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/20/1984	17:15	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/28/1985	14:22	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/23/1985	11:12	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/23/1985	11:13	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/19/1986	15:00	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	05/31/1987	17:35	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	08/16/1987	22:32	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/22/1988	16:54	1.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/22/1988	17:30	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
COOK CO.	COOK CO.	IL	04/25/1989	02:46	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/11/1989	08:25	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/30/1990	14:05	0.75 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/27/1991	02:35	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	03/27/1991	16:13	1.00 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/07/1991	21:40	1.50 in.	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/15/1992	19:00	2.00 in.	0	0	0.00K	0.00K
Hazel Crest	COOK CO.	IL	04/26/1994	18:00	1.00 in.	0	0	0.00K	0.00K
Markham	COOK CO.	IL	04/26/1994	18:03	1.75 in.	0	0	0.00K	0.00K
Lake Calumet	COOK CO.	IL	04/26/1994	18:07	1.75 in.	0	0	0.00K	0.00K
Dixmoor	COOK CO.	IL	04/26/1994	19:00	1.75 in.	0	0	0.00K	0.00K
Park Forest	COOK CO.	IL	04/26/1994	20:05	0.75 in.	0	0	0.00K	0.00K
Chicago	COOK CO.	IL	04/10/1995	15:00	1.25 in.	0	0	0.00K	0.00K
O'Hare Airport	COOK CO.	IL	06/07/1995	19:49	1.75 in.	0	0	0.00K	0.00K
Cicero	COOK CO.	IL	08/15/1995	10:35	1.75 in.	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	04/12/1996	09:50	1.00 in.	0	0	0.00K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	04/12/1996	10:10	1.00 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	04/12/1996	10:20	1.00 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	04/12/1996	10:20	1.75 in.	0	0	0.00K	0.00K
MIDLOTHIAN	COOK CO.	IL	04/12/1996	10:24	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	04/12/1996	10:25	1.75 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	04/12/1996	10:30	0.75 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	04/19/1996	20:46	1.75 in.	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	04/19/1996	20:46	1.00 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	04/19/1996	20:50	1.00 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	04/19/1996	22:08	1.00 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	05/05/1997	13:15	0.75 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	06/20/1997	19:00	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/18/1997	12:00	1.00 in.	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	07/26/1997	18:25	0.88 in.	0	0	0.00K	0.00K
HAZEL CREST	COOK CO.	IL	06/26/1998	02:52	2.00 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	04/10/1999	16:15	1.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/21/1999	20:10	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/17/1999	01:30	0.75 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	06/01/1999	17:07	1.25 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	06/09/1999	16:22	1.75 in.	0	0	0.00K	0.00K
BARRINGTON HILLS	COOK CO.	IL	03/08/2000	18:15	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	04/20/2000	07:15	1.75 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	05/12/2000	17:05	0.75 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	05/18/2000	10:40	1.75 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	05/18/2000	10:57	1.50 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	05/18/2000	11:00	2.75 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	05/18/2000	11:05	0.75 in.	0	0	0.00K	0.00K
CALUMET CITY	COOK CO.	IL	05/18/2000	17:44	1.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	09/11/2000	14:25	0.75 in.	0	0	0.00K	0.00K
MARKHAM	COOK CO.	IL	09/11/2000	14:56	0.88 in.	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	09/11/2000	15:20	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	06/11/2001	23:20	0.75 in.	0	0	0.00K	0.00K
WINNETKA	COOK CO.	IL	07/22/2001	15:45	1.00 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	08/22/2001	17:15	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	10/24/2001	08:05	0.88 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
ALSIP	COOK CO.	IL	06/14/2002	10:43	0.75 in.	0	0	0.00K	0.00K
BLUE IS	COOK CO.	IL	06/25/2002	11:20	2.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/30/2003	13:50	0.88 in.	0	0	0.00K	0.00K
WILLOW SPGS	COOK CO.	IL	04/30/2003	21:15	1.00 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	05/09/2003	22:35	1.25 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	05/10/2003	22:13	1.50 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	05/28/2003	15:14	0.75 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	07/06/2003	12:59	1.75 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	07/06/2003	17:00	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/06/2003	17:26	0.88 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	07/08/2003	09:00	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/15/2003	03:22	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/15/2003	04:05	0.75 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	07/17/2003	16:15	1.75 in.	0	0	0.00K	0.00K
NORTHBROOK	COOK CO.	IL	07/17/2003	16:20	2.50 in.	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	07/17/2003	16:20	1.75 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	07/17/2003	16:25	1.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	07/17/2003	16:30	0.75 in.	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	07/17/2003	16:45	1.00 in.	0	0	0.00K	0.00K
NORRIDGE	COOK CO.	IL	07/17/2003	16:47	1.50 in.	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	07/17/2003	16:55	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/17/2003	16:55	1.00 in.	0	0	0.00K	0.00K
AUSTIN	COOK CO.	IL	07/17/2003	16:55	1.25 in.	0	0	0.00K	0.00K
(MDW)MIDWAY ARPT CHI	COOK CO.	IL	07/17/2003	17:00	1.00 in.	0	0	0.00K	0.00K
ELSDON	COOK CO.	IL	07/17/2003	17:00	1.75 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	07/17/2003	17:00	1.00 in.	0	0	0.00K	0.00K
LANSING	COOK CO.	IL	07/17/2003	17:40	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	07/20/2003	21:50	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	07/20/2003	21:52	0.75 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	07/20/2003	21:52	0.75 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	07/20/2003	22:05	0.75 in.	0	0	0.00K	0.00K
LANSING	COOK CO.	IL	07/20/2003	23:50	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	08/01/2003	12:25	1.00 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/01/2003	12:27	1.00 in.	0	0	0.00K	0.00K
ROLLING MEADOWS	COOK CO.	IL	08/01/2003	12:28	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	08/01/2003	12:32	1.00 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	08/01/2003	12:40	0.88 in.	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	08/01/2003	12:44	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	08/01/2003	12:45	1.75 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	08/01/2003	12:47	1.25 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/01/2003	13:10	1.25 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/01/2003	14:00	1.00 in.	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	08/01/2003	14:01	0.88 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/01/2003	14:19	1.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	08/01/2003	14:20	1.75 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	08/01/2003	14:25	0.75 in.	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	08/01/2003	14:26	1.75 in.	0	0	0.00K	0.00K
BARTLETT	COOK CO.	IL	08/01/2003	14:30	1.00 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	08/01/2003	14:38	0.75 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	08/01/2003	14:45	0.75 in.	0	0	0.00K	0.00K
FRANKLIN PARK	COOK CO.	IL	08/01/2003	14:45	0.75 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
ELK GROVE VLG	COOK CO.	IL	08/01/2003	14:49	1.75 in.	0	0	0.00K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	08/01/2003	14:53	1.00 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	08/01/2003	16:08	1.00 in.	0	0	0.00K	0.00K
EVERGREEN PARK	COOK CO.	IL	08/01/2003	16:15	1.00 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	08/03/2003	12:00	0.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	08/03/2003	12:20	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	08/03/2003	12:35	1.75 in.	0	0	0.00K	0.00K
FRANKLIN PARK	COOK CO.	IL	08/03/2003	12:50	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	08/03/2003	12:55	1.00 in.	0	0	0.00K	0.00K
(ORD)O'HARE INTL ARP	COOK CO.	IL	08/03/2003	13:15	1.25 in.	0	0	0.00K	0.00K
BARTLETT	COOK CO.	IL	03/01/2004	14:50	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	03/01/2004	15:00	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	03/01/2004	15:20	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	03/01/2004	15:20	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	03/01/2004	15:20	1.00 in.	0	0	0.00K	0.00K
LA GRANGE	COOK CO.	IL	03/01/2004	16:00	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	03/13/2004	15:30	0.75 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	04/17/2004	02:20	0.75 in.	0	0	0.00K	0.00K
NORTHFIELD	COOK CO.	IL	04/17/2004	02:20	1.00 in.	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	04/17/2004	02:25	0.75 in.	0	0	0.00K	0.00K
HOMEWOOD	COOK CO.	IL	04/17/2004	02:40	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	04/17/2004	02:40	0.75 in.	0	0	0.00K	0.00K
EVERGREEN PARK	COOK CO.	IL	04/17/2004	02:45	1.00 in.	0	0	0.00K	0.00K
HICKORY HILLS	COOK CO.	IL	04/20/2004	19:25	0.75 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	04/20/2004	20:03	1.00 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	04/20/2004	20:05	0.75 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	05/09/2004	17:20	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/09/2004	17:30	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/20/2004	19:04	0.75 in.	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	05/20/2004	20:45	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/21/2004	08:58	0.75 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	05/21/2004	09:05	0.75 in.	0	0	0.00K	0.00K
ALSIP	COOK CO.	IL	05/23/2004	19:30	0.75 in.	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	05/23/2004	19:43	0.75 in.	0	0	0.00K	0.00K
BURBANK	COOK CO.	IL	05/23/2004	19:49	0.88 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/23/2004	19:50	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	06/11/2004	21:45	0.88 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	07/21/2004	15:55	0.75 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	03/30/2005	17:25	1.00 in.	0	0	0.00K	0.00K
SCHILLER PARK	COOK CO.	IL	03/30/2005	17:30	0.75 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	03/30/2005	18:30	0.88 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	03/30/2005	19:22	1.75 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	03/30/2005	19:30	0.75 in.	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	05/19/2005	11:46	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	05/19/2005	16:44	0.75 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	06/04/2005	19:22	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	06/10/2005	18:36	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	09/22/2005	16:23	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	09/22/2005	16:39	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	09/22/2005	16:43	0.75 in.	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	09/22/2005	16:45	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
MELROSE PARK	COOK CO.	IL	10/02/2005	15:12	0.75 in.	0	0	0.00K	0.00K
WESTCHESTER	COOK CO.	IL	04/02/2006	18:41	1.00 in.	0	0	0.00K	0.00K
BRIDGEVIEW	COOK CO.	IL	04/02/2006	19:04	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	04/02/2006	19:23	1.00 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	05/17/2006	16:04	1.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	05/17/2006	16:09	1.00 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	05/17/2006	16:11	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/17/2006	16:19	1.00 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	05/17/2006	16:22	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	05/17/2006	16:22	1.00 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	05/17/2006	16:30	1.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	05/24/2006	20:19	0.88 in.	0	0	0.00K	0.00K
HOMEWOOD	COOK CO.	IL	05/24/2006	21:14	0.88 in.	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	05/24/2006	21:29	0.75 in.	0	0	0.00K	0.00K
POSEN	COOK CO.	IL	05/29/2006	13:18	1.75 in.	0	0	1.00K	0.00K
ORLAND PARK	COOK CO.	IL	05/29/2006	13:55	0.75 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	06/22/2006	08:03	0.75 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	06/26/2006	01:41	0.88 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	06/28/2006	05:06	0.75 in.	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	06/28/2006	20:15	1.00 in.	0	0	15.00K	0.00K
RIVER FOREST	COOK CO.	IL	06/28/2006	20:31	0.75 in.	0	0	0.00K	0.00K
HAZEL CREST	COOK CO.	IL	07/20/2006	08:30	0.88 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	09/22/2006	16:14	0.75 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	09/22/2006	16:54	0.75 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	09/22/2006	16:59	1.00 in.	0	0	0.00K	0.00K
WILMETTE	COOK CO.	IL	09/22/2006	17:04	1.00 in.	0	0	0.00K	0.00K
WINNETKA	COOK CO.	IL	09/22/2006	17:09	0.75 in.	0	0	0.00K	0.00K
RIVER GROVE	COOK CO.	IL	10/02/2006	12:43	1.00 in.	0	0	0.00K	0.00K
WILLOW SPGS	COOK CO.	IL	10/02/2006	12:58	1.00 in.	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	10/02/2006	13:06	0.88 in.	0	0	0.00K	0.00K
BRIDGEVIEW	COOK CO.	IL	10/02/2006	13:09	0.88 in.	0	0	0.00K	0.00K
OLYMPIA FIELDS	COOK CO.	IL	10/02/2006	14:03	0.75 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	10/02/2006	14:09	0.88 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	10/02/2006	18:59	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	10/02/2006	19:00	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	10/02/2006	19:00	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	10/02/2006	19:13	1.00 in.	0	0	0.00K	0.00K
MAYWOOD	COOK CO.	IL	10/02/2006	19:26	0.88 in.	0	0	0.00K	0.00K
MANNHEIM	COOK CO.	IL	10/02/2006	19:32	1.00 in.	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	10/02/2006	19:44	0.88 in.	0	0	0.00K	0.00K
JUSTICE	COOK CO.	IL	10/02/2006	19:49	0.75 in.	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	10/02/2006	19:51	1.00 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	10/02/2006	19:56	1.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	10/02/2006	20:09	1.50 in.	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	10/02/2006	20:23	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	10/02/2006	20:29	0.75 in.	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	03/21/2007	16:02	0.88 in.	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	03/22/2007	02:40	1.75 in.	0	0	50.00K	0.00K
PALATINE	COOK CO.	IL	05/16/2007	17:00	0.75 in.	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	06/01/2007	19:24	0.75 in.	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	06/27/2007	15:14	0.88 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
LEMONT	COOK CO.	IL	07/09/2007	15:24	0.88 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/18/2007	19:29	1.00 in.	0	0	0.00K	0.00K
ALSIP	COOK CO.	IL	10/18/2007	16:21	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	10/18/2007	16:31	0.75 in.	0	0	0.00K	0.00K
BLUE IS	COOK CO.	IL	10/18/2007	16:32	0.88 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	10/18/2007	16:35	0.75 in.	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	10/18/2007	16:44	0.75 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	10/18/2007	17:11	0.88 in.	0	0	0.00K	0.00K
MIDLOTHIAN	COOK CO.	IL	10/18/2007	17:13	1.00 in.	0	0	0.00K	0.00K
BLUE IS	COOK CO.	IL	10/18/2007	17:19	0.88 in.	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	10/18/2007	17:46	0.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	04/25/2008	16:44	0.88 in.	0	0	0.00K	0.00K
CHICAGO HGTS	COOK CO.	IL	06/04/2008	20:49	1.00 in.	0	0	0.00K	0.00K
SAUK VLG	COOK CO.	IL	06/04/2008	20:54	1.75 in.	0	0	0.00K	0.00K
FOREST GLEN	COOK CO.	IL	06/05/2008	01:09	0.75 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	06/15/2008	06:43	0.75 in.	0	0	0.00K	0.00K
HERMOSA	COOK CO.	IL	06/15/2008	06:44	1.00 in.	0	0	0.00K	0.00K
BURBANK	COOK CO.	IL	06/21/2008	13:05	0.75 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	06/22/2008	16:17	1.00 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	06/22/2008	16:20	0.75 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/22/2008	16:24	0.88 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	06/28/2008	16:23	1.00 in.	0	0	0.00K	0.00K
DUNHURST	COOK CO.	IL	07/02/2008	15:41	1.00 in.	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	08/04/2008	21:20	0.88 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	08/04/2008	21:55	0.75 in.	0	0	0.00K	0.00K
CICERO	COOK CO.	IL	08/04/2008	23:03	0.75 in.	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	03/08/2009	08:02	0.75 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	06/01/2009	17:24	0.75 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	06/19/2009	08:00	0.75 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	06/19/2009	08:46	1.00 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	06/19/2009	09:15	0.75 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/19/2009	09:22	1.50 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/19/2009	09:27	1.00 in.	0	0	0.00K	0.00K
GRAYLAND	COOK CO.	IL	06/19/2009	09:59	1.00 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	06/19/2009	11:40	1.00 in.	0	0	0.00K	0.00K
HERMOSA	COOK CO.	IL	06/24/2009	12:38	0.75 in.	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	07/23/2009	15:46	0.88 in.	0	0	0.00K	0.00K
HARWOOD HGTS	COOK CO.	IL	07/23/2009	16:14	1.00 in.	0	0	0.00K	0.00K
FERNWAY	COOK CO.	IL	04/04/2010	15:21	0.75 in.	0	0	0.00K	0.00K
WORTH	COOK CO.	IL	04/04/2010	16:49	0.75 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	04/05/2010	20:30	0.88 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	04/05/2010	20:35	1.25 in.	0	0	50.00K	0.00K
STREAMWOOD	COOK CO.	IL	04/05/2010	21:30	1.00 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	04/05/2010	21:32	1.50 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	04/05/2010	21:35	1.00 in.	0	0	0.00K	0.00K
ROLLING MEADOWS	COOK CO.	IL	04/05/2010	21:35	1.00 in.	0	0	0.00K	0.00K
ROSEMONT	COOK CO.	IL	04/05/2010	21:37	1.50 in.	0	0	868.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	04/05/2010	21:38	0.88 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	04/05/2010	21:41	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/05/2010	21:48	0.88 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	04/05/2010	21:49	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
EVANSTON	COOK CO.	IL	04/05/2010	21:50	0.88 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	04/05/2010	21:50	1.75 in.	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	04/05/2010	21:50	1.25 in.	0	0	0.00K	0.00K
CUMBERLAND	COOK CO.	IL	04/05/2010	21:52	2.75 in.	0	0	5.00K	0.00K
FOREST GLEN	COOK CO.	IL	04/05/2010	21:53	0.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	04/05/2010	21:54	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	04/05/2010	21:55	0.75 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	04/05/2010	21:55	1.50 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	04/05/2010	21:55	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	04/05/2010	21:57	1.00 in.	0	0	0.00K	0.00K
LA GRANGE	COOK CO.	IL	06/23/2010	16:55	1.00 in.	0	0	0.00K	0.00K
HOMETOWN	COOK CO.	IL	10/24/2010	19:49	0.88 in.	0	0	0.00K	0.00K
EVERGREEN PARK	COOK CO.	IL	10/24/2010	19:50	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	04/19/2011	18:15	0.88 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	04/19/2011	18:30	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/19/2011	18:34	0.88 in.	0	0	0.00K	0.00K
NORTHBROOK	COOK CO.	IL	05/11/2011	17:00	0.75 in.	0	0	0.00K	0.00K
HOMETOWN	COOK CO.	IL	05/11/2011	18:47	1.00 in.	0	0	0.00K	0.00K
GOLDEN ACRES	COOK CO.	IL	05/22/2011	14:07	1.00 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	05/22/2011	14:45	0.75 in.	0	0	0.00K	0.00K
RICHTON PARK	COOK CO.	IL	05/25/2011	08:00	0.75 in.	0	0	0.00K	0.00K
MELROSE PARK	COOK CO.	IL	06/04/2011	14:29	0.88 in.	0	0	0.00K	0.00K
LYONS	COOK CO.	IL	06/04/2011	14:47	0.75 in.	0	0	0.00K	0.00K
NORTH RIVERSIDE	COOK CO.	IL	06/04/2011	14:47	0.75 in.	0	0	0.00K	0.00K
TINLEY PARK	COOK CO.	IL	06/04/2011	15:15	1.75 in.	0	0	0.00K	0.00K
RICHTON PARK	COOK CO.	IL	06/04/2011	15:21	1.00 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/30/2011	20:23	0.88 in.	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	06/30/2011	20:25	1.50 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/30/2011	20:26	1.25 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	06/30/2011	20:29	1.00 in.	0	0	0.00K	0.00K
CRAGIN	COOK CO.	IL	06/30/2011	20:30	2.00 in.	0	0	0.00K	0.00K
AUSTIN	COOK CO.	IL	06/30/2011	20:32	2.00 in.	0	0	17.000M	0.00K
AUSTIN	COOK CO.	IL	06/30/2011	20:33	2.00 in.	0	0	0.00K	0.00K
CORWITH	COOK CO.	IL	06/30/2011	20:33	2.00 in.	0	0	0.00K	0.00K
BRIGHTON PARK	COOK CO.	IL	06/30/2011	20:35	2.75 in.	0	0	750.00K	0.00K
EVERGREEN PARK	COOK CO.	IL	06/30/2011	20:45	1.50 in.	0	0	0.00K	0.00K
HARVEY	COOK CO.	IL	06/30/2011	21:00	1.75 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	08/13/2011	12:30	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	08/13/2011	12:48	0.75 in.	0	0	0.00K	0.00K
HANSON PARK	COOK CO.	IL	08/13/2011	12:57	1.00 in.	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	08/13/2011	13:21	0.75 in.	0	0	0.00K	0.00K
LAMBERT	COOK CO.	IL	09/03/2011	13:43	1.00 in.	0	0	0.00K	0.00K
WORTH	COOK CO.	IL	09/03/2011	13:47	1.00 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	05/03/2012	17:35	1.25 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	05/03/2012	17:52	1.25 in.	0	0	0.00K	0.00K
DES PLAINES	COOK CO.	IL	05/03/2012	18:12	1.00 in.	0	0	0.00K	0.00K
NORRIDGE	COOK CO.	IL	05/03/2012	18:18	0.88 in.	0	0	0.00K	0.00K
WEST GLENVIEW	COOK CO.	IL	05/03/2012	19:05	0.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	05/03/2012	19:15	1.00 in.	0	0	0.00K	0.00K
DUNNING	COOK CO.	IL	05/03/2012	19:38	1.75 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	05/03/2012	20:02	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
OAK LAWN	COOK CO.	IL	05/03/2012	20:54	1.00 in.	0	0	0.00K	0.00K
WORTH	COOK CO.	IL	05/03/2012	21:50	0.88 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	05/06/2012	12:00	0.88 in.	0	0	0.00K	0.00K
KEDZIE	COOK CO.	IL	05/06/2012	13:52	0.88 in.	0	0	0.00K	0.00K
BARTLETT	COOK CO.	IL	06/28/2012	16:25	1.00 in.	0	0	0.00K	0.00K
ALSIP	COOK CO.	IL	06/28/2012	17:53	1.75 in.	0	0	0.00K	0.00K
PALOS GARDENS	COOK CO.	IL	06/28/2012	17:56	1.25 in.	0	0	0.00K	0.00K
CHICAGO HOWELL ARPT	COOK CO.	IL	06/28/2012	18:00	1.75 in.	0	0	0.00K	0.00K
BERGER	COOK CO.	IL	06/28/2012	18:05	1.75 in.	0	0	0.00K	0.00K
BURNHAM	COOK CO.	IL	06/28/2012	18:17	0.88 in.	0	0	0.00K	0.00K
LANSING	COOK CO.	IL	06/28/2012	18:21	1.75 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	06/28/2012	18:33	1.00 in.	0	0	0.00K	0.00K
HOMEWOOD	COOK CO.	IL	06/28/2012	18:39	1.00 in.	0	0	0.00K	0.00K
SOUTH HOLLAND	COOK CO.	IL	06/29/2012	10:55	1.00 in.	0	0	0.00K	0.00K
WESTCHESTER	COOK CO.	IL	07/01/2012	11:45	0.75 in.	0	0	0.00K	0.00K
BROOKFIELD	COOK CO.	IL	07/01/2012	11:45	1.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	08/04/2012	15:00	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	10/14/2012	13:16	1.00 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	01/28/2013	23:07	0.88 in.	0	0	0.00K	0.00K
CHICAGO HGTS	COOK CO.	IL	01/28/2013	23:11	1.00 in.	0	0	0.00K	0.00K
CALUMET CITY	COOK CO.	IL	01/28/2013	23:18	0.75 in.	0	0	0.00K	0.00K
RIVERDALE	COOK CO.	IL	01/28/2013	23:33	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/17/2013	10:19	0.75 in.	0	0	0.00K	0.00K
LYNWOOD	COOK CO.	IL	05/30/2013	13:50	1.25 in.	0	0	0.00K	0.00K
EAST CHICAGO HGTS	COOK CO.	IL	05/30/2013	15:38	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	06/12/2013	17:00	1.00 in.	0	0	0.00K	0.00K
FLOSSMOOR	COOK CO.	IL	06/12/2013	17:20	0.75 in.	0	0	0.00K	0.00K
DUNNING	COOK CO.	IL	06/12/2013	17:30	0.75 in.	0	0	0.00K	0.00K
HARWOOD HGTS	COOK CO.	IL	06/12/2013	17:31	0.88 in.	0	0	0.00K	0.00K
SAUK VLG	COOK CO.	IL	06/12/2013	17:35	1.75 in.	0	0	0.00K	0.00K
CHATHAM	COOK CO.	IL	06/27/2013	17:15	1.00 in.	0	0	0.00K	0.00K
CHICAGO HGTS	COOK CO.	IL	08/12/2013	16:05	0.75 in.	0	0	0.00K	0.00K
EDISON PARK	COOK CO.	IL	08/30/2013	17:02	1.00 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	08/30/2013	17:05	0.75 in.	0	0	0.00K	0.00K
CRAGIN JCT	COOK CO.	IL	08/30/2013	17:09	1.00 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	09/18/2013	19:51	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	10/03/2013	19:58	0.88 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	11/17/2013	12:00	0.75 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	11/17/2013	12:35	1.00 in.	0	0	0.00K	0.00K
BRIDGEVIEW	COOK CO.	IL	11/17/2013	12:45	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	11/17/2013	13:36	1.00 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	04/12/2014	10:20	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	04/12/2014	10:21	2.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	04/12/2014	10:25	1.75 in.	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	04/12/2014	10:30	1.00 in.	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	04/12/2014	10:30	1.00 in.	0	0	0.00K	0.00K
NORTHBROOK	COOK CO.	IL	04/12/2014	10:47	1.00 in.	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	04/29/2014	11:03	0.75 in.	0	0	0.00K	0.00K
BURNHAM	COOK CO.	IL	05/11/2014	17:39	1.00 in.	0	0	0.00K	0.00K
NORTHBROOK	COOK CO.	IL	05/12/2014	17:41	1.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	05/12/2014	18:13	0.75 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	**County**	**State**	**Date**	**Time**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
NORTHBROOK	COOK CO.	IL	05/12/2014	18:20	1.00 in.	0	0	0.00K	0.00K
BEVERLY HILLS	COOK CO.	IL	05/20/2014	19:00	1.00 in.	0	0	0.00K	0.00K
CHESTERFIELD	COOK CO.	IL	05/20/2014	19:01	1.00 in.	0	0	0.00K	0.00K
DEARBORN HGTS	COOK CO.	IL	05/20/2014	19:20	0.88 in.	0	0	0.00K	0.00K
WORTH	COOK CO.	IL	05/20/2014	19:32	1.00 in.	0	0	0.00K	0.00K
FERNWAY	COOK CO.	IL	05/20/2014	19:48	1.00 in.	0	0	0.00K	0.00K
GOESELVILLE	COOK CO.	IL	05/20/2014	19:49	1.75 in.	0	0	0.00K	0.00K
PALOS HGTS	COOK CO.	IL	05/20/2014	19:50	1.00 in.	0	0	0.00K	0.00K
KIMBERLY HGTS	COOK CO.	IL	05/20/2014	19:51	2.00 in.	0	0	0.00K	0.00K
WORTH	COOK CO.	IL	05/20/2014	19:55	0.75 in.	0	0	0.00K	0.00K
COUNTRY CLUB HILLS	COOK CO.	IL	05/20/2014	19:59	1.00 in.	0	0	0.00K	0.00K
CALUMET	COOK CO.	IL	05/20/2014	20:02	2.00 in.	0	0	0.00K	0.00K
LANSING	COOK CO.	IL	05/20/2014	20:25	1.75 in.	0	0	0.00K	0.00K
GLENWOOD	COOK CO.	IL	05/20/2014	20:25	1.75 in.	0	0	0.00K	0.00K
PALOS HILLS	COOK CO.	IL	06/28/2014	17:45	0.75 in.	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	08/01/2014	13:30	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	04/08/2015	23:48	0.75 in.	0	0	0.00K	0.00K
INVERNESS	COOK CO.	IL	04/09/2015	17:45	1.00 in.	0	0	0.00K	0.00K
BRIDGEVIEW	COOK CO.	IL	06/08/2015	14:01	0.75 in.	0	0	0.00K	0.00K
FERNWAY	COOK CO.	IL	07/13/2015	18:20	0.88 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	07/13/2015	18:23	0.88 in.	0	0	0.00K	0.00K
CLABURN	COOK CO.	IL	07/13/2015	18:39	2.50 in.	0	0	100.00K	0.00K
BURNHAM	COOK CO.	IL	07/13/2015	18:40	1.75 in.	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	07/17/2015	16:28	1.00 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	07/17/2015	16:30	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/17/2015	16:34	0.75 in.	0	0	0.00K	0.00K
SPAULDING	COOK CO.	IL	07/17/2015	16:34	0.75 in.	0	0	0.00K	0.00K
ROSEMONT	COOK CO.	IL	08/02/2015	13:40	0.88 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	08/02/2015	13:45	1.00 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	08/02/2015	13:50	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	08/02/2015	13:53	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	08/02/2015	13:56	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	08/02/2015	21:25	1.25 in.	0	0	0.00K	0.00K
BARRINGTON WOODS	COOK CO.	IL	08/02/2015	21:30	2.00 in.	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	08/02/2015	21:36	1.00 in.	0	0	0.00K	0.00K
PALOS HILLS	COOK CO.	IL	08/02/2015	22:43	1.00 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	04/25/2016	17:25	1.00 in.	0	0	0.00K	0.00K
FOREST GLEN	COOK CO.	IL	04/25/2016	20:31	1.00 in.	0	0	0.00K	0.00K
NORRIDGE	COOK CO.	IL	04/25/2016	20:32	1.00 in.	0	0	0.00K	0.00K
HARWOOD HGTS	COOK CO.	IL	04/25/2016	20:40	1.00 in.	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	04/25/2016	20:45	1.00 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	07/24/2016	17:38	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	02/24/2017	01:20	1.00 in.	0	0	0.00K	0.00K
ALSIP	COOK CO.	IL	02/28/2017	18:12	1.00 in.	0	0	0.00K	0.00K
CHICAGO HAMMOND ARPT	COOK CO.	IL	02/28/2017	20:23	0.88 in.	0	0	0.00K	0.00K
OLYMPIA FIELDS	COOK CO.	IL	02/28/2017	20:52	1.75 in.	0	0	0.00K	0.00K
FLOSSMOOR	COOK CO.	IL	02/28/2017	20:58	0.88 in.	0	0	0.00K	0.00K
ORLAND PARK	COOK CO.	IL	02/28/2017	21:42	1.00 in.	0	0	0.00K	0.00K
ALSIP	COOK CO.	IL	02/28/2017	21:47	1.00 in.	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	03/20/2017	00:40	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	03/20/2017	00:56	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
LAMBERT	COOK CO.	IL	03/20/2017	01:42	1.00 in.	0	0	0.00K	0.00K
OAK LAWN	COOK CO.	IL	03/20/2017	01:45	1.00 in.	0	0	0.00K	0.00K
OAK LAWN	COOK CO.	IL	04/10/2017	12:18	1.00 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	04/10/2017	16:50	0.75 in.	0	0	0.00K	0.00K
ARLINGTON HGTS	COOK CO.	IL	04/10/2017	16:56	0.75 in.	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	07/07/2017	07:03	1.00 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	07/07/2017	07:20	1.25 in.	0	0	0.00K	0.00K
MORTON GROVE	COOK CO.	IL	07/07/2017	07:25	1.00 in.	0	0	0.00K	0.00K
SAUK VLG	COOK CO.	IL	07/07/2017	10:58	1.50 in.	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	07/12/2017	07:40	0.75 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	07/12/2017	08:35	0.75 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	07/21/2017	15:49	1.25 in.	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	07/21/2017	15:50	1.00 in.	0	0	0.00K	0.00K
ELK GROVE VLG	COOK CO.	IL	07/21/2017	16:00	1.25 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	07/23/2017	15:04	0.88 in.	0	0	0.00K	0.00K
MC COOK	COOK CO.	IL	05/02/2018	15:46	1.00 in.	0	0	0.00K	0.00K
(MDW)MIDWAY ARPT CHI	COOK CO.	IL	05/02/2018	15:53	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	05/14/2018	17:08	0.75 in.	0	0	0.00K	0.00K
CHICAGO RIDGE	COOK CO.	IL	05/16/2019	21:32	0.75 in.	0	0	0.00K	0.00K
AVONDALE	COOK CO.	IL	05/17/2019	00:01	1.50 in.	0	0	0.00K	0.00K
HASTINGS	COOK CO.	IL	05/27/2019	13:23	1.50 in.	0	0	0.00K	0.00K
PALOS HILLS	COOK CO.	IL	05/27/2019	13:39	1.50 in.	0	0	0.00K	0.00K
PARK FOREST	COOK CO.	IL	05/27/2019	15:06	1.25 in.	0	0	0.00K	0.00K
BROOKFIELD	COOK CO.	IL	06/01/2019	14:33	0.88 in.	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	06/01/2019	14:36	1.50 in.	0	0	0.00K	0.00K
RIVER FOREST	COOK CO.	IL	06/01/2019	14:56	1.25 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/01/2019	15:03	0.88 in.	0	0	0.00K	0.00K
HOMETOWN	COOK CO.	IL	06/01/2019	15:12	1.00 in.	0	0	0.00K	0.00K
(CGX)MEIGS FLD CHICA	COOK CO.	IL	06/01/2019	15:13	0.88 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	06/01/2019	16:50	0.88 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/25/2019	15:40	1.00 in.	0	0	0.00K	0.00K
CLYBOURN	COOK CO.	IL	06/25/2019	15:42	0.88 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	06/26/2019	18:31	2.00 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	06/26/2019	18:35	1.50 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	06/28/2019	17:04	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	06/28/2019	17:12	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	06/28/2019	17:12	1.75 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/28/2019	17:50	1.25 in.	0	0	0.00K	0.00K
DEERING	COOK CO.	IL	06/28/2019	17:50	1.25 in.	0	0	0.00K	0.00K
GLENCOE	COOK CO.	IL	04/07/2020	19:12	1.00 in.	0	0	0.00K	0.00K
SUNSET PARK	COOK CO.	IL	04/07/2020	19:25	1.00 in.	0	0	0.00K	0.00K
KENILWORTH	COOK CO.	IL	04/07/2020	19:27	1.50 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	04/07/2020	19:28	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	04/07/2020	19:32	2.75 in.	0	0	0.00K	0.00K
BURBANK	COOK CO.	IL	04/07/2020	19:32	1.00 in.	0	0	0.00K	0.00K
(IGQ) LANSING MUNICIPAL ...	COOK CO.	IL	06/10/2020	07:59	2.00 in.	0	0	0.00K	0.00K
(IGQ) LANSING MUNICIPAL ...	COOK CO.	IL	06/10/2020	08:03	1.00 in.	0	0	0.00K	0.00K
WEST DALE	COOK CO.	IL	06/22/2020	15:22	1.00 in.	0	0	0.00K	0.00K
WEST DALE	COOK CO.	IL	07/07/2020	17:20	1.00 in.	0	0	0.00K	0.00K
GLENCOE	COOK CO.	IL	08/10/2020	14:50	0.88 in.	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	08/23/2020	15:30	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
ARLINGTON PARK	COOK CO.	IL	08/23/2020	15:41	1.25 in.	0	0	0.00K	0.00K
ARLINGTON PARK	COOK CO.	IL	08/23/2020	16:00	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	08/23/2020	18:40	1.00 in.	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	06/12/2021	13:15	1.00 in.	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	08/24/2021	16:20	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	02/22/2022	06:17	0.88 in.	0	0	0.00K	0.00K
MT PROSPECT	COOK CO.	IL	06/13/2022	17:28	1.00 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	06/13/2022	17:35	1.00 in.	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	06/13/2022	17:45	1.00 in.	0	0	0.00K	0.00K
MELROSE PARK	COOK CO.	IL	06/13/2022	17:55	1.00 in.	0	0	0.00K	0.00K
IRVING PARK	COOK CO.	IL	07/22/2022	22:05	1.00 in.	0	0	0.00K	0.00K
MATTESON	COOK CO.	IL	03/31/2023	15:46	1.00 in.	0	0	0.00K	0.00K
SPAULDING	COOK CO.	IL	04/04/2023	12:49	1.75 in.	0	0	0.00K	0.00K
BARTLETT	COOK CO.	IL	04/04/2023	12:51	1.00 in.	0	0	0.00K	0.00K
FRANKLIN PARK	COOK CO.	IL	04/04/2023	12:53	1.00 in.	0	0	0.00K	0.00K
HARWOOD HEIGHTS	COOK CO.	IL	04/04/2023	12:54	1.50 in.	0	0	0.00K	0.00K
OLD IRVING PARK	COOK CO.	IL	04/04/2023	12:58	1.25 in.	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	04/04/2023	12:58	1.00 in.	0	0	0.00K	0.00K
EDISON PARK	COOK CO.	IL	04/04/2023	13:00	1.25 in.	0	0	0.00K	0.00K
IRVING PARK	COOK CO.	IL	04/04/2023	13:00	1.25 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	04/04/2023	13:01	1.75 in.	0	0	0.00K	0.00K
NILES	COOK CO.	IL	04/04/2023	13:01	1.50 in.	0	0	0.00K	0.00K
NORWOOD PARK	COOK CO.	IL	04/04/2023	13:01	1.00 in.	0	0	0.00K	0.00K
HARWOOD HEIGHTS	COOK CO.	IL	04/04/2023	13:01	1.75 in.	0	0	0.00K	0.00K
JEFFERSON PARK	COOK CO.	IL	04/04/2023	13:03	1.50 in.	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	04/04/2023	13:03	1.25 in.	0	0	0.00K	0.00K
ROGERS PARK	COOK CO.	IL	04/04/2023	13:05	1.00 in.	0	0	0.00K	0.00K
ROGERS PARK	COOK CO.	IL	04/04/2023	13:06	1.00 in.	0	0	0.00K	0.00K
ROGERS PARK	COOK CO.	IL	04/04/2023	13:06	1.25 in.	0	0	0.00K	0.00K
SKOKIE	COOK CO.	IL	04/04/2023	13:07	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	04/04/2023	13:07	1.50 in.	0	0	0.00K	0.00K
PARK RIDGE	COOK CO.	IL	04/04/2023	13:08	1.75 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	04/04/2023	13:10	1.00 in.	0	0	0.00K	0.00K
EVANSTON	COOK CO.	IL	04/04/2023	13:10	1.00 in.	0	0	0.00K	0.00K
ARLINGTON HEIGHTS	COOK CO.	IL	04/04/2023	13:11	1.50 in.	0	0	0.00K	0.00K
NORTHFIELD	COOK CO.	IL	04/04/2023	13:12	1.50 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	04/04/2023	13:17	1.75 in.	0	0	0.00K	0.00K
CHICAGO BOTANIC GARDEN	COOK CO.	IL	04/04/2023	13:19	1.00 in.	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	04/04/2023	13:22	1.00 in.	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	04/20/2023	16:55	1.75 in.	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	04/20/2023	16:58	1.25 in.	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	04/20/2023	17:02	1.00 in.	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	04/20/2023	17:05	1.25 in.	0	0	0.00K	0.00K
PALATINE	COOK CO.	IL	04/20/2023	17:10	1.00 in.	0	0	0.00K	0.00K
BARRINGTON	COOK CO.	IL	04/20/2023	17:17	1.00 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	04/20/2023	17:36	1.50 in.	0	0	0.00K	0.00K
GLENVIEW	COOK CO.	IL	04/20/2023	17:39	1.00 in.	0	0	0.00K	0.00K
HUBBARD WOODS	COOK CO.	IL	04/20/2023	17:42	1.00 in.	0	0	0.00K	0.00K
IRVING PARK	COOK CO.	IL	06/29/2023	14:25	1.00 in.	0	0	0.00K	0.00K
NORWOOD PARK	COOK CO.	IL	02/08/2024	19:38	1.00 in.	0	0	0.00K	0.00K
ELGIN	COOK CO.	IL	02/27/2024	19:30	1.00 in.	0	0	0.00K	0.00K

TABLE: HAILSTORM EVENTS IN COOK COUNTY (1955-2023)									
Location	**County**	**State**	**Date**	**Time**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
HOFFMAN ESTATES	COOK CO.	IL	02/27/2024	19:34	1.00 in.	0	0	0.00K	0.00K
LA GRANGE PARK	COOK CO.	IL	02/27/2024	20:10	1.00 in.	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	02/27/2024	20:13	1.00 in.	0	0	0.00K	0.00K
BURBANK	COOK CO.	IL	02/27/2024	20:30	1.00 in.	0	0	0.00K	0.00K
OAK LAWN	COOK CO.	IL	02/27/2024	20:36	1.50 in.	0	0	0.00K	0.00K
ORLAND HILLS	COOK CO.	IL	02/27/2024	20:37	1.25 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	02/27/2024	20:40	1.50 in.	0	0	0.00K	0.00K
OAK FOREST	COOK CO.	IL	02/27/2024	20:44	2.00 in.	0	0	0.00K	0.00K
MIDLOTHIAN	COOK CO.	IL	02/27/2024	20:46	1.50 in.	0	0	0.00K	0.00K
HEGEWISCH	COOK CO.	IL	02/27/2024	20:54	1.75 in.	0	0	0.00K	0.00K
LA GRANGE	COOK CO.	IL	03/04/2024	21:23	1.00 in.	0	0	0.00K	0.00K

*** Note: According to NOAA, Cook County did not record any dense fog events between 2014-2023.*

TABLE: STRONG WINDS EVENTS IN COOK COUNTY (1996-2024)										
Location	**County**	**State**	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:							**4**	**15**	**1.303M**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	03/20/1996	03:00	High Wind	55 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/25/1996	00:00	High Wind	48 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	04/06/1997	13:15	High Wind	61 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	04/30/1997	18:16	High Wind	40 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	09/29/1997	12:00	High Wind	41 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/26/1997	09:00	High Wind	50 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/10/1998	07:30	High Wind	53 kts.	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	04/12/2001	04:00	High Wind	43 kts. M	0	0	50.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/25/2001	14:47	High Wind	51 kts. M	0	2	50.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/09/2002	11:52	High Wind	50 kts. M	4	4	200.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/04/2002	16:00	High Wind	50 kts. E	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/22/2003	17:00	High Wind	54 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	05/11/2003	13:00	High Wind	50 kts. MG	0	0	10.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/13/2003	15:00	High Wind	50 kts. EG	0	1	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/05/2004	11:15	High Wind	52 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/13/2005	11:30	High Wind	50 kts. EG	0	0	100.00K	0.00K

COOK (ZONE)	COOK (ZONE)	IL	03/31/2006	12:00	High Wind	55 kts. EG	0	4	100.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/31/2006	13:26	High Wind	52 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	12/23/2007	08:00	High Wind	50 kts. EG	0	0	10.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	05/13/2008	18:00	High Wind	51 kts. MG	0	0	1.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/26/2008	14:00	High Wind	50 kts. EG	0	1	40.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/26/2010	08:00	High Wind	50 kts. EG	0	0	500.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/19/2011	11:45	High Wind	53 kts. MG	0	0	2.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	04/16/2012	12:42	High Wind	52 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/11/2012	16:00	High Wind	50 kts. MG	0	0	25.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/11/2013	10:48	High Wind	50 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/17/2013	15:51	High Wind	51 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/20/2014	20:24	High Wind	51 kts. MG	0	0	5.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/31/2014	13:54	High Wind	50 kts. EG	0	0	50.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/31/2014	15:17	High Wind	50 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/12/2015	04:00	High Wind	60 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/19/2016	12:17	High Wind	50 kts. MG	0	1	100.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/16/2016	12:00	High Wind	50 kts. EG	0	0	15.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/16/2016	12:00	High Wind	50 kts. EG	0	0	20.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	04/02/2016	10:30	High Wind	51 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/08/2017	14:30	High Wind	55 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/20/2018	12:37	High Wind	53 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/20/2018	12:40	High Wind	50 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/20/2018	12:55	High Wind	55 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	10/20/2018	12:56	High Wind	52 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/24/2019	08:00	High Wind	54 kts. MG	0	0	25.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/14/2019	14:04	High Wind	52 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	07:07	High Wind	52 kts. MG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	07:10	High Wind	50 kts. MG	0	0	0.00K	0.00K

COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	07:40	High Wind	50 kts. EG	0	1	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	09:09	High Wind	50 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	13:00	High Wind	50 kts. EG	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/27/2019	13:45	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENRTRAL COOK COUNTY (ZO...	CENRTRAL COOK COUNTY (ZO...	IL	03/29/2020	09:00	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENRTRAL COOK COUNTY (ZO...	CENRTRAL COOK COUNTY (ZO...	IL	03/29/2020	16:05	High Wind	53 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	11/15/2020	11:45	High Wind	60 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	11/15/2020	13:55	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	11/15/2020	16:00	High Wind	56 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	05/01/2021	15:15	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	10/25/2021	06:30	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/11/2021	04:48	High Wind	56 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/11/2021	05:15	High Wind	50 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/11/2021	05:20	High Wind	51 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/15/2021	21:46	High Wind	57 kts. MG	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	12/15/2021	23:30	High Wind	55 kts. EG	0	0	0.00K	0.00K

CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/16/2021	00:05	High Wind	53 kts. MG	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	12/16/2021	01:17	High Wind	58 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	04/14/2022	14:40	High Wind	51 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	11/05/2022	03:30	High Wind	50 kts. EG	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	11/05/2022	09:30	High Wind	60 kts. EG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	11/05/2022	13:14	High Wind	51 kts. MG	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	11/05/2022	16:57	High Wind	51 kts. MG	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	02/27/2023	21:35	High Wind	50 kts. EG	0	1	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	01/12/2024	08:04	High Wind	50 kts. MG	0	0	0.00K	0.00K

5.5.6 Vulnerability and Impacts

Impacted FEMA Community Lifelines		
Safety and Security	**Safety and Security** Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	**Moderate**
Food, Hydration, Shelter	**Food, Hydration, Shelter** Food, Hydration, Shelter, Agriculture	**Moderate**
Health and Medical	**Health and Medical** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	**Moderate**
Energy (Power & Fuel)	**Energy** Power Grid, Fuel	**Moderate**
Communications	**Communications** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	**Minimal**

Lifeline	Description	Impact
Transportation	**Transportation** Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	**Moderate**
Hazardous Materials	**Hazardous Materials** Facilities, HAZMAT, Pollutants, Contaminants	**Minimal**
Water Systems	**Water Systems** Potable Water Infrastructure, Wastewater Management	**Moderate**
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown		

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health (Extreme Heat): According to NOAA, extreme heat events carry significant health and life safety risks, notably heat-related illnesses such as heat exhaustion and heatstroke. These conditions can be life-threatening if not promptly addressed, with the elderly, young children, and individuals with pre-existing health conditions being particularly susceptible. Dehydration is a common and dangerous consequence of high temperatures, leading to symptoms like dizziness and confusion, and exacerbating the effects of heat-related illnesses. Respiratory problems are also aggravated by the heat, especially in areas with poor air quality, increasing the likelihood of respiratory distress for individuals with chronic respiratory diseases.

Extreme heat also places strain on both the human body and critical infrastructure. The cardiovascular system can be overburdened, heightening the risk of heart-related issues in individuals with underlying heart conditions. Physical and cognitive functions can be impaired due to excessive body strain, which raises the risk of accidents and injuries. Infrastructure such as roads and power lines may fail, causing widespread disruptions. Heatwaves intensify water scarcity, affecting potable water availability and agriculture, and increase the propensity for wildfires, endangering both life and property. These conditions can also lead to a spike in heat-related mortality rates, particularly in vulnerable groups, underscoring the importance of effective heatwave preparedness and response strategies.

Life Safety and Public Health (Lightning): According to NOAA, lightning can cause fatalities, with an average of 49 reported deaths in the United States each year. In addition to the risk of fatalities, lightning also results in numerous injuries that can have long-lasting effects. These include severe burns, neurological injuries, and other serious health issues. Beyond personal injury, lightning can cause fires and electrical outages, further endangering lives and property. NOAA emphasizes the importance of safety measures such as seeking shelter during storms and avoiding open areas, tall trees, and metal objects to minimize these risks.

Life Safety and Public Health (Hailstorms): According to NOAA, hail events can have several life safety and public health implications. Hailstones, which vary in size from small pellets to golf ball size or larger, can inflict bodily injury to those caught outside during a hailstorm. Such injuries can range from minor bruises to more serious trauma, especially if the hail is large. The risk extends to animals as well, both livestock and pets, which can be severely injured or killed in extreme cases. For the public, hail can pose a significant hazard, prompting advisories for individuals to seek shelter during severe hailstorms. Beyond direct physical harm, hail can cause substantial property damage, affecting homes, vehicles, and critical infrastructure like power lines and roofing. The resulting debris from damaged structures can lead to secondary public health concerns, such as obstructed roadways that impede emergency and medical services. Crop damage is another significant impact of hail events, which can compromise local food supplies and economic stability in agricultural communities. In the aftermath of severe hail, cleanup and repair efforts pose additional health risks, with individuals potentially exposed to injury from debris removal or structural repairs. NOAA emphasizes preparedness and timely weather warnings to mitigate these risks, urging the public to heed hailstorm advisories and take protective actions.

Life Safety and Public Health (Dense Fog): According to NOAA, dense fog impacts life safety and public health by severely reducing visibility, which can lead to dangerous driving, boating, and flying conditions. Fog, particularly when it is dense, contributes to numerous travel accidents each year, including vehicle collisions and maritime incidents. It also complicates aviation operations, affecting both takeoff and landing procedures and leading to delays and cancellations. Lastly, dense fog can hinder emergency response efforts by limiting visibility for first responders during critical situations.

Life Safety and Public Health (Strong Winds): Strong winds pose significant life safety and public health risks, particularly during severe weather events. Strong winds can cause extensive damage to infrastructure, such as homes, power lines, and trees, leading to power outages and blocking access to emergency services. The risk extends to personal safety, where high winds can turn debris into projectiles, posing dangers to life and increasing the likelihood of injury. For those living in manufactured homes or temporary structures, the risk is even more pronounced, as these can be severely damaged or destroyed in high wind conditions. The aftermath of strong winds also includes economic impacts, where communities need significant resources and time to recover and rebuild.

Property Damage and Critical Infrastructure (Extreme Heat): According to NOAA, extreme heat can lead to property damage and critical infrastructure impacts. Prolonged exposure to high temperatures can cause structural damage to buildings and transportation networks, affecting road surfaces and railway tracks. High demand for electricity during heatwaves can strain electrical grids, resulting in power outages that impact homes, businesses, and critical facilities. Water supply shortages and reduced water quality may occur due to drought conditions. Healthcare facilities may be overwhelmed with patients suffering from heat-related illnesses, affecting critical healthcare infrastructure. Extreme heat can also disrupt telecommunications equipment and communication systems and contribute to the ignition and spread of wildfires, resulting in property damage and environmental impacts. Lastly, vulnerable populations are at increased risk of heat-related illnesses, and public safety concerns arise, regarding strained emergency response and healthcare systems.

Property Damage and Critical Infrastructure (Lightning): According to NOAA, lightning can impact property damage and critical infrastructure in various ways. It can directly strike buildings, causing structural damage, igniting fires, and disrupting power systems, which can lead to broader electrical outages. Lightning strikes are also a hazard to telecommunications and other technological systems due to the electrical surges they produce, potentially leading to costly repairs and downtime. Additionally, critical infrastructure such as power plants, substations, and airports are particularly vulnerable to lightning strikes, which can result in extensive operational disruptions and safety hazards. Overall, the economic and functional impact of lightning on infrastructure necessitates the implementation of protective measures such as lightning rods, surge protectors, and other mitigation strategies to safeguard both property and public safety.

Property Damage and Critical Infrastructure (Hailstorms): According to NOAA, hailstorms can cause extensive property damage and have significant repercussions for critical infrastructure. Hail can vary in size from small pellets to the size of softballs, and larger hailstones can shatter windows, dent vehicles, and damage roofs of homes and businesses, leading to costly repairs and insurance claims. Agricultural sectors are particularly vulnerable, as hail can decimate crops, resulting in substantial economic losses for farmers. The impact on personal property and commercial assets can be severe, depending on the storm's intensity, hail size, and duration.

Critical infrastructure is also vulnerable to hail. Examples include energy infrastructure, including power lines and solar panels, which can suffer damage, leading to power outages and affecting energy production. Communication infrastructures, such as cell towers and satellite dishes, can also be impaired during hail events, disrupting communication networks. Transportation can be affected as well, with hail impairing visibility and surface conditions, potentially leading to accidents and damage to transportation systems like railways and airports.

Property Damage and Critical Infrastructure (Dense Fog): According to NOAA, dense fog impacts property damage and critical infrastructure primarily by reducing visibility, which can lead to accidents and disrupt transportation systems. Dense fog can cause major delays and hazards in road, air, and marine transportation, increasing the risk of collisions and other accidents. This disruption affects both daily commuters and emergency services' ability to respond to incidents promptly. Finally, dense fog can lead to economic losses due to delayed flights, shipping, and other logistics-related activities. The accumulation of fog on electrical equipment, such as power lines, can also lead to short circuits and power outages, affecting residential and commercial areas.

Property Damage and Critical Infrastructure (Strong Winds): According to NOAA, strong winds can impact property damage and critical infrastructure in several ways. Strong winds, often categorized as having speeds exceeding 50-60 mph, can cause structural damage to buildings by tearing off roofs, breaking windows, and uprooting trees. Strong winds can also disrupt electrical power lines and communication infrastructure, leading to widespread power outages and affecting emergency services. Lastly, strong winds can impair transportation systems, including grounding flights, toppling vehicles, and creating hazardous driving conditions due to flying debris.

5.5.7 Economy

Extreme Heat: According to NOAA, there are many economic impacts associated with extreme heat. These impacts can include increased healthcare costs resulting from a surge in heat-related illnesses, which necessitate medical treatment and contribute to healthcare expenditures.

Furthermore, the scorching temperatures can lead to reduced productivity in various economic sectors, impacting labor efficiency and overall economic output. During heatwaves, cooling demands soar, driving up energy consumption, elevating utility bills, and placing strain on energy infrastructure. The agricultural sector is not immune, as extreme heat can damage crops, reducing yields and affecting agriculture, thereby disrupting food supply chains and causing financial losses for farmers. Additionally, high temperatures can stress transportation infrastructure, causing road buckling, rail deformation, and necessitating repairs. Water resources may also face increased demand, requiring additional treatment and distribution efforts, which come with associated costs. The tourism and outdoor recreation industries can be adversely affected as extreme heat deters tourists and outdoor enthusiasts, impacting local economies dependent on these sectors. In the realm of insurance, heightened heat-related property and infrastructure damage may lead to higher premiums for individuals and businesses. Lastly, prolonged periods of extreme heat heighten the risk of wildfires, incurring costs associated with property damage, ecosystem disruption, firefighting efforts, and resource allocation.

Lightning: According to NOAA, lightning can cause direct damage to buildings and electrical systems, ignite fires, and disrupt power and communication services. These incidents can result in costly repairs and significant economic losses, not just from the physical damage but also from the secondary effects such as business interruptions and loss of service delivery. Lastly, the insurance and reinsurance industries incorporate this data to evaluate and manage risks associated with lightning and other severe weather events.

Hailstorms: According to NOAA, hail events can have significant economic impacts, particularly due to the damage they inflict on vehicles, homes, and agriculture. Automobiles exposed to hail can sustain dents and broken glass, leading to expensive repairs and insurance claims. Residential and commercial roofing can be severely damaged, necessitating costly repairs or replacements. For the insurance industry, hailstorms often result in a high volume of claims, impacting their financial reserves and potentially leading to higher insurance premiums for customers in hail-prone areas.

The agricultural sector is especially vulnerable to hail events. Crops can be devastated by hail, leading to a loss of yield for farmers and affecting the local and regional food supply, which can drive up food prices. Hail can also damage greenhouses and farm equipment, adding to the financial burden on agricultural businesses. The cumulative economic effect of hail includes not only the direct costs of damage and repairs but also the indirect costs associated with business interruptions and the increased prices of goods and services affected by the loss of crops and property damage.

Dense Fog: According to NOAA, dense fog can severely reduce visibility, leading to delays and closures in air, road, and maritime transport. This disruption affects airline operations, causing flight delays and cancellations, which in turn impacts passenger transit and cargo shipments. On roads, reduced visibility increases the risk of accidents, leading to potential human and material losses. In maritime settings, fog can delay shipping activities, affecting the supply chain and leading to economic losses.

Strong Wind: According to NOAA, strong wind events (including derechos and severe thunderstorm winds), can have economic impacts due to property damage over widespread areas. These impacts can include structural damage to buildings and homes, leading to substantial repair costs and insurance claims. The agricultural sector can be significantly affected, with damage to crops and farming infrastructure potentially resulting in lost income for farmers and increased commodity prices. Businesses may suffer interruptions that disrupt economic activity and incur losses, particularly when power outages affect operations and supply chains.

The costs associated with strong wind events typically include cleanup and restoration efforts, which can be extensive and require significant municipal and state resources. Utility companies may face substantial expenses in repairing downed power lines and restoring service to customers. Moreover, the transportation sector can experience disruptions, with damaged roads and railways impeding travel and logistics. The cumulative effect of these events on the economy includes direct costs, such as damage repair and lost revenue, and indirect costs, like increased insurance rates and the potential for long-term economic downturn in severely affected areas.

5.5.8 Changes in Development and Impact to Future Development

Extreme Heat: According to NOAA, extreme heat events can impact changes in development and future urban planning and construction. As temperatures rise, cities and developers are increasingly considering the heat resilience of buildings and infrastructure. Currently, there's an increasing emphasis on designing structures that can withstand high temperatures while minimizing the need for energy-intensive cooling methods. This includes integrating materials that reflect rather than absorb heat, enhancing natural ventilation, and increasing green spaces to reduce the urban heat island effect. Additionally, there's a trend toward "cool roofs," urban tree canopies, and permeable pavements to manage heat.

In many areas, climate-resilient urban planning is becoming a priority to accommodate the anticipated increase in frequency and severity of heatwaves due to climate change. This planning involves the creation of heat action plans, the development of early warning systems, and the construction of cool refuges to protect vulnerable populations. Water resource management also becomes more critical in the design of new developments, as extreme heat can exacerbate water scarcity. Communities are also re-evaluating building codes, zoning laws, and development policies to ensure that new constructions and city expansions are both sustainable and resilient in the face of rising temperatures.

Lightning: According to NOAA, lightning events impact development decisions by impacting building codes and infrastructure planning, enhancing both safety and resilience. In regions prone to frequent lightning, such as Southeastern U.S. states, developers and urban planners incorporate advanced lightning protection systems in buildings and infrastructure. This initiative extends to the design of electrical systems, with a focus on minimizing outages and damage from lightning-induced power surges through the integration of robust surge protectors and other resistant technologies. The insurance industry also adjusts its standards in high-lightning areas, influencing building practices with modified coverage requirements and premium calculations.

Hailstorms: According to NOAA, hail events can impact development and construction practices, particularly in hail-prone regions. The frequency and intensity of hailstorms can influence the choice of building materials or design considerations in new constructions. In addition, there is an increasing emphasis on using hail-resistant materials, especially for roofing and siding. For instance, the adoption of impact-resistant shingles and reinforced glass is becoming more common to reduce damage and subsequent repair costs. Lastly, architectural designs are evolving to include features that can minimize hail damage, such as protective overhangs and the strategic placement of vulnerable elements like windows and skylights.

Urban and regional planning is also accounting for the risk of hail events. This involves selecting appropriate materials and designs for buildings and considering the broader impact on infrastructure such as transportation and utilities. Finally, the agricultural sector is particularly vulnerable to hail, and is also adapting through the use of protective structures like hail nets over crops.

Dense Fog: According to NOAA, dense fog can influence urban and infrastructure development primarily through its implications for transportation and public safety. In turn, urban planners and developers might consider these impacts when designing infrastructure, particularly in areas prone to frequent dense fog. This can include the implementation of advanced traffic management and navigation systems designed to operate effectively in reduced visibility conditions. This means that road designs may incorporate better lighting and signage, while airports and ports might invest in sophisticated navigational aids to prevent disruptions caused by fog. Lastly, building codes could require that structures in high-risk areas be designed to minimize accidents and enhance safety during dense fog conditions.

Strong Wind: According to NOAA, strong wind events *(including derechos and severe thunderstorm winds)* can impact current and future development practices. Physical damage from historical straight-line wind events is prompting changes in building design and construction. There is also a focus on wind-resistant construction techniques, such as strengthening building envelopes, using more durable roofing materials, and securing outdoor objects to prevent them from becoming airborne projectiles. In areas frequently affected by straight-line winds, there is a growing emphasis on adopting building codes that require wind-resistant features, aiming to reduce damage and ensure the safety of structures.

For future development, urban and regional planning are evaluating this placement and orientation of buildings to minimize wind impact, enhancing vegetation cover to serve as windbreaks, and implementing robust infrastructure designs, especially for utilities and transportation networks. Planning also includes the development of emergency response strategies and the installation of early warning systems to mitigate the impact of such events on communities.

5.5.9 Effects of Climate Change on the Severity of Impacts

Extreme Heat: According to the NOAA, climate change is impacting the severity and frequency of extreme heat events. As global temperatures rise due to increasing greenhouse gas emissions, extreme heat events are becoming more intense, frequent, and prolonged. NOAA data indicates that heatwaves are occurring earlier in the year and lasting longer, leading to higher temperatures than historically recorded. This increase in temperature exacerbates the urban heat island effect in cities, where concrete and asphalt store and re-radiate heat, further intensifying the impact of extreme heat events in these areas.

The compounding effects of climate change on extreme heat also have broader ecological impacts, such as altering natural ecosystems and increasing the risk of wildfires. Higher temperatures contribute to more significant evaporation and soil dryness, which in turn can lead to drought conditions, affecting water supplies and agriculture. Lastly, the changing patterns of extreme heat are impacting public health, with increases in heat-related illnesses and deaths, particularly among vulnerable populations such as the elderly, children, and those with pre-existing health conditions.

Lightning: Climate change is projected to increase the frequency and intensity of "hot lightning," a type of lightning strike that is particularly effective at sparking wildfires. This increase is due to higher temperatures driving up the rate of these intense lightning strikes. As a result, regions may face heightened risks of lightning-induced wildfires, making it imperative for development and urban planning to consider these changes, especially in areas prone to such natural disasters. This adaptation could involve enhancing fire management strategies and updating building codes to mitigate the risks associated with more frequent and severe lightning events.

Hailstorms: According to NOAA, climate change is impacting the severity of hail events. One impact is the increase in the intensity of hailstorms. As global temperatures rise, the atmosphere can hold more moisture, leading to greater instability and energy, which are critical factors for the formation of thunderstorms that produce hail. This can result in stronger updrafts in thunderstorms, essential for the formation of larger hailstones. Consequently, while the frequency of hail events may not necessarily increase, the intensity and size of the hail produced during these events could also escalate, leading to more significant damage.

According to NOAA, the relationship between climate change and hail is intricate and varies by region. In some areas, warming temperatures might actually reduce the likelihood of hail by increasing the height at which hail melts before reaching the ground. This could lead to a decrease in the number of hail events or a shift in their geographical distribution. Finally, climate change may affect the seasonality of hail, potentially altering the timing of hailstorms and impacting agricultural planning and preparedness.

Dense Fog: According to NOAA, climate change can impact fog formation through alterations in temperature, humidity, and local weather patterns, which might affect the frequency and density of fog events. Warmer temperatures can increase evaporation rates, potentially leading to more fog under the right conditions, while other factors, such as changing wind patterns and urbanization, can also play significant roles.

Strong Wind: According to NOAA, climate change impacts the severity of strong wind events, although the specific effects are complex and subject to ongoing research. Straight-line winds, such as those associated with severe thunderstorms, derechos, and downbursts, can be influenced by atmospheric conditions that are affected by climate change. As global temperatures rise, the atmosphere can hold more moisture and become more unstable, potentially leading to more powerful and frequent thunderstorms capable of producing severe straight-line winds. This increased instability can contribute to the intensity of storm systems and the energy available for severe weather events, including those with damaging winds.

According to NOAA, the relationship between climate change and strong wind events is not straightforward. Factors such as changes in the jet stream, regional variations in temperature and moisture patterns, and the complex dynamics of storm formation all play a role in determining how these events may change in a warming climate. While some models suggest an increase in the frequency and intensity of storms capable of producing strong straight-line winds, there is still uncertainty regarding the extent and geographical distribution of these changes.

TABLE: 25-YEAR PRECIPITATION PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience a **10% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.8" increase** (from 36.9" to 37.7") in average annual precipitation.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience a **1% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.1" decrease** (from 37.3" to 37.2") in average annual precipitation.
Source: Neighborhoods at Risk: (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: 25-YEAR CLIMATE PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience **an 115% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 55°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience an **83% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 54°F) in average annual temperatures.
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL

Indicator	Modeled History (1976-2005)	Early Century (2015-2044)		Mid Century (2035-2064)		Late Century (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Average Annual Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40”**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Days Per Year With No Precipitation	**193 days**	**195 days**	**196 days**	**196 days**	**197 days**	**197 days**	**200 days**
	190-197	187-208	187-212	186-207	184-216	187-208	180-235
Maximum Number Of Consecutive Dry Days	**13 days**	**13 days**	**14 days**	**14 days**	**14 days**	**14 days**	**15 days**
	11-14	12-16	12-17	12-16	12-18	12-16	12-20
Temperature Thresholds							
	12 days	**31 days**	**34 days**	**41 days**	**49 days**	**50 days**	**81 days**

Annual days with Maximum temperature > 90°	12-18	19-51	21-50	22-69	30-75	26-86	47-113
Annual days with Maximum temperature > 100°	**0 days**	**2 days**	**2 days**	**4 days**	**7 days**	**7 days**	**24 days**
	0-0	0-6	0-7	0-16	1-23	1-16	2-67

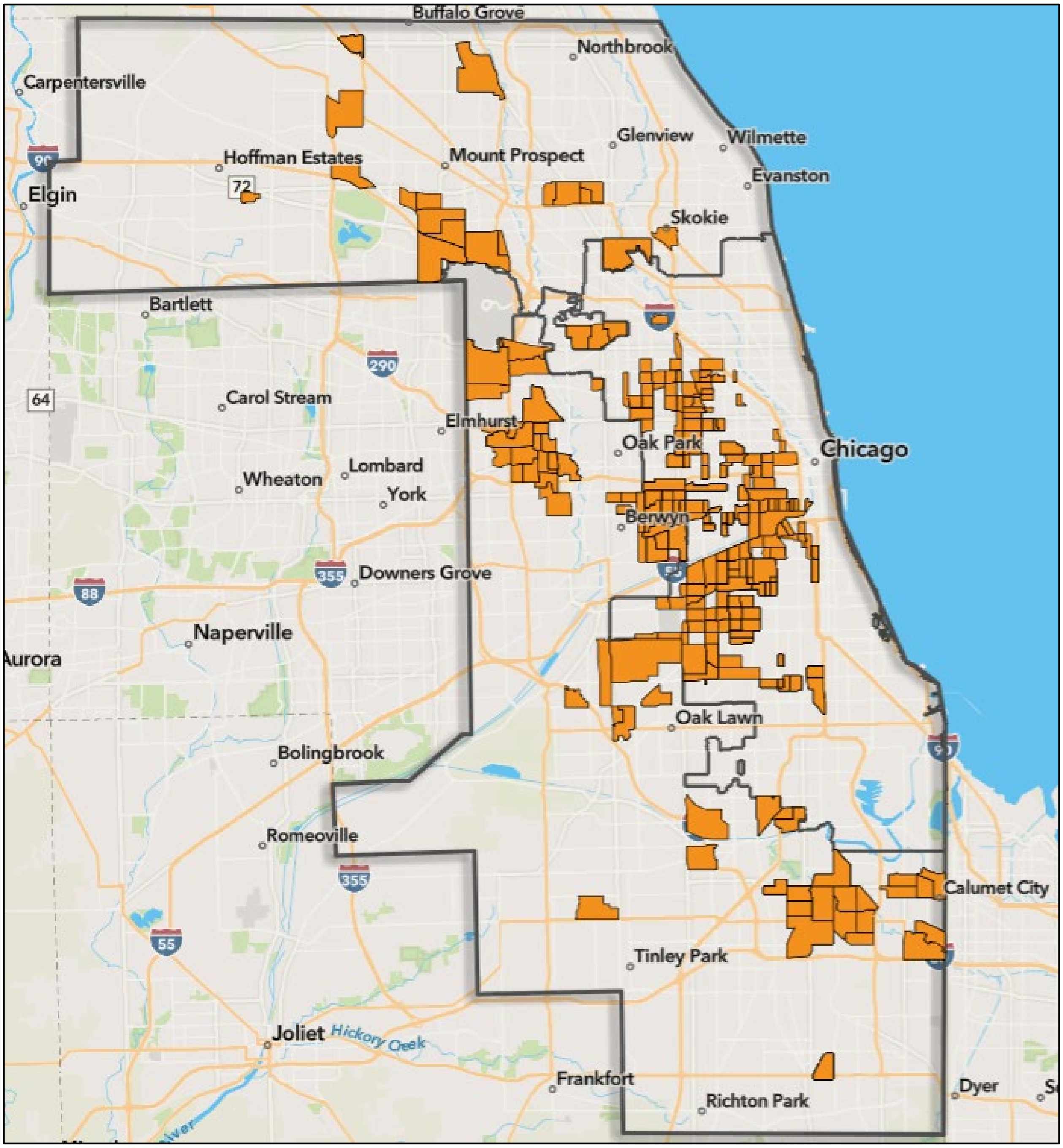
Source: Climate Mapping for Resilience and Adaptation (2024)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40“**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation (Wet Days)	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Maximum Period of Consecutive Wet Days	**10 days**	**10 days**	**10 days**	**10 days**	**11 days**	**10 days**	**10 days**
	10-12	9-12	9-12	9-12	9-12	9-12	9-13
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**4 days**	**5 days**	**5 days**	**5 days**	**5 days**	**5 days**	**6 days**
	3-5	4-6	4-6	4-6	4-7	4-7	5-9
Annual Days With Total Precipitation > 2 inches	**0 days**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**
	0-1	0-1	0-1	0-1	0-1	0-1	0-2
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**5 days**	**6 days**	**6 days**	**7 days**	**7 days**	**7 days**	**8 days**
	5-7	5-8	5-8	6-8	6-9	6-9	7-10
*Days With Maximum Temperature Below 32*F*	**41 days**	**30 days**	**28 days**	**25 days**	**22 days**	**21 days**	**12 days**
	37-44	17-40	21-37	13-36	11-32	10-32	2-24

Source: Climate Mapping for Resilience and Adaptation (2024)

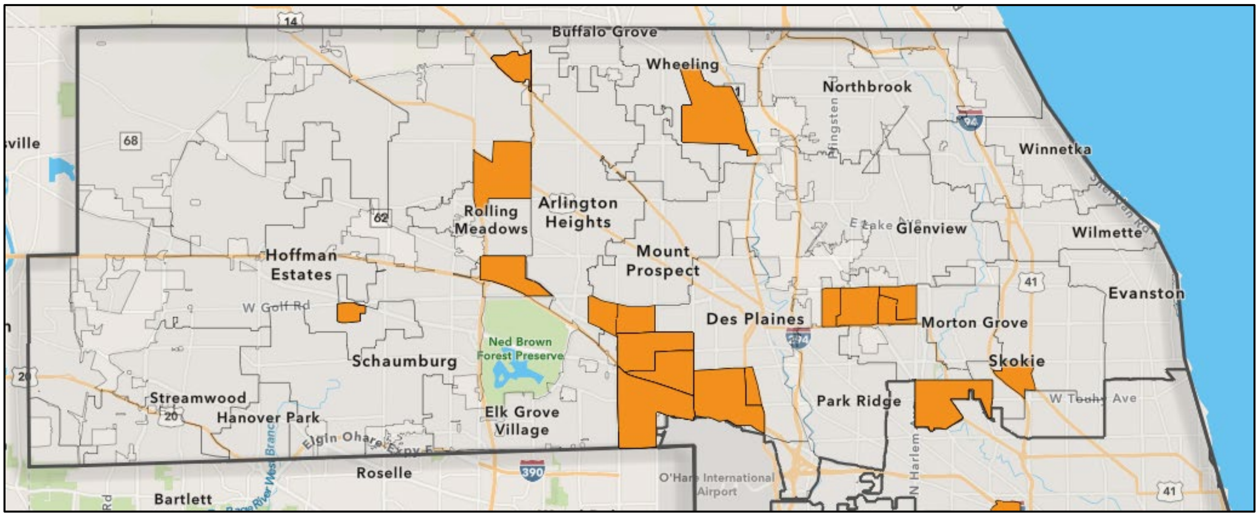
The figure below highlights the highest risk census tracts for extreme heat mitigation and intervention and associated challenges that communities face from climate change. This map examines where areas of high urban heat index, low tree canopy percentage, and high amounts of impervious surface overlap with one of eleven social vulnerability index variables. The resulting data shows census tracts that are at highest risk for extreme heat and contain populations who may be disproportionately affected by extreme heat events caused by climate change.

Climate Change Impact: High Heat Risk Areas for Cook County



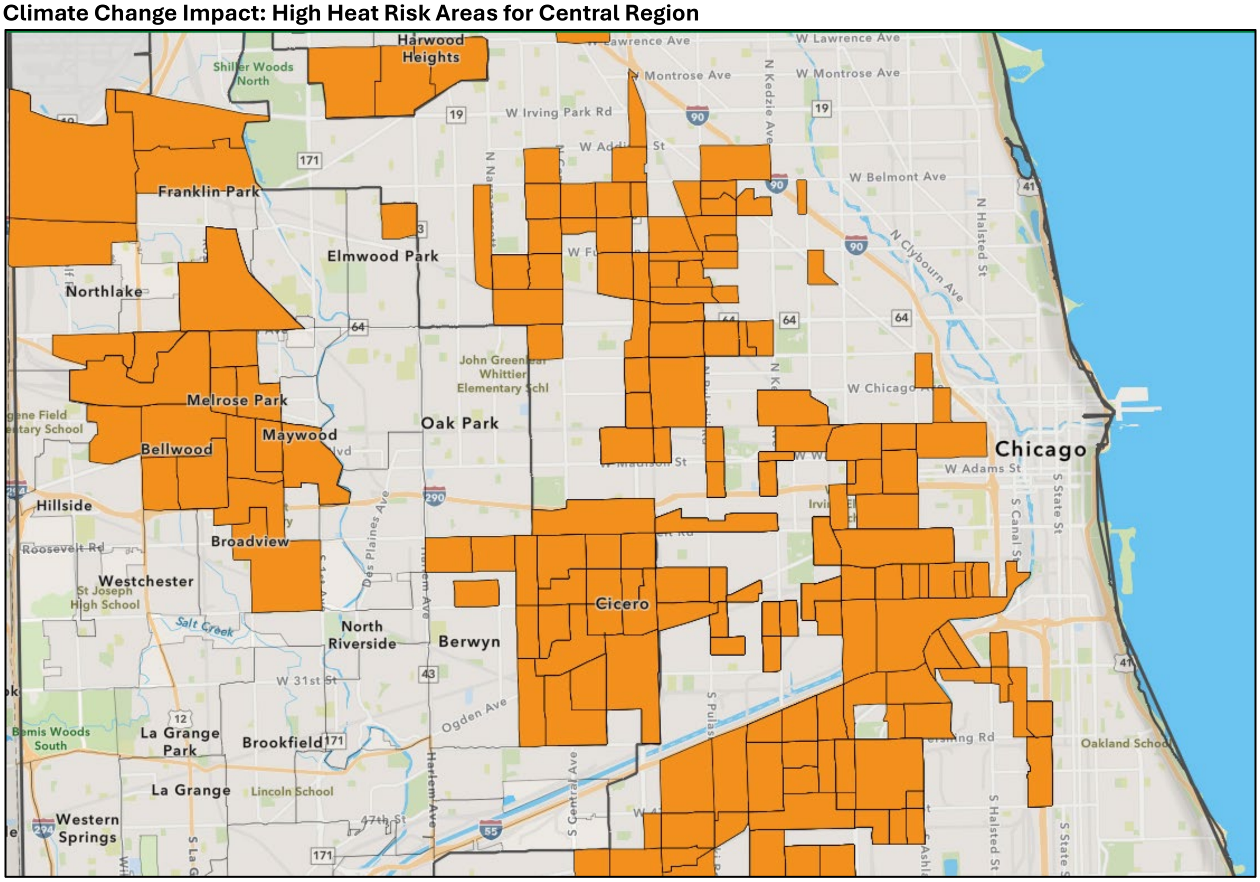
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for North Region



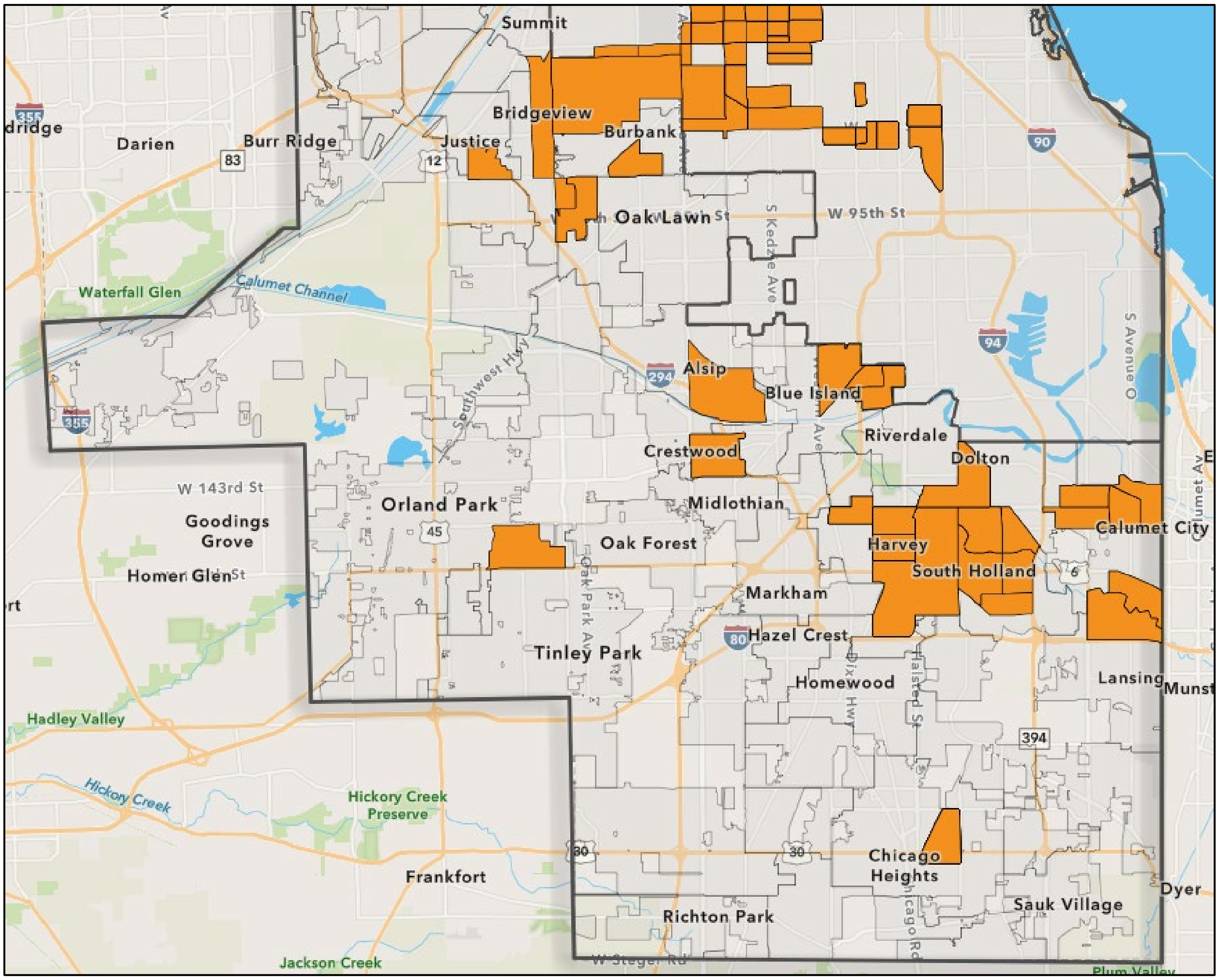
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for Central Region



Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for South Region



5.5.10 FEMA NRI Expected Annual Loss Estimates

COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR EXTREME HEAT EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
1.5 events per year	13.33	$154,608,948	$3,425	$1,827	$154,614,200	Very High	100.0
Period of Record: 2005-2021 (16 years)							
COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR LIGHTNING EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
73.9 events per year	0.21	$2,492,830	$476,976	N/A	$2,969,805	Very High	99.1
Period of Record: 1991-2012 (22 years)							
COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR HAILSTORM EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
4.1 events per year	0.04	$412,586	$1,129,266	$2,163	$1,544,015	Relatively Moderate	93.7
Period of Record: 1986-2021 (34 years)							
COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR STRONG WIND EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
5.6 events per year	0.92	$10,673,065	$1,723,156	$1,315	$12,397,536	Very High	99.6
Period of Record: 1986-2021 (34 years)							
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

*** Note: The FEMA National Risk Index does not assess expected annual loss for dense fog events.*

5.5.11 FEMA NRI Hazard Specific Risk Index

COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – EXTREME HEAT EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$154,614,200	Very High	Relatively High	$187,764,913	100.0
COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – LIGHTNING EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$2,969,805	Very High	Relatively High	$3,600,856	99.1
COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – HAILSTORM EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$1,544,015	Very High	Relatively High	$1,824,094	93.9
COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – STRONG WIND EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$12,397,536	Very High	Relatively High	$14,964,947	99.7
*FEMA Hazard-Type **Risk Index Scores** are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type **Social Vulnerability Score** represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type **Community Resilience Score** represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

*** Note: The FEMA National Risk Index does not assess hazard-specific risk for dense fog events.*

5.5.12 FEMA NRI Exposure Value Table

TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR EXTREME HEAT EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Extreme Heat	$61,228,367,602,051	$882,318,117,526	$60,346,027,604,756	5,202,243.76	$21,879,769
TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR LIGHTNING EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Lightning	$62,057,306,815,354	$893,116,815,354	$61,164,190,000,000	5,272,775.00	N/A
TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR HAILSTORM EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Hailstorm	$62,057,329,400,253	$893,116,815,354	$61,164,190,000,000	5,272,775.00	$22,584,899
TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR STRONG WIND EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Strong Wind	$62,057,329,400,253	$893,116,815,354	$61,164,190,000,000	5,272,775.00	$22,584,899

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).*
Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

*** Note: The FEMA National Risk Index does not assess exposure value for dense fog events*

5.6 Severe Winter Weather

5.6.1 Hazard Description

In this *Plan*, Severe Winter Storms are considered to be heavy snow, blizzards, ice storms, and extreme cold/wind chill.

Heavy Snow: According to NOAA, a "Heavy Snow Warning" is issued when there is an imminent or occurring snowfall of 6 inches (15 cm) or more in 12 hours, or 8 inches (20 cm) or more in 24 hours. These criteria are specifically noted for the Midwest but may vary regionally across different parts of the United States, accommodating the varying climatic conditions and the impacts that such snowfall can have on those regions.

Blizzards: According to NOAA, a blizzard is defined by several specific conditions that must occur simultaneously for a period of 3 hours or longer. These conditions include sustained wind or frequent gusts reaching 35 miles per hour or more, and considerable falling and/or blowing snow that reduces visibility to less than one quarter of a mile. This severe weather event is characterized by its ability to significantly impair visibility and mobility, impacting transportation and safety over extended periods.

Ice Storms: According to NOAA, an ice storm is defined as a storm which results in the accumulation of at least 0.25 inches (about 6.4 mm) of ice on exposed surfaces. Ice storms are significant due to their ability to create hazardous driving and walking conditions, and they can easily cause tree branches and power lines to snap under the weight of the ice. This definition highlights the dangers posed by such storms, particularly regarding safety and the potential for widespread power outages.

Extreme Cold/Wind Chill: According to NOAA, "extreme cold" or "wind chill" is defined based on the effect of the wind on air temperature as it feels to exposed skin. The wind chill factor describes the combined effect of the wind and cold temperatures on exposed skin, which can increase the risk of frostbite and hypothermia. NOAA typically issues warnings related to extreme cold or wind chill when these conditions pose significant health risks, such as when wind chill values are expected to fall to dangerously low temperatures that could cause frostbite within minutes.

5.6.2 Hazard Location

Severe winter storms could occur anywhere within Cook County, Illinois.

5.6.3 Hazard Extent/Intensity

Heavy Snow: NWS measures the weight of snow on a given area, in pounds per square foot/kilogram, per square meter. In the table below, Snow Load accounts for the density and depth of accumulated snow on a surface, such as a roof or structure, and is crucial for assessing the potential stress and load-bearing capacity of buildings.

TABLE: NATIONAL WEATHER SERVICE SNOW LOAD INFORMATION			
WATER = 62.4 pounds/cubic foot			
INCHES	**WE=lbs./sq ft.**	**INCHES**	**WE=lbs./sq ft.**
1.0	5.2	21.0	109.2
2.0	10.4	22.0	114.4
3.0	15.6	23.0	119.6
4.0	20.8	24.0	124.8
5.0	26.0	25.0	130.0
6.0	31.2	26.0	135.2
7.0	36.4	27.0	140.4
8.0	41.6	28.0	145.6
9.0	46.8	29.0	150.8
10.0	52.0	30.0	156.0
11.0	57.2	31.0	161.2
12.0	62.4	32.0	166.4
13.0	67.6	33.0	171.6
14.0	72.8	34.0	176.8
15.0	78.0	35.0	182.0
16.0	83.2	36.0	187.2
17.0	88.4	37.0	192.4
18.0	93.6	38.0	197.6
19.0	98.8	39.0	202.8
20.0	104.0	40.0	208.0
Source: NWS Snow Load (2024)			

In addition, NOAA also produces the Regional Snowfall Index (RSI) (shown below) for significant snowstorms that impact the eastern two thirds of the U.S. The Regional Snowfall Index, however, can still be a useful tool for considering extent values of snowfall throughput in Cook County.

TABLE: NOAA REGIONAL SNOWFALL INDEX (RSI)		
Category	**RSI Value**	**Description**
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme
Source: Regional Snowfall Index (RSI) | National Centers for Environmental Information (NCEI) (noaa.gov)		

Blizzards: NOAA measures the extent and intensity of a blizzard by assessing several meteorological variables over a minimum duration of three hours. These include sustained winds or frequent gusts of 35 miles per hour or more and considerable falling and/or blowing snow reducing visibility to less than one-quarter mile. This combination of high winds and low visibility must persist for at least three hours to qualify as a blizzard. These criteria are crucial for issuing blizzard warnings, which are based on forecasts and observations using advanced weather tracking and prediction technologies.

Ice Storms: To measure the extent and intensity of ice storms, NOAA considers the amount of ice accumulation resulting from the storm, typically using the threshold of 0.25 inches (about 6.4 mm) of ice on exposed surfaces to define a significant ice storm event. This accumulation can be estimated using various meteorological data and observations. Additionally, the Sperry–Piltz Ice Accumulation Index (SPIA Index) is used for rating ice storm intensity based on expected ice accumulation and the potential damage to human-built structures, particularly utility systems like power lines. This index helps categorize the severity of ice storms and predict their likely impacts on infrastructure and public safety.

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Source: SPIA Index

Extreme Cold: NOAA measures the extent and intensity of extreme cold using a combination of meteorological tools and observation networks. The assessment of extreme cold conditions involves analyzing various data points and indicators, including:

- Temperature Readings: NOAA uses a network of weather stations and temperature sensors to record air temperature data. During extreme cold events, temperature readings well below the normal or seasonal averages are noted. Extremely low temperatures are a primary indicator of the intensity of extreme cold conditions.
- Wind Chill Index: In addition to actual air temperature, NOAA calculates the wind chill index. This index reflects how cold it feels to the human body and is determined by a combination

of air temperature and wind speed. A lower wind chill index indicates more severe cold conditions.

- Historical Climate Data: NOAA maintains extensive records of historical climate data, including records of the lowest temperatures ever recorded in specific locations. Comparing current temperatures to historical records helps assess the extremeness of the cold event.
- Duration of Extreme Cold: The length of time that extreme cold conditions persist is another factor in assessing their intensity. Prolonged periods of extreme cold can have more significant impacts on both the environment and human health.
- Wind Speed and Gusts: Wind speed and gusts can exacerbate the intensity of extreme cold. NOAA monitors these parameters to determine whether wind-driven cold temperatures are causing more significant issues.
- Real-Time Monitoring: NOAA continuously collects real-time data from weather stations and sensors to monitor the current conditions during an extreme cold event. These data points provide insights into the extent and intensity of the event.
- Public Reports: Reports from the public, including trained weather spotters and community members, are valuable sources of information regarding the extent and impacts of extreme cold. Public reports contribute to NOAA's understanding of the real-time conditions on the ground.

NOAA uses all of these tools and data sources to assess the extent and intensity of extreme cold conditions and to issue appropriate advisories and warnings, such as Wind Chill Warnings and Extreme Cold Warnings, to inform the public and provide guidance on how to stay safe during extreme cold events.

Wind Chill Chart

Temperature (°F)

Wind (mph) / Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill } (^\circ F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

- **Severe Winter Storms**: The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in Cook County.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT				
Hazard Type	Affected Jurisdictions	Extent (based on historical events)		Comments
		Minimum	Maximum	
Severe Winter Weather	County-wide	No property Damage	$500,000 Property damage	Multiple instances of severe winter weather have occurred (2018-2023), one storm causing $500,000 in property damage.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT – Snow Events				
Hazard Type	Affected Jurisdictions	Extent (based on historical events)		Comments
		Minimum	Maximum	
Precipitation (Snow)	Arlington Heights	0.0 inches	4.2 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 15* to *March 30*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Arlington Heights is *February*, with an average snowfall of *4.2 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 30* to *November 15*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Alsip	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Alsip is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Barrington	0.0 inches	4.8 inches	The *snowy* period of the year lasts for *4.7 months*, from *November 10* to *April 2*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Barrington is *January*, with an average snowfall of *4.8 inches*. The *snowless* period of the year lasts for *7.3 months*, from *April 2* to *November 10*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Bedford Park	0.0 inches		Not Available.
Precipitation (Snow)	Bellwood	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Bellwood is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Berkeley	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Berkeley is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 27* to *November 19*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Berwyn	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 23* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Berwyn is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 23*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Blue Island	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Blue Island is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 22*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Bridgeview	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Bridgeview is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Broadview	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Broadview is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Brookfield	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Brookfield is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Buffalo Grove	0.0 inches	4.2 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 15* to *March 30*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Buffalo Grove is *February*, with an average snowfall of *4.2 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 30* to *November 15*. The *least snow* falls around *July 18*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Burbank	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Burbank is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Burnham	0.0 inches	3.5 inches	The *snowy* period of the year lasts for *3.9 months*, from *November 26* to *March 23*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Burnham is *February*, with an average snowfall of *3.5 inches*. The *snowless* period of the year lasts for *8.1 months*, from *March 23* to *November 26*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Calumet City	0.0 inches	3.5 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 25* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Calumet City is *February*, with an average snowfall of *3.5 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 25*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Calumet Park	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 23* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Calumet Park is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 23*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Chicago Heights	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Chicago Heights is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Chicago Ridge	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Chicago Ridge is *February*, with an average snowfall of *3.9 inches*.

				The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Cicero	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 24* to *March 23*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Cicero is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 23* to *November 24*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	City of Chicago	0.0 inches	3.2 inches	The *snowy* period of the year lasts for *3.5 months*, from *December 1* to *March 18*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Chicago is *February*, with an average snowfall of *3.2 inches*. The *snowless* period of the year lasts for *8.5 months*, from *March 18* to *December 1*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Country Club Hills	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Country Club Hills is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Countryside	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Countryside is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Crestwood	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Crestwood is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Des Plaines	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 11* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Des Plaines is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 27* to *November 11*. The *least snow* falls around *July 28*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Dixmoor	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Dixmoor is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Dolton	0.0 inches	3.5 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 25* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Dolton is *February*, with an average snowfall of *3.5 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 25*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	East Hazel Crest	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in East Hazel Crest is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Elgin (New for 2024)	0.0 inches	4.3 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 14* to *March 30*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Elgin is *January*, with an average snowfall of *4.3 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 30* to *November 14*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Elk Grove Village	0.0 inches	4.3 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 15* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Elk Grove Village is *February*, with an average snowfall of *4.3 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 15*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Elmwood Park	0.0 inches	3.7 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 17* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Elmwood Park is *February*, with an average snowfall of *3.7 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 25* to *November 17*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Evanston	0.0 inches	3.4 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 9* to *March 23*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Evanston is *February*, with an average snowfall of *3.4 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 23* to *November 9*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Evergreen Park	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Evergreen Park is *February*, with an average snowfall of *3.8 inches*.

				The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 22*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Flossmoor	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Flossmoor is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Ford Heights	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Ford Heights is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Forest Park	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 23* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Forest Park is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 23*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Forest View			Not Available.
Precipitation (Snow)	Franklin Park	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Franklin Park is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Glencoe	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 6* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Glencoe is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.3 months*, from *March 27* to *November 6*. The *least snow* falls around *July 16*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Glenview	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 5* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Glenview is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.3 months*, from *March 26* to *November 5*. The *least snow* falls around *July 13*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Glenwood	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Glenwood is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Golf			Not Available.
Precipitation (Snow)	Hanover Park	0.0 inches	4.5 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 13* to *March 31*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hanover Park is *February*, with an average snowfall of *4.5 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 31* to *November 13*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Harvey	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Harvey is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Harwood Heights	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 14* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Harwood Heights is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 26* to *November 14*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Hazel Crest	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hazel Crest is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 28* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Hickory Hills	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hickory Hills is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Hillside	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hillside is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 27* to *November 19*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Hodgkins	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hodgkins is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Hoffman Estates	0.0 inches	4.5 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 12* to *April 1*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hoffman Estates is *January*, with an average snowfall of *4.5 inches*. The *snowless* period of the year lasts for *7.4 months*, from *April 1* to *November 12*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Hometown	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Hometown is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 22*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Homewood	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 20* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Homewood is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Indian Head Park	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 19* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Indian Head Park is *February*, with an average snowfall of *4.0 inches*.

				The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 19*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Inverness	0.0 inches	4.7 inches	The *snowy* period of the year lasts for *4.7 months*, from *November 11* to *April 2*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Inverness is *January*, with an average snowfall of *4.7 inches*. The *snowless* period of the year lasts for *7.3 months*, from *April 2* to *November 11*. The *least snow* falls around *July 22*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Justice	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Justice is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Kenilworth	0.0 inches	3.5 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 8* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Kenilworth is *February*, with an average snowfall of *3.5 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 24* to *November 8*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	LaGrange			Not Available.
Precipitation (Snow)	LaGrange Park			Not Available.
Precipitation (Snow)	Lansing	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Lansing is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 28* to *November 21*.

				The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Lemont	0.0 inches	4.2 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 17* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Lemont is *February*, with an average snowfall of *4.2 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 17*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Lincolnwood	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 13* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Lincolnwood is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 24* to *November 13*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Lynwood	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Lynwood is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 29* to *November 19*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Lyons	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Lyons is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Markham	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Markham is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Matteson	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Matteson is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Maywood	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Maywood is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 28*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	McCook			Not Available.
Precipitation (Snow)	Melrose Park	0.0 inches	3.7 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Melrose Park is *February*, with an average snowfall of *3.7 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 22*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Merrionette Park	0.0 inches	3.7 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Merrionette Park is *February*, with an average snowfall of *3.7 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 22*.

				The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Midlothian	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Midlothian is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Morton Grove	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 8* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Morton Grove is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 26* to *November 8*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Mount Prospect	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 11* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Mount Prospect is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 28* to *November 11*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	MWRD			Not Available.
Precipitation (Snow)	Niles	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 9* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Niles is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 26* to *November 9*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Norridge	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 14* to *March 26*, with a sliding 31-day snowfall of at least *1.0*

				inches. The month with the most snow in Norridge is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 26* to *November 14*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	North Riverside	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in North Riverside is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Northbrook	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 8* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Northbrook is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 27* to *November 8*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Northfield	0.0 inches	3.7 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 5* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Northfield is *February*, with an average snowfall of *3.7 inches*. The *snowless* period of the year lasts for *7.3 months*, from *March 26* to *November 5*. The *least snow* falls around *July 13*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Northlake	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 18* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Northlake is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 18*.

				The *least snow* falls around *July 28*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Oak Forest	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Oak Forest is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Oak Lawn	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Oak Lawn is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Oak Park	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 24* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Oak Park is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 24*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Olympia Fields	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Olympia Fields is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Orland Hills	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Orland Hills is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Orland Park	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Orland Park is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Palatine	0.0 inches	4.3 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 13* to *March 31*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Palatine is *February*, with an average snowfall of *4.3 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 31* to *November 13*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Palos Heights	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Palos Heights is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 20*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Palos Hills	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Palos Hills is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Palos Park	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Palos Park is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 28* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Park Forest	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 23* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Forest Park is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 23*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Park Ridge	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 10* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Park Ridge is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 27* to *November 10*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Phoenix	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Phoenix is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Posen	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Posen is *February*, with an average snowfall of *3.9 inches*.

				The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Prospect Heights	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 16* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Prospect Heights is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 16*. The *least snow* falls around *July 22*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Richton Park	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Richton Park is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	River Forest	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 24* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in River Forest is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 24*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*
Precipitation (Snow)	River Grove	0.0 inches	3.8 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 22* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in River Grove is *February*, with an average snowfall of *3.8 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 22*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Riverdale	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 23* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Riverdale is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 23*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Riverside	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 23* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Riverdale is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 25* to *November 23*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Robbins	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Robbins is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Rolling Meadows	0.0 inches	4.3 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 14* to *March 30*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Rolling Meadows is *February*, with an average snowfall of *4.3 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 30* to *November 14*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Rosemont	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 14* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Rosemont is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 27* to *November 14*. The *least snow* falls around *July 28*, with an average total accumulation of *0.0 inches*.

Precipitation (Snow)	Sauk Village	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Sauk Village is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Schaumburg	0.0 inches	4.5 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 12* to *April 1*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Schaumburg is *January*, with an average snowfall of *4.5 inches*. The *snowless* period of the year lasts for *7.4 months*, from *April 1* to *November 12*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Schiller Park	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 15* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Schiller Park is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 26* to *November 15*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Skokie	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 8* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Skokie is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 24* to *November 8*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	South Barrington	0.0 inches	4.7 inches	The *snowy* period of the year lasts for *4.7 months*, from *November 11* to *April 2*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in South Barrington is *January*, with an average snowfall of *4.7 inches*.

				The *snowless* period of the year lasts for *7.3 months*, from *April 2* to *November 11*. The *least snow* falls around *July 22*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	South Chicago Heights	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in South Chicago Heights is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	South Holland	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in South Holland is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Steger	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 18* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Steger is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 18*. The *least snow* falls around *July 17*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Stickney	0.0 inches	3.7 inches	The *snowy* period of the year lasts for *4.0 months*, from *November 23* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Stickney is *February*, with an average snowfall of *3.7 inches*. The *snowless* period of the year lasts for *8.0 months*, from *March 24* to *November 23*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Stone Park	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in

				Stone Park is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 27* to *November 19*. The *least snow* falls around *July 28*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Streamwood	0.0 inches	4.4 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 13* to *March 31*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Streamwood is *January*, with an average snowfall of *4.4 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 31* to *November 13*. The *least snow* falls around *July 23*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Summit	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Summit is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 21*. The *least snow* falls around *July 26*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Thornton	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Thornton is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 28* to *November 20*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Tinley Park	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.3 months*, from *November 19* to *March 28*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Tinley Park is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.7 months*, from *March 28* to *November 19*.

				The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	University Park	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 21* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in University Park is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 21*. The *least snow* falls around *July 21*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Unincorporated Cook County			Not Available.
Precipitation (Snow)	Westchester	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Westchester is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Western Springs	0.0 inches	4.0 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 27*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Western Springs is *February*, with an average snowfall of *4.0 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 27* to *November 20*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Wheeling	0.0 inches	4.1 inches	The *snowy* period of the year lasts for *4.4 months*, from *November 16* to *March 29*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Wheeling is *February*, with an average snowfall of *4.1 inches*. The *snowless* period of the year lasts for *7.6 months*, from *March 29* to *November 16*. The *least snow* falls around *July 22*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Willow Springs	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.2 months*, from *November 20* to *March 26*, with a sliding 31-day snowfall of at least *1.0*

				inches. The month with the most snow in Willow Springs is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.8 months*, from *March 26* to *November 20*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Wilmette	0.0 inches	3.5 inches	The *snowy* period of the year lasts for *4.5 months*, from *November 7* to *March 24*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Wilmette is *February*, with an average snowfall of *3.5 inches*. The *snowless* period of the year lasts for *7.5 months*, from *March 24* to *November 7*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Winnetka	0.0 inches	3.6 inches	The *snowy* period of the year lasts for *4.6 months*, from *November 7* to *March 25*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Winnetka is *February*, with an average snowfall of *3.6 inches*. The *snowless* period of the year lasts for *7.4 months*, from *March 25* to *November 7*. The *least snow* falls around *July 24*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Worth	0.0 inches	3.9 inches	The *snowy* period of the year lasts for *4.1 months*, from *November 21* to *March 26*, with a sliding 31-day snowfall of at least *1.0 inches*. The month with the most snow in Worth is *February*, with an average snowfall of *3.9 inches*. The *snowless* period of the year lasts for *7.9 months*, from *March 26* to *November 21*. The *least snow* falls around *July 19*, with an average total accumulation of *0.0 inches*.
Precipitation (Snow)	Cook County Forest Preserve District (New for 2024)			Not Available.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT – Extreme Temperatures				
Hazard Type	Affected Jurisdictions	Extent (based on historical events)		Comments
		Minimum	Maximum	
Extreme Heat & Extreme Cold	Arlington Heights	-3°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 17°F to 84°F and is rarely below -3°F or above 93°F.
Extreme Heat & Extreme Cold	Alsip	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Barrington	-7°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *14°F* to *85°F* and is rarely below *-7°F* or above *93°F*.
Extreme Heat & Extreme Cold	Bedford Park			Not Available
Extreme Heat & Extreme Cold	Bellwood	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Berkeley	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Berwyn	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Blue Island	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.

Extreme Heat & Extreme Cold	Bridgeview	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *85°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Broadview	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Brookfield	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Buffalo Grove	-3°F	93°F	the summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-3°F* or above *93°F*.
Extreme Heat & Extreme Cold	Burbank	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Burnham	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Calumet City	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Calumet Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Chicago Heights	-1°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *18°F* to *84°F* and is rarely below *-1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Chicago Ridge	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Cicero	3°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *3°F* or above *92°F*.
Extreme Heat & Extreme Cold	City of Chicago	5°F	91°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *22°F* to *83°F* and is rarely below *5°F* or above *91°F*.
Extreme Heat & Extreme Cold	Country Club Hills	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Countryside	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Crestwood	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Des Plaines	-1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Dixmoor	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.

Extreme Heat & Extreme Cold	Dolton	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	East Hazel Crest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Elgin	-4°F	91°F	The summers are long, warm, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *84°F* and is rarely below *-4°F* or above *91°F*.
Extreme Heat & Extreme Cold	Elk Grove Village	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Elmwood Park	2°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Evanston	4°F	90°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *4°F* or above *90°F*.
Extreme Heat & Extreme Cold	Evergreen Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Flossmoor	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Ford Heights	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.
Extreme Heat & Extreme Cold	Forest Park	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Forest View			Not Available
Extreme Heat & Extreme Cold	Franklin Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Glencoe	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.
Extreme Heat & Extreme Cold	Glenview	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Glenwood	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Golf			Not Available
Extreme Heat & Extreme Cold	Hanover Park	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *84°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Harvey	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.

Extreme Heat & Extreme Cold	Harwood Heights	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.
Extreme Heat & Extreme Cold	Hazel Crest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hickory Hills	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Hillside	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hodgkins	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Hoffman Estates	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Hometown	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Homewood	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Indian Head Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from

				18°F to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Inverness	-5°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *15°F* to *85°F* and is rarely below *-5°F* or above *93°F*.
Extreme Heat & Extreme Cold	Justice	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Kenilworth	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	LaGrange			Not Available
Extreme Heat & Extreme Cold	LaGrange Park			Not Available
Extreme Heat & Extreme Cold	Lansing	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Lemont	-1°F	92°F	The summers are long, warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Lincolnwood	3°F	90°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *82°F* and is rarely below *3°F* or above *90°F*.
Extreme Heat & Extreme Cold	Lynwood	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.

Extreme Heat & Extreme Cold	Lyons	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Markham	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Matteson	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Maywood	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	McCook			Not Available
Extreme Heat & Extreme Cold	Melrose Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Merrionette Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Midlothian	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Morton Grove	2°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *2°F* or above *91°F*.

Extreme Heat & Extreme Cold	Mount Prospect	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	MWRD			Not Available
Extreme Heat & Extreme Cold	Niles	1°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *1°F* or above *91°F*.
Extreme Heat & Extreme Cold	Norridge	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	North Riverside	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northbrook	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northfield	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Northlake	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Oak Forest	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.

Extreme Heat & Extreme Cold	Oak Lawn	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *93°F*.
Extreme Heat & Extreme Cold	Oak Park	3°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *83°F* and is rarely below *3°F* or above *92°F*.
Extreme Heat & Extreme Cold	Olympia Fields	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Orland Hills	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Orland Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palatine	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Palos Heights	0°F	°92F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palos Hills	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Palos Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies

				from *18°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Park Forest	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	Park Ridge	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Phoenix	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Posen	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Prospect Heights	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Richton Park	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	River Forest	2°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *92°F*.
Extreme Heat & Extreme Cold	River Grove	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *83°F* and is rarely below *1°F* or above *92°F*.

Extreme Heat & Extreme Cold	Riverdale	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Riverside	1°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Robbins	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Rolling Meadows	-3°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *85°F* and is rarely below *-3°F* or above *93°F*.
Extreme Heat & Extreme Cold	Rosemont	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Sauk Village	0°F	93°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *93°F*.
Extreme Heat & Extreme Cold	Schaumburg	-4°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *85°F* and is rarely below *-4°F* or above *93°F*.
Extreme Heat & Extreme Cold	Schiller Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Skokie	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from

				21°F to *83°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	South Barrington	-6°F	94°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *15°F* to *85°F* and is rarely below *-6°F* or above *94°F*.
Extreme Heat & Extreme Cold	South Chicago Heights	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	South Holland	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Steger	-1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Stickney	2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *84°F* and is rarely below *2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Stone Park	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Streamwood	-4°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *16°F* to *84°F* and is rarely below *-4°F* or above *92°F*.
Extreme Heat & Extreme Cold	Summit	1°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *85°F* and is rarely below *1°F* or above *93°F*.

Extreme Heat & Extreme Cold	Thornton	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Tinley Park	0°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	University Park	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Unincorporated Cook County			Not Available
Extreme Heat & Extreme Cold	Westchester	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Western Springs	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *18°F* to *84°F* and is rarely below *-0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Wheeling	-2°F	93°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *17°F* to *84°F* and is rarely below *-2°F* or above *93°F*.
Extreme Heat & Extreme Cold	Willow Springs	0°F	92°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *0°F* or above *92°F*.
Extreme Heat & Extreme Cold	Wilmette	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *21°F* to *83°F* and is rarely below *3°F* or above *91°F*.

Extreme Heat & Extreme Cold	Winnetka	3°F	91°F	The summers are warm and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *20°F* to *82°F* and is rarely below *3°F* or above *91°F*.
Extreme Heat & Extreme Cold	Worth	1°F	92°F	The summers are warm, humid, and wet; the winters are freezing, snowy, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from *19°F* to *84°F* and is rarely below *1°F* or above *92°F*.
Extreme Heat & Extreme Cold	Cook County Forest Preserve District (New for 2024)			Not Available

5.6.4 Frequency and Probability

Heavy Snow Frequency: Between 1997 and 2023, Cook County experienced 24 heavy snow events. This equates to an average of 0.92307692 heavy snow events/year.

Heavy Snow Probability: NOAA measures the probability of heavy snow by using probabilistic snowfall forecasts that estimate the likelihood of reaching specific snow accumulation thresholds. This approach involves analyzing data from various meteorological sources including computer models, satellite observations, and historical weather patterns. Forecasts are often presented in multi-panel charts that show the probabilities of snow reaching or exceeding accumulation levels such as 4, 8, and 12 inches over a set period, typically spanning from one to three days.

Blizzard Frequency: Between 2000 and 2023, Cook County experienced 4 blizzard events. This equates to an average of 0.17391304 blizzard events/year.

Blizzard Probability: NOAA measures the probability of a blizzard by analyzing combined probabilities of low visibility and high sustained wind speeds, specifically where visibility is less than a quarter mile and winds are at or exceed 35 miles per hour. This analysis is contingent upon at least one ensemble member indicating snowfall during the previous hour. These combined factors are essential in determining the likelihood of blizzard conditions, enabling NOAA to provide accurate forecasts and warnings.

Ice Storms Frequency: Between 2007 and 2023, Cook County experienced 3 ice storm events. This equates to an average of 0.1875 ice storm events/year.

Ice Storm Probability: The probability of an ice storm is measured by NOAA through the use of various forecasting tools and models. One such tool is the Winter Storm Severity Index (WSSI), which assesses the likelihood and potential severity of winter precipitation, including ice accumulation. This index helps forecast the impacts of ice storms by considering factors such as expected ice accumulation, temperatures, and wind speeds during the event.

Moreover, NOAA employs the SPIA Index (shown above), which utilizes key parameters like storm total rainfall converted to ice accumulation, wind, and temperatures during the event period. These measurements are used in conjunction with digital forecasts to accurately predict the duration and severity of ice storms, aiding in the preparation and response efforts.

Extreme Cold/Wind Chill Frequency: Between 2006 and 2024, Cook County experienced 17 extreme cold/wind chill events. This equates to an average of 0.94444444 extreme cold/wind chill events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

Extreme Cold/Wind Chill Probability: NOAA measures the probability of extreme cold using meteorological tools and data analysis. It closely monitors temperature forecasts and calculates the Wind Chill Index, which assesses the impact of temperature and wind speed on human comfort. Advanced meteorological models are used to forecast extreme cold events by considering atmospheric conditions, high-pressure systems, temperature anomalies, and other relevant factors. Historical climate data and records of the lowest temperatures recorded in specific areas aid in evaluating the probability of extreme cold. NOAA also examines the expected duration and intensity of extreme cold, particularly during prolonged periods of low temperatures. Collaboration with public health agencies enhances the analysis of cold-related illnesses, and advisories and warnings are issued to provide the public with information about the likelihood of extreme cold, health risks, and recommended safety measures.

5.6.5 Past Events

(Note: Events are listed in the table based on impacts to an area (zone) of Cook County; impacts to more than one area (zone) will result in multiple entries.)

Table: Past Heavy Snow Events in Cook County from 1997-2023									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**1**	**0**	**0.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	12/09/1997	18:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/08/1998	06:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/09/1998	04:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/01/1999	19:00	Heavy Snow	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/05/1999	17:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/08/1999	17:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/18/2000	03:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/04/2004	07:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/04/2005	19:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/21/2005	16:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	12/15/2007	15:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	12/31/2007	14:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/26/2013	10:30	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/04/2014	09:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/01/2014	04:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/04/2014	12:00	Heavy Snow	0	0	0.00K	0.00K

COOK (ZONE)	COOK (ZONE)	IL	02/17/2014	07:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/11/2014	22:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/01/2015	00:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/25/2015	16:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/23/2015	01:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	11/20/2015	16:00	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/24/2016	11:17	Heavy Snow	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	12/04/2016	09:02	Heavy Snow	0	0	0.00K	0.00K

Table: Past Blizzard Events in Cook County from 2000-2023									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**1**	**0**	**200.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	12/11/2000	03:00	Blizzard	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/13/2007	02:00	Blizzard	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/02/2007	14:00	Blizzard	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/01/2011	09:00	Blizzard	1	0	200.00K	0.00K

Table: Past Ice Storm Events in Cook County from 2014-2023									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**0**	**0**	**0.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	12/01/2007	12:30	Ice Storm	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/11/2019	16:15	Ice Storm	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	02/22/2023	08:00	Ice Storm	0	0	0.00K	0.00K

Table: Past Extreme Cold/Wind Chill Events in Cook County from 2006-2024									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**34**	**5**	**0.00K**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	12/02/2006	22:00	Extreme Cold/wind Chill	7	5	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/28/2007	00:00	Extreme Cold/wind Chill	2	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/01/2007	00:00	Extreme Cold/wind Chill	10	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	03/02/2007	16:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/22/2008	12:00	Extreme Cold/wind Chill	5	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/29/2008	19:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	02/10/2008	03:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K

Table: Past Extreme Cold/Wind Chill Events in Cook County from 2006-2024									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
COOK (ZONE)	COOK (ZONE)	IL	12/21/2008	07:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/05/2009	00:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/15/2009	09:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/21/2009	00:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/25/2009	00:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/06/2014	02:00	Extreme Cold/wind Chill	4	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/28/2014	07:00	Extreme Cold/wind Chill	1	0	0.00K	0.00K
COOK (ZONE)	COOK (ZONE)	IL	01/29/2019	22:51	Extreme Cold/wind Chill	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	12/23/2022	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
SOUTHERN COOK COUNTY (ZO...	SOUTHERN COOK COUNTY (ZO...	IL	12/23/2022	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	12/23/2022	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
NORTHERN COOK COUNTY (ZO...	NORTHERN COOK COUNTY (ZO...	IL	01/14/2024	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
CENTRAL COOK COUNTY (ZON...	CENTRAL COOK COUNTY (ZON...	IL	01/14/2024	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K
SOUTHERN COOK COUNTY (ZO...	SOUTHERN COOK COUNTY (ZO...	IL	01/14/2024	00:00	Extreme Cold/wind Chill	0	0	0.00K	0.00K

5.6.6 Vulnerability and Impacts

Impacted FEMA Community Lifelines	
Safety and Security Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	Moderate
Food, Hydration, Shelter Food, Hydration, Shelter, Agriculture	Moderate
Health and Medical Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	Moderate
Energy Power Grid, Fuel	Moderate
Communications Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	Minimal
Transportation Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	Significant
Hazardous Materials Facilities, HAZMAT, Pollutants, Contaminants	Minimal
Water Systems Potable Water Infrastructure, Wastewater Management	Moderate
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown	

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health (Heavy Snow): According to NOAA, the life safety and public health impacts of heavy snow are as follows:

- Increased Accidents and Injuries: Heavy snow can lead to treacherous driving conditions, resulting in higher accident rates. Roads become slippery and visibility is reduced, increasing the risk of vehicular accidents. Pedestrians also face risks from slippery sidewalks and the potential for falling icicles and snow from buildings.
- Health Risks from Cold Exposure: Exposure to cold temperatures can lead to frostbite and hypothermia, especially for vulnerable populations such as the elderly and homeless. These conditions occur when the body is exposed to cold and begins to lose heat faster than it can be produced.
- Cardiac Issues: Shoveling snow is a physically demanding task that significantly raises the heart rate and blood pressure. This strenuous activity can lead to heart attacks, particularly in those who are not accustomed to regular physical activity or who have pre-existing heart conditions.
- Strain on Public Health Systems: During heavy snowfalls, access to medical facilities can be compromised. The demand for emergency services increases, while the ability to provide these services is often hindered by the weather conditions. This can delay treatment for acute health emergencies.
- Mental Health Impact: The isolating effect of heavy snow can lead to increased anxiety and depression for individuals cut off from social contact and regular activities, particularly during prolonged snow events.

Life Safety and Public Health (Blizzards): According to NOAA, the life safety and public health impacts of blizzards are as follows:

- Health Risks: Blizzards can lead to dangerous conditions such as hypothermia and frostbite due to the extreme cold and wind. The risks are heightened for vulnerable populations like the elderly, those without adequate heating, or individuals who are stranded or homeless during a blizzard.
- Accidents and Injuries: The combination of ice, snow, and poor visibility significantly increases the risk of vehicular accidents. Slippery roads and reduced visibility make driving perilous. Similarly, walking conditions become treacherous, leading to a higher incidence of falls and related injuries.
- Isolation and Mental Health Effects: Heavy snowfall and the subsequent cleanup can lead to extended periods of isolation for individuals, particularly in rural areas. This isolation can exacerbate feelings of loneliness and depression, especially among the elderly and those living alone.
- Strain on Emergency Services: Access to emergency services and medical care can be severely hindered during blizzards. Emergency responders may have difficulty reaching those in need, and power outages can affect medical facilities, further complicating the response to medical emergencies.
- Resource Scarcity: The demand for and strain on resources such as food, heating fuel, and emergency supplies increase during blizzard conditions. Power outages and blocked roads can prevent the resupply of essential goods, leading to shortages.

Life Safety and Public Health (Ice Storms): According to NOAA, the life safety and public health impacts of ice storms are as follows:

- Power Outages: Ice can accumulate on power lines and tree limbs, causing them to break and resulting in widespread power outages. Loss of electricity impacts heating, which is critical during cold weather conditions.
- Travel Hazards: Ice storms lead to extremely slippery conditions on roads, walkways, and bridges, making driving and walking hazardous. This increases the risk of accidents and injuries.
- Tree Damage: The weight of ice can cause branches and even entire trees to fall, posing dangers to people, animals, and property, and potentially blocking roads and damaging power lines.
- Health Risks: The cold weather associated with ice storms can pose health risks, particularly hypothermia and frostbite. Power outages may also prevent people from heating their homes adequately.
- Emergency Response Delays: The hazardous conditions can delay emergency and medical services, impacting their ability to respond quickly to accidents or health issues exacerbated by the storm.
- Communication Disruptions: Ice and wind can damage communication infrastructure, leading to disruptions in internet and telephone services.

Life Safety and Public Health (Extreme Cold): According to NOAA, the life safety and public health impacts of extreme cold are as follows:

- Hypothermia: Exposure to extreme cold can lead to hypothermia, a life-threatening condition where the body loses heat faster than it can produce it. Hypothermia can cause confusion, loss of consciousness, and, if not treated promptly, death.
- Frostbite: Frostbite occurs when skin and underlying tissues freeze, typically affecting extremities like fingers, toes, ears, and the nose. Severe frostbite can result in tissue damage and the need for amputation.
- Respiratory Issues: Cold air can exacerbate respiratory conditions, such as asthma, and increase the risk of respiratory distress, particularly in areas with high levels of air pollution.
- Cardiovascular Stress: Extreme cold can strain the cardiovascular system, increasing the risk of heart-related complications, especially in individuals with heart conditions.
- Slips and Falls: Icy and slippery conditions increase the risk of slips, trips, and falls, which can lead to injuries, fractures, and head trauma.
- Transportation Disruption: Cold weather can impact transportation systems, causing road closures, flight cancellations, and delays, which can pose safety risks for travelers.
- Power Outages: Extreme cold can damage power lines and electrical infrastructure, leading to power outages that can affect critical services, including heating and medical equipment.
- Water Infrastructure Issues: Freezing temperatures can damage water supply systems and lead to water shortages or frozen pipes, affecting drinking water availability.
- Snow-Related Hazards: Heavy snowfall and blizzards can lead to snow accumulation, road closures, and the risk of being trapped in vehicles or homes.
- Shelter and Homelessness: Extreme cold poses particular risks to individuals experiencing homelessness, who may lack access to shelter and adequate protection from the elements.

Property Damage and Critical Infrastructure (Heavy Snow): According to NOAA, the property damage and critical infrastructure impacts of heavy snow are as follows:

- Structural Damage: Heavy snow can lead to structural damage due to the weight of snow accumulation, especially on roofs and overhangs. This can result in costly repairs and safety hazards.
- Transportation Disruptions: Snow can disrupt transportation systems, making roads impassable and leading to closures of airports and railways. This impacts not just daily commuting but also the delivery of essential goods and services.
- Power Outages: The weight of snow and ice can down trees and power lines, leading to widespread power outages. This disrupts heating and telecommunications and can cause further economic losses.
- Water Damage: Snowmelt or ice dams can lead to water damage in buildings. As snow melts, it can penetrate structures, leading to mold, mildew, and deterioration of building materials.

Property Damage and Critical Infrastructure (Blizzards): According to NOAA, the property damage and critical infrastructure impacts of blizzards are as follows:

- Infrastructure Strain: Blizzards can overburden infrastructures like power lines and trees with ice and snow accumulation, leading to power outages and broken lines, which can take considerable time and resources to repair.
- Transportation Halts: The heavy snowfall and strong winds typical of blizzards can make roads impassable, disrupt air and rail travel, and halt public transportation, leading to economic losses and delayed emergency and medical services.
- Building Damage: Accumulated snow can be heavy enough to cause structural damage to homes and buildings. The weight of snow can collapse roofs and break windows, leading to costly repairs.
- Economic Disruptions: The combination of closed businesses, transportation delays, and the need for extensive snow removal and repairs contribute to substantial economic disruption.
- Emergency Services: The hazardous conditions created by blizzards significantly impact the response time and effectiveness of emergency services, complicating rescue and medical assistance efforts during and after the storm.

Property Damage and Critical Infrastructure (Ice Storms): According to NOAA, ice storms can cause significant property damage and impacts to critical infrastructure. These impacts include damage to residential, commercial, and governmental buildings, as well as vehicles and essential public infrastructure such as roads and bridges. The economic burden of these events can be substantial, often reaching into billions of dollars for significant storms.

Property Damage and Critical Infrastructure (Extreme Cold/Wind Chill): Extreme cold/wind chill can lead to property damage and critical infrastructure impacts including frozen and burst water pipes, heating system failures, road and transportation infrastructure damage, and power outages, affecting homes, businesses, and critical facilities like hospitals. Healthcare facilities may struggle to provide care in frigid conditions, and transportation disruptions, including road closures and accidents, can impact critical infrastructure and supply chains. Communication equipment can be affected, potentially hindering emergency communication systems, and snow accumulation can stress roofs and structures, leading to damage. Lastly, extreme cold poses health risks, particularly for vulnerable populations, and can strain emergency response and healthcare systems.

All Cook County critical facilities and infrastructure are listed in Section 4.6.

5.6.7 Economy

Heavy Snow: According to NOAA, the economic impacts of heavy snow incidents can vary depending on the severity and duration of the storm. These effects often include direct costs like physical damage to buildings and infrastructure, as well as indirect costs such as business interruptions and lost productivity. Additionally, winter storms are among the weather events that can cause extensive financial loss, reflecting a combination of direct impacts on transportation, energy, and residential and commercial properties, along with broader economic disruptions.

Severe winter storms can also lead to extensive power outages, disrupting normal business operations and causing economic losses both from the immediate impacts and longer-term recovery and repair costs. The closure of roads and airports can halt the flow of goods and services, further exacerbating economic losses. In more severe cases, structural damage from heavy snow loads on buildings and infrastructures, like the collapse of roofs or breaking of pipes, can lead to significant repair costs and economic disturbances.

Blizzards: According to NOAA, the economic impacts of blizzards include substantial physical damage to infrastructure and buildings, including residential, commercial, and government properties. This damage often extends to vehicles and public utilities, necessitating costly repairs. Blizzard conditions also disrupt business operations, leading to significant interruptions and revenue losses due to closures and reduced consumer activity. Additionally, local governments incur high costs in managing the aftermath, such as snow removal and emergency services. In agricultural areas, blizzards can cause direct losses to livestock and crops, further straining local economies. Lastly, the recovery and restoration efforts following blizzard events involve considerable financial expenditures across multiple sectors, emphasizing the need for effective disaster preparedness and risk management strategies.

Ice Storms: According to NOAA, the economic impacts of ice storms are multifaceted and have significant implications for communities. Ice storms have caused extensive damage to infrastructure, including power lines and roadways, due to the heavy weight of ice and falling tree branches. This often results in prolonged power outages and hazardous road conditions, which disrupt daily life and commerce. Businesses, especially those dependent on foot traffic, face substantial losses due to decreased customer visits and forced closures.

Local governments and emergency services also bear substantial costs in responding to these events, encompassing road clearance and infrastructure repairs. Residential areas suffer as homes are damaged by ice accumulation and debris, leading to costly repairs. Lastly, the agriculture sector is not spared, as crops and farm structures can be severely damaged. These factors collectively highlight the economic burden of ice storms, emphasizing the importance of preparedness and effective response strategies to mitigate their impacts.

Extreme Cold/Wind Chill: According to NOAA, the economic impacts of extreme cold/wind chill events include significant disruptions to infrastructure and public safety. During periods of extreme cold, infrastructure can fail, including power systems. Losing power then leads to a lack of heating and can also impact other utilities such as water supply, with frozen pipes bursting can lead to widespread damage and boil water advisories.

In parallel, the transportation sector is impacted by icy conditions which can lead to hazardous roads, increasing the likelihood of accidents and impeding normal travel and commerce. These conditions result in economic disruptions from halted transportation and emergency responses to accidents and road maintenance. The agriculture sector also experiences significant impacts due to extreme cold. Livestock and winter crops can suffer greatly without adequate protection from the severe weather, leading to losses in production and income. Lastly, extreme cold conditions necessitate increased energy use for heating, which can lead to higher energy costs for residents and strain on the energy supply systems, particularly if they are not prepared for unusual demand spikes.

5.6.8 Changes In Development and Impact to Future Development

Heavy Snow: According to NOAA, heavy snow events can significantly impact current and future development trends in several ways. First, the increased frequency and intensity of heavy snowstorms can necessitate changes in building codes and infrastructure resilience planning. Warmer-than-average ocean surface temperatures contribute to higher moisture levels in storms, exacerbating snowfall and the severity of snowstorms. This has led to shifts in building standards to accommodate the greater load from heavy snow, impacting architectural designs and construction materials used, particularly in areas prone to these extreme weather events.

The implications of heavy snow for urban planning can be substantial. Communities in Cook County may need to enhance their snow removal capabilities and stormwater management systems to handle the increased runoff from snow melting, which can be a significant issue, especially during rapid thaw periods. This could lead to more investment in snow removal equipment and technologies, as well as modifications to landscaping and drainage systems in urban areas to prevent flooding and maintain accessibility during winter months.

Lastly, planning for and management of transportation infrastructure must also adapt, considering the likelihood of more frequent severe snow events. This includes enhancing road design, maintenance protocols, and public transit systems to withstand harsher winter conditions. For future development, considerations might include more robust transportation networks that can remain operational despite heavy snowfalls, potentially incorporating heated roadways or more efficient public transit solutions to reduce the reliance on individual car travel during winter storms.

Blizzards: According to NOAA, blizzard events can impact both current and future development trends. These impacts stem primarily from the increased frequency and intensity of these events due to climate changes. Blizzard conditions can necessitate changes in infrastructure resilience and building codes to accommodate heavier snow loads and more extreme temperature fluctuations. For example, developments may require more robust heating systems, enhanced insulation, and snow-resistant building designs to cope with the demands of increased snowfall and colder temperatures.

Urban planning must consider the logistical challenges posed by blizzards, including the need for effective snow removal strategies and emergency services accessibility during severe weather events. This can influence the planning of road networks, the allocation of resources for snow removal, and the placement of critical infrastructure to ensure it remains operational during and after blizzard events.

Lastly, transportation systems, particularly in cities prone to blizzard conditions (e.g. Chicago), may also need to adapt to maintain functionality in harsh weather. This could include the installation of heating elements on critical roadways and railways to prevent ice buildup and the integration of weather-resistant materials in the construction of transit facilities.

Ice Storms: According to NOAA, ice storm events can impact current and future development trends, mainly due to the impact on infrastructure resilience and emergency preparedness. Ice storms, characterized by their ability to cause extensive damage to power lines and trees, lead to significant economic losses and disrupt lives. These impacts necessitate enhancements in infrastructure design and maintenance, such as the use of more robust materials capable of withstanding heavy ice loads and improved utility line designs to prevent widespread power outages.

In terms of urban planning, areas prone to ice storms may need to revise their emergency response strategies. This could include investing in more efficient ice and snow removal equipment and enhancing road designs to improve safety during icy conditions. Additionally, building codes may be updated to ensure that new constructions can withstand the severe conditions brought on by ice storms, focusing on factors like roof load capacity and the stability of structures under ice accumulation.

Finally, the increasing frequency and intensity of ice storms underscores the need for sustainable development practices that consider changing weather patterns. This includes creating more resilient urban landscapes that can cope with the challenges posed by severe weather events, ensuring that communities can recover more quickly and effectively from their impacts.

Extreme Cold/Wind Chill: According to NOAA, extreme cold/wind chill events can impact current and future development. In areas prone to such conditions, there is an increasing emphasis on constructing buildings and infrastructure that can withstand the rigors of extreme cold. This includes enhanced insulation, robust heating systems, and materials resistant to freezing and thawing cycles. Building codes are also being revised to incorporate these considerations, ensuring structures are not only energy-efficient but also resilient to cold-related damages like burst pipes and ice accumulation. Urban planning is also focusing on ensuring essential services and transportation remain operational during severe cold events, and that communities, (especially vulnerable populations), have access to adequate heating and emergency services.

In addition, the frequency and intensity of extreme cold events can potentially be exacerbated by climate change and are being factored into long-term development strategies. This involves planning for increased energy demands during cold snaps, incorporating sustainable and renewable energy sources, and developing emergency response protocols for cold weather events. Additionally, environmental considerations, such as the ecological impact of road salt and other ice-melting agents, are also becoming a part of the planning process.

5.6.9 Effects of Climate Change on the Severity of Impacts

Heavy Snow: According to NOAA, climate change is influencing the severity and frequency of heavy snow events in various ways. One significant factor is the increase in warmer-than-average ocean surface temperatures, particularly in the Atlantic, which leads to higher moisture content in storm systems. This extra moisture can result in more intense snowfall during storm events, as observed with events like the "Snowmageddon" that occurred in 2010. Changes in the Arctic, such as reductions in sea ice, are affecting atmospheric circulation patterns. These changes may lead to more frequent occurrences of atmospheric blocking patterns over the North Atlantic, which can cause cold air outbreaks in the eastern United States and potentially enhance the conditions needed for severe snowstorms. Research also suggests that while the overall mean snowfall may decrease due to a warmer climate, extreme snowfall events might see different trends. In some areas, particularly at higher latitudes and elevations, the frequency of extreme snowfall events could actually increase, creating a more complex and variable pattern of winter weather. These observations highlight the dynamic and paradoxical effects of climate change on winter weather, suggesting that regions, especially in eastern North America, could experience both declines in average snowfall but increases in extreme snowfall events due to a warmer atmosphere's ability to hold more moisture. (NOAA NCEI) (NOAA Institutional Repository).

Blizzards: According to NOAA, climate change can impact the severity of blizzard events in different ways. This includes increasing global temperatures which leads to warmer-than-average ocean surface temperatures, which contribute to higher moisture availability in the atmosphere. This additional moisture can intensify snowfall during blizzards, resulting in more severe snowstorm events. In addition, reductions in sea ice are altering atmospheric circulation patterns. These changes can lead to the increased prevalence of high-pressure blocking patterns resulting in colder air outbreaks which can exacerbate the persistence and severity of blizzards by slowing down storm systems and prolonging the duration of snowfall. Climate models and historical data both indicate that while there might be a decrease in the overall frequency of snowfall, the instances of extreme snowfall events could increase due to these climatic changes. This means that while regions might experience fewer snow days overall, the snowstorms that do occur could be more intense, presenting significant challenges for infrastructure and emergency services (NOAA) (NOAA NCEI).

Ice Storms: According to NOAA, climate change can impact the severity of ice storm events through several mechanisms. One factor is the increase in atmospheric moisture driven by warmer global temperatures. This increase can lead to more freezing rain events, as warmer air can hold more water vapor that, when meeting cold surfaces, freezes and results in ice accumulation. In addition, changes in weather patterns due to climate change can lead to more frequent and severe cold air outbreaks. As Arctic ice melts and global heat distribution changes, this can alter the jet stream, making cold air from the Arctic more likely to move further south, where it can contribute to creating conditions suitable for ice storms. Finally, the increasing frequency of extreme weather events, including both heavier precipitation and extreme cold snaps, can combine to increase the frequency and intensity of ice storm conditions. As climate change progresses, such conditions are expected to become more common, posing increased risks to areas traditionally affected by ice storms as well as introducing these conditions to new regions (NOAA) (NOAA NCEI) (NOAA).

Extreme Cold/Wind Chill: Climate change can lead to various effects on the severity of extreme cold events. While global temperatures are generally rising, shifts in atmospheric circulation patterns and disruptions in polar vortex behavior can contribute to more variable and severe cold weather in specific regions. These changes can result in intense cold snaps and frigid conditions, even during overall warming trends. Extreme cold events can have adverse effects on public safety, infrastructure, and agriculture (NOAA).

TABLE: 25-YEAR PRECIPITATION PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience a **10% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.8" increase** (from 36.9" to 37.7") in average annual precipitation.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience a **1% increase** in heavy precipitation within 25 years.
By 2049, Cook County is expected to have a **0.1" decrease** (from 37.3" to 37.2") in average annual precipitation.
Source: Neighborhoods at Risk: (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: 25-YEAR CLIMATE PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience **an 115% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 55°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience an **83% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 54°F) in average annual temperatures.
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Average Annual Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40”**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Days Per Year With No Precipitation	**193 days**	**195 days**	**196 days**	**196 days**	**197 days**	**197 days**	**200 days**
	190-197	187-208	187-212	186-207	184-216	187-208	180-235
Maximum Number Of Consecutive Dry Days	**13 days**	**13 days**	**14 days**	**14 days**	**14 days**	**14 days**	**15 days**
	11-14	12-16	12-17	12-16	12-18	12-16	12-20
Temperature Thresholds							
	12 days	**31 days**	**34 days**	**41 days**	**49 days**	**50 days**	**81 days**

Annual days with Maximum temperature > 90°	12-18	19-51	21-50	22-69	30-75	26-86	47-113
Annual days with Maximum temperature > 100°	**0 days**	**2 days**	**2 days**	**4 days**	**7 days**	**7 days**	**24 days**
	0-0	0-6	0-7	0-16	1-23	1-16	2-67
Source: Climate Mapping for Resilience and Adaptation (2024)							

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**36"**	**37"**	**37"**	**38"**	**38"**	**38"**	**40"**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation (Wet Days)	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Maximum Period of Consecutive Wet Days	**10 days**	**10 days**	**10 days**	**10 days**	**11 days**	**10 days**	**10 days**
	10-12	9-12	9-12	9-12	9-12	9-12	9-13
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**4 days**	**5 days**	**5 days**	**5 days**	**5 days**	**5 days**	**6 days**
	3-5	4-6	4-6	4-6	4-7	4-7	5-9
Annual Days With Total Precipitation > 2 inches	**0 days**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**	**1 day**
	0-1	0-1	0-1	0-1	0-1	0-1	0-2
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**5 days**	**6 days**	**6 days**	**7 days**	**7 days**	**7 days**	**8 days**
	5-7	5-8	5-8	6-8	6-9	6-9	7-10
*Days With Maximum Temperature Below 32*F*	**41 days**	**30 days**	**28 days**	**25 days**	**22 days**	**21 days**	**12 days**
	37-44	17-40	21-37	13-36	11-32	10-32	2-24
Source: Climate Mapping for Resilience and Adaptation (2024)							

5.6.10 FEMA NRI Expected Annual Loss Estimates

COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR WINTER WEATHER EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
4.1 events per year	0.21	$2,465,817	$36,878	$103	$2,502,799	Very High	99.6
Period of Record: 2005-2021 (16 years)							
COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR ICE STORM EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0.6 events per year	0.00	$19,018	$577,363	N/A	$596,381	Relatively High	90.7
Period of Record: 1946-2014 (67 years)							
COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR COLD WAVE EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0.9 events per year	5.86	$67,989,216	$51,372	$7,456	$68,048,044	Very High	100.0
Period of Record: 2005-2021 (16 years)							
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

*** Note: The FEMA National Risk Index does not assess expected annual loss for heavy snow events.*

5.6.11 FEMA Hazard Specific Risk

COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – WINTER WEATHER EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$2,502,799	Very High	Relatively High	$3,036,624	99.7
COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – ICE STORM EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$596,381	Very High	Relatively High	$701,955	90.9
COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – COLD WAVE EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$68,048,044	Very High	Relatively High	$82,635,463	100
FEMA Hazard-Type ***Risk Index Scores*** *are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type* ***Social Vulnerability Score*** *represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type* ***Community Resilience Score*** *represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

*** Note: The FEMA National Risk Index does not assess hazard-specific risk for heavy snow events.*

5.6.12 FEMA NRI Exposure Value Table

TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR WINTER WEATHER EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Winter Weather	$62,057,329,400,253	$893,116,815,354	$61,164,190,000,000	5,272,775.00	$22,584,899
TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR – ICE STORM EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Ice Storm	$61,668,922,697,404	$888,265,410,431	$60,780,657,286,972	5,239,711.84	N/A
TABLE: COOK COUNTY, ILLINOIS EXPOSURE VALUE TABLE FOR COLD WAVE EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Cold Wave	$61,232,738,229,870	$882,369,637,442	$60,350,346,712,638	5,202,616.10	$21,879,791
Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).* ***Agriculture:*** *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*					
Source: FEMA National Risk Index (2024)					

*** Note: The FEMA National Risk Index does not assess exposure value for heavy snow events.*

5.7 Tornado

5.7.1 Hazard Description

The National Weather Service describes a tornado as a violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local scale, it is the most destructive of all atmospheric phenomena. Like hail, most tornadoes are spawned by supercell thunderstorms. They usually last only a few minutes, although some have lasted more than an hour and traveled several miles.

Tornado Types

Multiple Vortex Tornadoes: A multiple-vortex tornado is a tornado that contains several vortices rotating around, inside of, and as part of the main vortex. The only times multiple vortices may be visible are when the tornado is first forming or when condensation and debris are balanced enough so that sub-vortices are apparent without being obscured. They are responsible for most (if not all) cases where narrow arcs of extreme destruction lie right next to weak damage within tornado paths. Multi-vortex tornadoes should not be confused with cyclically tornadic super-cells, which are systems that produce many, separate tornadoes at the same time or in succession.

Suction vortices are substructures of many, perhaps all, tornadoes but are not always easily visible. They usually occur where the tornado makes contact with the surface. Sub-vortices tend to form after vortex breakdown reaches the surface and result from the ratio of cyclonically incoming and rising air motions. Multi-vortex structure is not unique to tornadoes, occurring in other circulations such as dust devils; it is a natural result of the physics of vortex dynamics.

The largest tornado ever documented was a multiple-vortex tornado; it struck near the town of El Reno, Oklahoma on May 31, 2013. This storm had a maximum width of 2.6 miles and a maximum recorded wind speed of 295 miles per hour, rating it an EF3 on the Enhanced Fujita scale, second only to the 1999 Bridge Creek–Moore tornado (another multiple-vortex tornado) in terms of maximum recorded wind speed. The May 2011 destructive EF5 Joplin tornado is another example of a multiple-vortex tornado.

A phenomenon similar to multiple vortices is the satellite tornado. It is different from a multiple-vortex tornado in that it exists outside of the main tornado and forms via a different mechanism.

Water Spouts: characterized by a spiraling funnel-shaped wind current, connecting to a large cumulus or cumulonimbus cloud. They are generally classified as non-super cellular tornadoes that develop over bodies of water, but there is disagreement over whether to classify them as true tornadoes. These spiraling columns of air frequently develop in tropical areas close to the equator and are less common at high latitudes. There are two methods of water spout formation:

Waterspouts can form on a clear day with the right amount of instability and wind shear. These can have wind speeds of 60 to 100 mph, but since they do not move very far, they can often be navigated around. They can become a threat to land if they drift onshore.

A tornadic waterspout is a true tornado that is moving over water at the time that it forms. These form from the same processes that cause tornadoes (see section above). The National Weather Service issues a Special Marine Warning for waterspouts over the coastal waters. The Service issues a Tornado Warning if a waterspout shows signs of moving toward land.

Landspout: A landspout is a colloquial term for a kind of tornado not associated with the mesocyclone of a thunderstorm. Landspouts are considered tornadoes since a rotating column of air is in contact with both the surface and a cumuliform cloud. The Glossary of Meteorology defines landspouts as follows: tornadoes occurring with a parent cloud in its growth stage and with its vorticity originating in the boundary layer. The parent cloud does not contain a preexisting midlevel mesocyclone. The landspout was so named because it looks like a weak Florida Keys waterspout over land.

Landspouts form during the growth stage of convective clouds by stretching boundary layer vorticity upward and into the cumuliform tower's updraft. They generally are smaller and weaker than super-cellular tornadoes and do not contain a mesocyclone or pre-existing rotation in the cloud. Because of this, landspouts are rarely detected by Doppler weather radar. Landspouts develop similarly to waterspouts and bear a strong resemblance to them, usually taking the form of a translucent and highly laminar helical tube. Not all landspouts are visible, and many are first sighted as debris swirling at the surface before eventually filling in with condensation and dust. Landspouts are most common in semi-arid climates characterized by high cloud bases and considerable low-level instability. These conditions tend to favor the High Plains of the United States from spring through summer.

5.7.2 Hazard Location

A tornado could occur anywhere in Cook County.

5.7.3 Hazard Extent/Intensity

The Enhanced Fujita Scale, or the "EF-Scale," measures tornado strength and associated damage. This Enhanced Fujita Scale is illustrated in the table below. The EF-Scale is an update to the earlier Fujita scale published in 1971. It classifies tornadoes in the United States into six intensity categories based on the estimated maximum winds within the wind vortex. The EF-Scale has become the definitive metric for assessing wind speeds within tornadoes based on the damage done to buildings and structures since it was implemented through the National Weather Service in 2007.

TABLE: ENHANCED FUJITA SCALE AND ASSOCIATED DAMAGE

EF-Scale Number	Wind Speed (MPH)	Type of Damage Possible
EF0	**65-85**	**Minor damage**: Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	**86-110**	**Moderate damage**: Roofs severely stripped; manufactured homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	**111-135**	**Considerable damage**: Roofs torn off well-constructed houses; foundations of frame homes shifted; manufactured homes destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

TABLE: ENHANCED FUJITA SCALE AND ASSOCIATED DAMAGE		
EF-Scale Number	**Wind Speed (MPH)**	**Type of Damage Possible**
EF3	**136-165**	**Severe damage**: Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	**166-200**	**Devastating damage**: Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF5	**>200**	**Extreme damage**: Sturdy frame houses leveled off foundations and swept away; automobile-sized missiles fly more than 100 m (300 ft.); steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.

The extent of the hazard varies in terms of the extent of the path and the wind speed. Extent is addressed at the county level due to the nature of the hazard.

TABLE: COOK COUNTY JURISDICTIONAL EXTENT				
Hazard Type	**Affected Jurisdictions**	**Extent (based on historical events)**		**Comments**
		Minimum	**Maximum**	
Severe Winter Weather	County-wide	EF0	EF4	Multiple tornadoes have occurred within Cook County (2018-2023), ranging from EF0-EF3. EF3 or greater tornadoes are possible.

5.7.4 Probability and Frequency

Probability: To measure tornado probability, NOAA uses atmospheric data from satellites, radar systems, weather stations, and weather balloons. This includes information on temperature, humidity, atmospheric pressure, and wind patterns at various altitudes.

Typically, the probability of tornadoes is presented in percentages, reflecting the likelihood of occurrence in specific areas and timeframes. This probabilistic forecasting accounts for the inherent uncertainties in weather prediction. Meteorologists interpret this data and model outputs, considering both the current atmospheric situation and historical weather patterns, to assess tornado risks and generate accurate forecasts.

NWS issues tornado watches or warnings based on current conditions for tornadoes. A tornado watch indicates favorable conditions for tornadoes, while a warning signifies an imminent threat, often based on sightings or radar detection. This process involves continuous monitoring and updating of forecasts and warnings to adapt to rapidly changing weather conditions.

Frequency: Between 1954 and 2024, Cook County experienced 52 tornado events. This equates to an average of 0.74285714 tornado events/year.

(Note: Events listed in the Past Events table are based on impacts to an area (zone) of Cook County; as such, impacts to more than one area (zone) will result in multiple entries. When determining probability estimates, efforts were made to delineate single events from events that impacted a number of areas.)

5.7.5 Past Events

Table: Past Tornado Events in Cook County from 1954-2024									
Location	**County**	**State**	**Date**	**Time**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**39**	**772**	**118.338M**	**0.00K**
COOK CO.	COOK CO.	IL	10/10/1954	16:00	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	05/26/1955	16:00	F1	0	2	250.00K	0.00K
COOK CO.	COOK CO.	IL	04/02/1956	01:30	F1	0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	08/23/1956	14:40	F2	0	3	250.00K	0.00K
COOK CO.	COOK CO.	IL	08/30/1958	22:55	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	05/26/1959	19:34		0	0	0.25K	0.00K
COOK CO.	COOK CO.	IL	09/21/1959	14:47	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	09/26/1959	18:00	F1	0	14	250.00K	0.00K
COOK CO.	COOK CO.	IL	03/04/1961	17:04	F2	1	115	25.000M	0.00K
COOK CO.	COOK CO.	IL	06/23/1962	16:52	F2	0	10	250.00K	0.00K
COOK CO.	COOK CO.	IL	05/26/1965	08:15	F2	0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	05/26/1965	08:22	F2	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	08/26/1965	23:10	F1	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	11/12/1965	15:45	F2	0	0	25.000M	0.00K
COOK CO.	COOK CO.	IL	06/09/1966	05:10	F0	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/09/1966	05:15	F2	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/09/1966	05:20	F2	1	30	0.00K	0.00K
COOK CO.	COOK CO.	IL	04/21/1967	17:24	F4	33	500	25.000M	0.00K
COOK CO.	COOK CO.	IL	04/21/1967	17:40	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	04/30/1970	14:25	F2	0	9	25.00K	0.00K
COOK CO.	COOK CO.	IL	06/19/1972	15:00	F1	0	2	25.00K	0.00K
COOK CO.	COOK CO.	IL	07/14/1972	23:00	F1	0	0	2.500M	0.00K

Table: Past Tornado Events in Cook County from 1954-2024									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
COOK CO.	COOK CO.	IL	08/25/1972	21:30	F2	0	1	2.500M	0.00K
COOK CO.	COOK CO.	IL	04/21/1973	21:00	F2	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	04/21/1973	21:15	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	06/16/1973	15:15	F0	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/20/1974	18:40		0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	07/14/1974	12:15	F0	0	0	0.00K	0.00K
COOK CO.	COOK CO.	IL	06/17/1975	11:54	F2	0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	03/12/1976	13:25	F2	2	41	2.500M	0.00K
COOK CO.	COOK CO.	IL	06/13/1976	16:18	F4	2	23	2.500M	0.00K
COOK CO.	COOK CO.	IL	06/30/1977	13:45		0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	09/07/1977	14:10	F1	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	04/18/1978	16:55	F1	0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	09/22/1980	14:28	F0	0	0	25.00K	0.00K
COOK CO.	COOK CO.	IL	05/29/1983	12:39	F1	0	1	25.00K	0.00K
COOK CO.	COOK CO.	IL	05/29/1983	12:42	F0	0	2	2.50K	0.00K
COOK CO.	COOK CO.	IL	07/04/1985	21:56	F1	0	0	250.00K	0.00K
COOK CO.	COOK CO.	IL	09/29/1986	13:30	F1	0	10	250.00K	0.00K
COOK CO.	COOK CO.	IL	03/27/1991	16:07	F3	0	7	25.000M	0.00K
COOK CO.	COOK CO.	IL	05/05/1991	17:00	F0	0	0	0.00K	0.00K
LEMONT	COOK CO.	IL	05/30/2003	19:30	F0	0	0	0.00K	0.00K
CHICAGO	COOK CO.	IL	09/22/2006	17:02	F0	0	0	0.00K	0.00K
SCHAUMBURG	COOK CO.	IL	05/16/2007	16:52	EF0	0	0	50.00K	0.00K
PARK FOREST SOUTH	COOK CO.	IL	06/07/2008	17:19	EF2	0	0	4.000M	0.00K
PARK FOREST	COOK CO.	IL	06/07/2008	17:32	EF1	0	0	1.000M	0.00K
LANSING	COOK CO.	IL	06/07/2008	17:48	EF0	0	0	10.00K	0.00K
ORLAND PARK	COOK CO.	IL	08/04/2008	18:59	EF0	0	0	30.00K	0.00K
MATTESON	COOK CO.	IL	06/23/2010	17:26	EF1	0	0	100.00K	0.00K

Table: Past Tornado Events in Cook County from 1954-2024									
Location	County	State	Date	Time	Mag	Dth	Inj	PrD	CrD
BERGER	COOK CO.	IL	06/15/2011	17:18	EF0	0	0	25.00K	0.00K
CUMBERLAND	COOK CO.	IL	06/21/2011	19:48	EF1	0	0	50.00K	0.00K
MC COOK	COOK CO.	IL	05/26/2015	12:08	EF0	0	0	10.00K	0.00K
CICERO	COOK CO.	IL	08/09/2016	14:48	EF0	0	0	0.00K	0.00K
BERWYN	COOK CO.	IL	09/03/2018	13:14	EF0	0	0	10.00K	0.00K
SAUK VLG	COOK CO.	IL	05/27/2019	15:27	EF0	0	0	0.00K	0.00K
GOESELVILLE	COOK CO.	IL	08/10/2020	14:54	EF1	0	0	0.00K	0.00K
PARK FOREST SOUTH	COOK CO.	IL	08/10/2020	14:57	EF0	0	0	0.00K	0.00K
LINCOLNWOOD	COOK CO.	IL	08/10/2020	14:59	EF1	0	0	0.00K	0.00K
BURR RIDGE	COOK CO.	IL	06/20/2021	22:21	EF3	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	06/13/2022	17:13	EF0	0	0	0.00K	0.00K
(O6C) SCHAUMBURG REGIONA...	COOK CO.	IL	06/13/2022	17:27	EF0	0	0	0.00K	0.00K
BURR RIDGE	COOK CO.	IL	07/12/2023	17:10	EF1	0	1	0.00K	0.00K
SPAULDING	COOK CO.	IL	07/12/2023	17:32	EF1	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	07/12/2023	17:41	EF0	0	0	0.00K	0.00K
HANOVER PARK	COOK CO.	IL	07/12/2023	17:43	EF0	0	0	0.00K	0.00K
ELK GROVE VILLAGE	COOK CO.	IL	07/12/2023	17:59	EF0	0	0	0.00K	0.00K
(ORD) CHICAGO O'HARE AIR...	COOK CO.	IL	07/12/2023	18:02	EF0	0	0	0.00K	0.00K
STREAMWOOD	COOK CO.	IL	02/27/2024	19:29	EF0	0	0	0.00K	0.00K
HOFFMAN ESTATES	COOK CO.	IL	02/27/2024	19:32	EF1	0	0	0.00K	0.00K
SOUTH BARRINGTON	COOK CO.	IL	02/27/2024	19:34	EF1	0	0	0.00K	0.00K
WHEELING	COOK CO.	IL	02/27/2024	19:55	EF1	0	1	0.00K	0.00K

5.7.6 Vulnerabilities and Impacts

Impacted FEMA Community Lifelines		
Safety and Security	**Safety and Security** Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	Significant
Food, Hydration, Shelter	**Food, Hydration, Shelter** Food, Hydration, Shelter, Agriculture	Moderate
Health and Medical	**Health and Medical** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	Significant
Energy (Power & Fuel)	**Energy** Power Grid, Fuel	Moderate
Communications	**Communications** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	Moderate
Transportation	**Transportation** Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	Moderate
Hazardous Materials	**Hazardous Materials** Facilities, HAZMAT, Pollutants, Contaminants	Moderate
Water Systems	**Water Systems** Potable Water Infrastructure, Wastewater Management	Moderate
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown		

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health: According to NOAA, Tornadoes have potential to cause catastrophic life safety and public health impacts. The immediate threat to life from tornadoes can result in fatalities and injuries to humans and animals due to flying debris, collapsing structures, and the sheer force of the tornado itself. The risk to individuals in the path of a tornado is extremely high, as the rapid onset of these events often allows little time for seeking adequate shelter. Post-event, survivors may face a range of health concerns, including trauma, emotional distress, and the potential for injury during rescue efforts or cleanup operations.

Beyond personal safety, tornadoes can devastate critical infrastructure, leading to extended power outages, water supply contamination, and the disruption of healthcare services and emergency response capabilities. The destruction of homes and businesses contributes to public health concerns, displacing residents and potentially causing long-term socioeconomic challenges. The public health system can be strained as medical facilities cope with the influx of casualties and the broader needs of the affected community.

Property Damage and Critical Infrastructure: According to NOAA, tornadoes are among the most destructive weather events, with the potential to cause catastrophic property damage and critical infrastructure impacts. The intense winds of a tornado, which can exceed 200 miles per hour in the most severe cases, have the force to destroy buildings, homes, and vegetation, leaving a trail of debris. They can displace or overturn vehicles, rip apart roofs, and even lift and destroy well-built structures. The resultant debris can compound the damage by becoming airborne projectiles. For businesses, this means not only structural loss but also potential disruption of operations and economic activity, with recovery and rebuilding efforts often costing significantly.

When it comes to critical infrastructure, tornadoes can result in widespread destruction, compromising public safety and community functionality. They can severely damage power lines and utilities, leading to prolonged power outages and water supply contamination. Transportation infrastructure such as roads, bridges, and railways may be rendered unusable, hindering emergency response efforts and recovery operations. Tornadoes also pose a risk to healthcare infrastructure by damaging hospitals and medical facilities, thereby limiting access to medical care when it is most needed. The extensive damage to infrastructure necessitates comprehensive disaster response plans and resilient construction practices to mitigate the impacts of tornadoes.

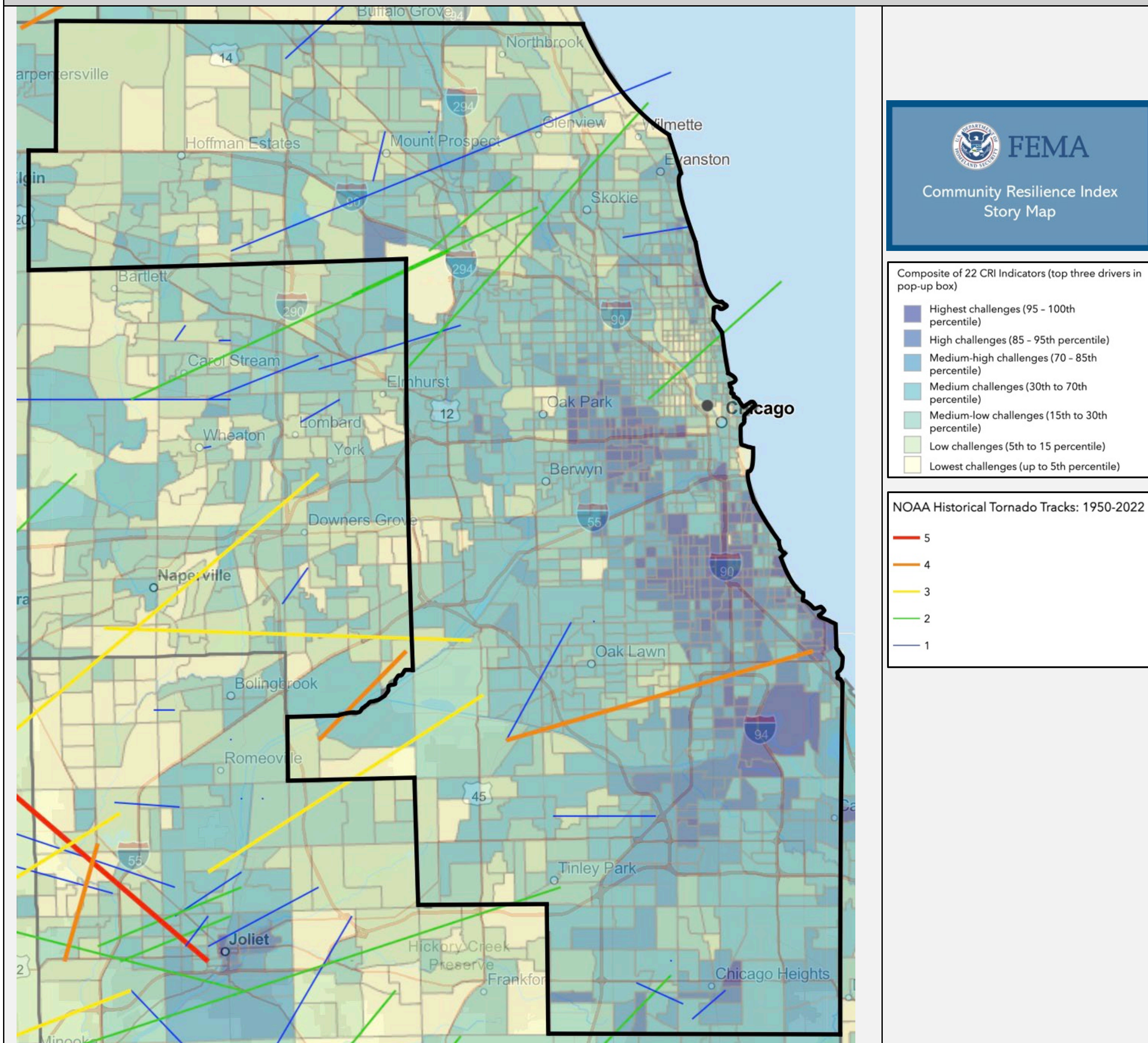
All Cook County critical facilities and infrastructure are listed in Section 4.6.

The FEMA Community Resilience Challenges Index (CRCI) provides a relative assessment of a community's potential resilience and gives insights into population and community characteristics from which to build emergency operations plans and targeted outreach strategies.

The figure below illustrates the impact of EF1 to EF5 tornadoes on CCRI tracts in Cook County.

FIGURE: TORNADO IMPACTS TO CRCI TRACTS IN COOK COUNTY, ILLINOIS

FEMA COMMUNITY RESILIENCE INDEX STORY MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

According to FEMA, in areas subject to extreme wind events, those responsible for public safety—including building owners, schools, hospitals, and neighborhood associations—should consider building accessible community safe rooms. In addition, people who live or work in structures with inadequate protection, such as manufactured homes or buildings with long-span roofs, also should discuss the option of building a community safe room or shelter. Because a tornado can hit anywhere in the county, all structures are susceptible to being hit. Schools are a particular concern, though, for two reasons:

- Many people are present, either during school or as a storm shelter.
- They have large span areas, such as gyms and theaters.

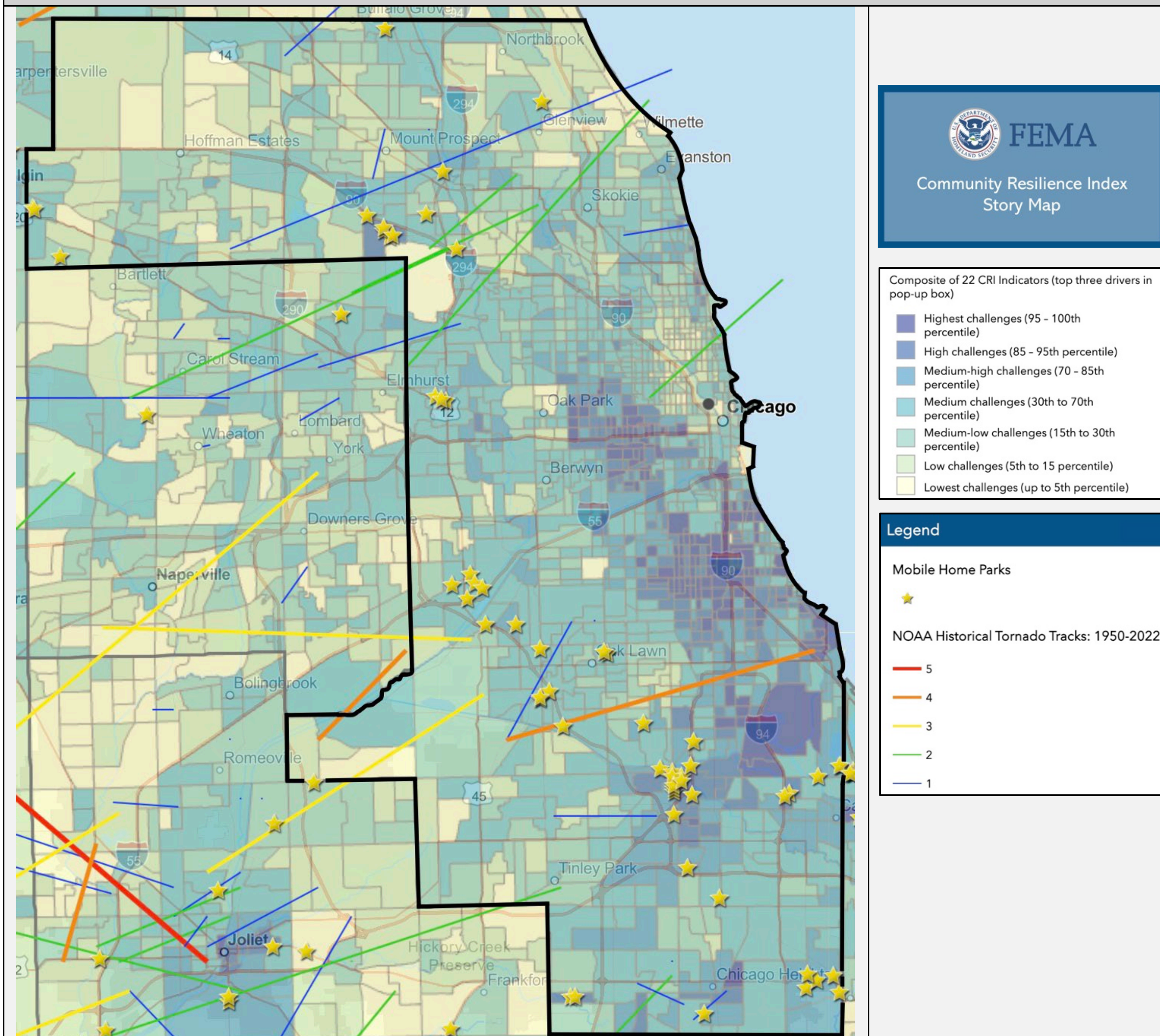
Although tornadoes strike at random, making all buildings vulnerable, three types of structures are more likely to suffer damage:

- Manufactured homes,
- Homes on crawlspaces (more susceptible to lift), and
- Buildings with large spans include airplane hangars, gymnasiums, and factories.

Residents living in manufactured homes are more vulnerable than people in permanent homes. Cook County has approximately 15,435 manufactured homes that could be impacted by a tornadic event (Neighborhoods At Risk). The figure below illustrates tornadic impact to manufactured home areas in Cook County.

FIGURE: FEMA COMMUNITY RESILIENCE INDEX STORY MAP

COOK COUNTY, ILLINOIS



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

Economy: According to NOAA, tornadoes can have severe economic impacts resulting in long-term recovery efforts. Tornadoes can obliterate buildings, homes, infrastructure, and agricultural fields in mere moments, resulting in significant repair and reconstruction costs. The destruction of commercial and industrial facilities can disrupt local economies, leading to job losses, business interruptions, and a reduction in tax revenues for affected communities. The cost burden can often be shared by insurance companies, who face substantial claims following a tornado, potentially increasing premiums for customers and influencing the insurance market's stability.

In addition to property damage, the economic repercussions of tornadoes include the expense of emergency response, debris cleanup, and temporary housing for displaced residents. Long-term economic impacts can be exacerbated by the loss of public services and utilities, reduced property values, and the potential for displaced businesses and residents to relocate permanently. These factors contribute to a complex economic aftermath, which can persist long after the physical debris has been cleared.

Changes in Development and Impact to Future Development: According to NOAA, tornadic events can impact changes in development and future construction practices, particularly in tornado-prone regions. Historical patterns and frequency of occurrence have also led to a focus on building resilience, with an emphasis on stronger construction standards to withstand high winds. This includes reinforcing the structural integrity of buildings, using wind-resistant materials, and incorporating tornado-safe rooms or shelters in both new and existing structures. Architects and engineers are increasingly adopting these enhanced safety measures in building designs, considering factors such as roof shapes and anchoring methods that can reduce wind damage. Finally, there's a growing trend towards community-wide tornado preparedness planning, which includes the development of emergency response strategies and the establishment of public storm shelters.

For future development, understanding and mapping tornado risk areas play a crucial role in urban planning decisions. This can influence zoning regulations, with potential restrictions on development in high-risk areas or requirements for specific building codes in such regions. The increasing frequency and intensity of tornadoes, possibly linked to climate change, also necessitates the integration of tornado risk assessments in long-term development plans.

Effects of Climate Change on Severity of Impacts: According to NOAA, climate change is impacting the severity and behavior of tornadic events, although the exact nature of these effects is complex and still a subject of ongoing research. One of the primary challenges in understanding the relationship between climate change and tornadoes is the complexity of tornado formation. Tornadoes require specific atmospheric conditions, including a combination of high instability and strong wind shear. Climate change may affect these conditions, but how these changes will influence tornado occurrence and intensity is not yet fully understood.

According to NOAA, climate change is expected to increase atmospheric instability by warming the Earth’s surface and may also lead to a decrease in wind shear, particularly in areas where tornadoes are most common. This could potentially lead to a change in the number or intensity of tornadoes, but the evidence is not yet conclusive. Second, shifts in climate patterns could affect the geographical distribution and seasonality of tornadoes, potentially leading to tornadoes in regions where they were previously less common or during times of the year when they were less expected.

In a 2021 thesis study, pseudo-global warming (PGW) methodology was used to analyze two historical tornadic events within environments influenced by anthropogenic climate change (ACC). In the findings of this study, weather research and forecasting modeling (WRF) suggested that more convective and intense storms would occur under ACC. In addition, accumulated precipitation also generally increased, and more areas received measurable rainfall, where extreme rainfall – more than 100 mm – increased by more than 50% on average (Woods, 2021).

TABLE: 25-YEAR CLIMATE PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience **an 115% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 55°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience an **83% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 54°F) in average annual temperatures.
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL

Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Average Annual Total Precipitation	**36”**	**37”**	**37”**	**38”**	**38”**	**38”**	**40”**
	34-37	34-41	34-41	34-42	33-44	34-43	34-46
Days Per Year With Precipitation	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Days Per Year With No Precipitation	**193 days**	**195 days**	**196 days**	**196 days**	**197 days**	**197 days**	**200 days**
	190-197	187-208	187-212	186-207	184-216	187-208	180-235
Maximum Number Of Consecutive Dry Days	**13 days**	**13 days**	**14 days**	**14 days**	**14 days**	**14 days**	**15 days**
	11-14	12-16	12-17	12-16	12-18	12-16	12-20
Temperature Thresholds							
Annual days with Maximum temperature > 90°	**12 days**	**31 days**	**34 days**	**41 days**	**49 days**	**50 days**	**81 days**
	12-18	19-51	21-50	22-69	30-75	26-86	47-113
Annual days with Maximum temperature > 100°	**0 days**	**2 days**	**2 days**	**4 days**	**7 days**	**7 days**	**24 days**
	0-0	0-6	0-7	0-16	1-23	1-16	2-67
Source: Climate Mapping for Resilience and Adaptation (2024)							

Using Woods' thesis study and 25-Year climate projections in the table above, it is possible to conclude that increasing climate conditions will impact the connectivity and intensity of future tornadic events in Cook County.

5.7.7 FEMA NRI Expected Annual Loss Estimates

TABLE: COOK COUNTY - EXPECTED ANNUAL LOSS FOR TORNADIC EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0.6 events per year	17.16	$199,094,447	$104,973,215	$203	$304,067,865	Very High	99.9
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Period of Record: 2021 dataset							
Source: FEMA National Risk Index (2024)							

5.7.8 FEMA Hazard-Specific Risk Index

TABLE: COOK COUNTY - FEMA HAZARD SPECIFIC RISK INDEX – TORNADIC EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
304,067,865	Very High	Relatively High	$364,927,286	100
FEMA Hazard-Type ***Risk Index Scores*** *are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type* ***Social Vulnerability Score*** *represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type* ***Community Resilience Score*** *represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

5.7.9 FEMA NRI Exposure Values

TABLE: COOK COUNTY - EXPOSURE VALUE TABLE FOR TORNADIC EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Tornado	$62,057,329,400,253	$893,116,815,354	$61,164,190,000,000	5,272,775	$22,584,899

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

5.8 Wildfire

5.8.1 Hazard Description

Wildfire is an uncontrolled fire that burns in forests, grasslands, and other natural areas. Wildfires can spread quickly, driven by factors like wind and dry conditions, and they often pose significant threats to life, property, and the environment. These fires can be ignited by various sources, including lightning, human activities, and other natural causes. Wildfires can result in widespread devastation and require coordinated efforts for containment, suppression, and recovery.

5.8.2 Hazard Location

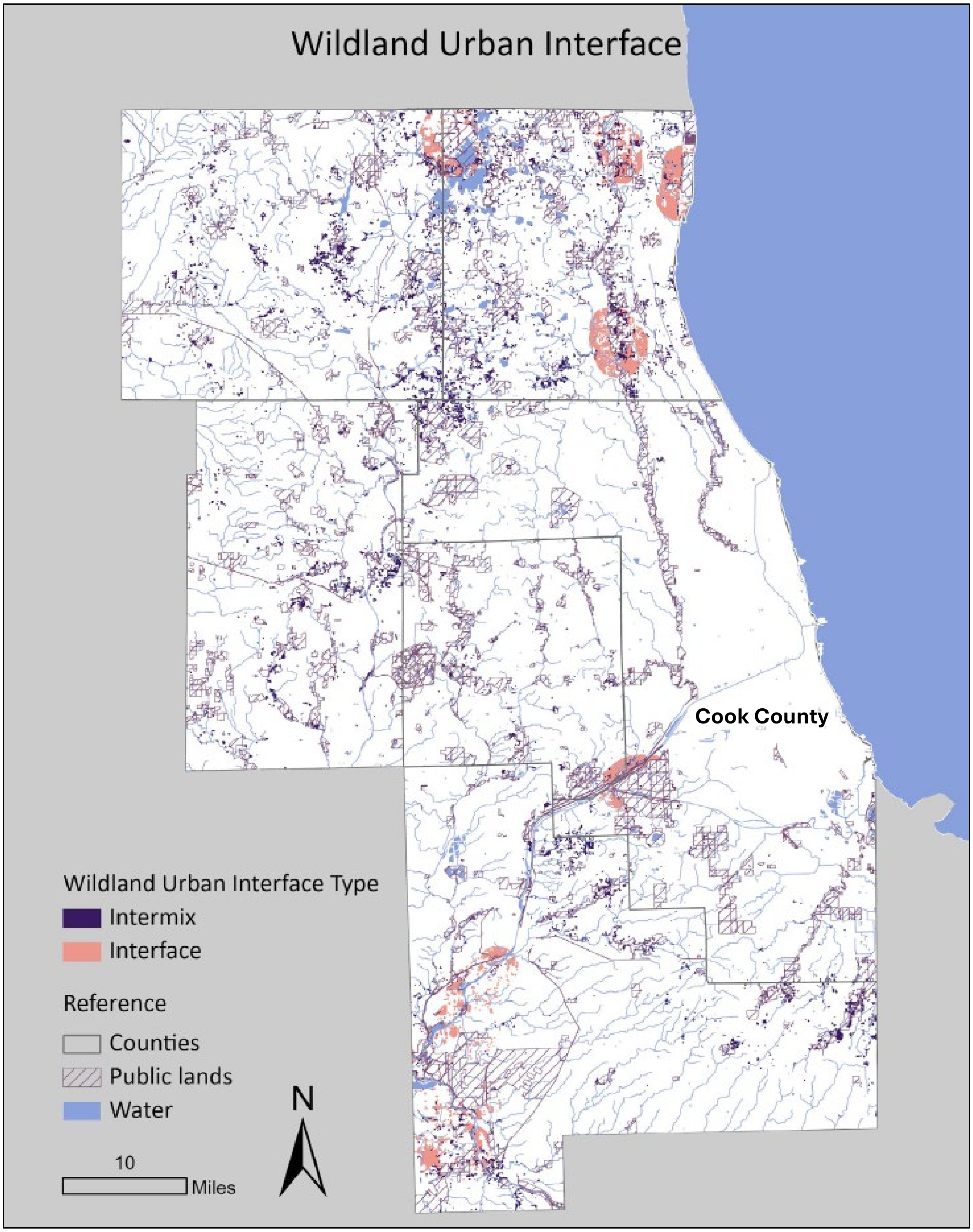
Wildland-Urban Intermix/Interface (WUI/I) are defined as any area where potentially combustible wildland fuels are found adjacent to or in the vicinity of combustible homes, businesses, and other structures. It is a zone where man-made improvements intermix with wildland fuels.

In 2024, Chicago Wilderness initiated a study to look at wildland urban intermix/interface (WUI/I) vulnerability in a six-county area surrounding Chicago, Illinois. The counties participating in this study include Cook, DuPage, Kane, Lake, McHenry and Will, which total 2,397,675 acres. These six counties were selected due to: 1) their proximity to the metropolitan Chicago area; 2) their continuity to one another; and, 3) presence of representative fuels with interspersed residential housing. The goal was to develop a process for identifying WUI/I with an analytical template so other entities within the Chicago Wilderness area could utilize the process to initiate their own plans.

Because wildfire is not a common hazard associated with this region, the Chicago Wilderness Community Wildfire Preparedness Plan provides the most in-depth analysis of the risks and concerns associated with this hazard. As such, the mitigation planning team has been given permission to utilize these regional findings to articulate the risk of wildfire for the planning area.

The following map shows the WUI areas for Cook County, which represents a very small portion of the county.

TABLE: COOK COUNTY WUI				
County	**Size (Acres)**	**Wildland Fuels (acres)**	**WUI/I (acres)**	**WUI/I Percent**
Cook	611,610	84,602	7,951	1.3%



Source: 2024 Chicago Wilderness Community Wildfire Preparedness Plan

5.8.3 Hazard Extent/Intensity

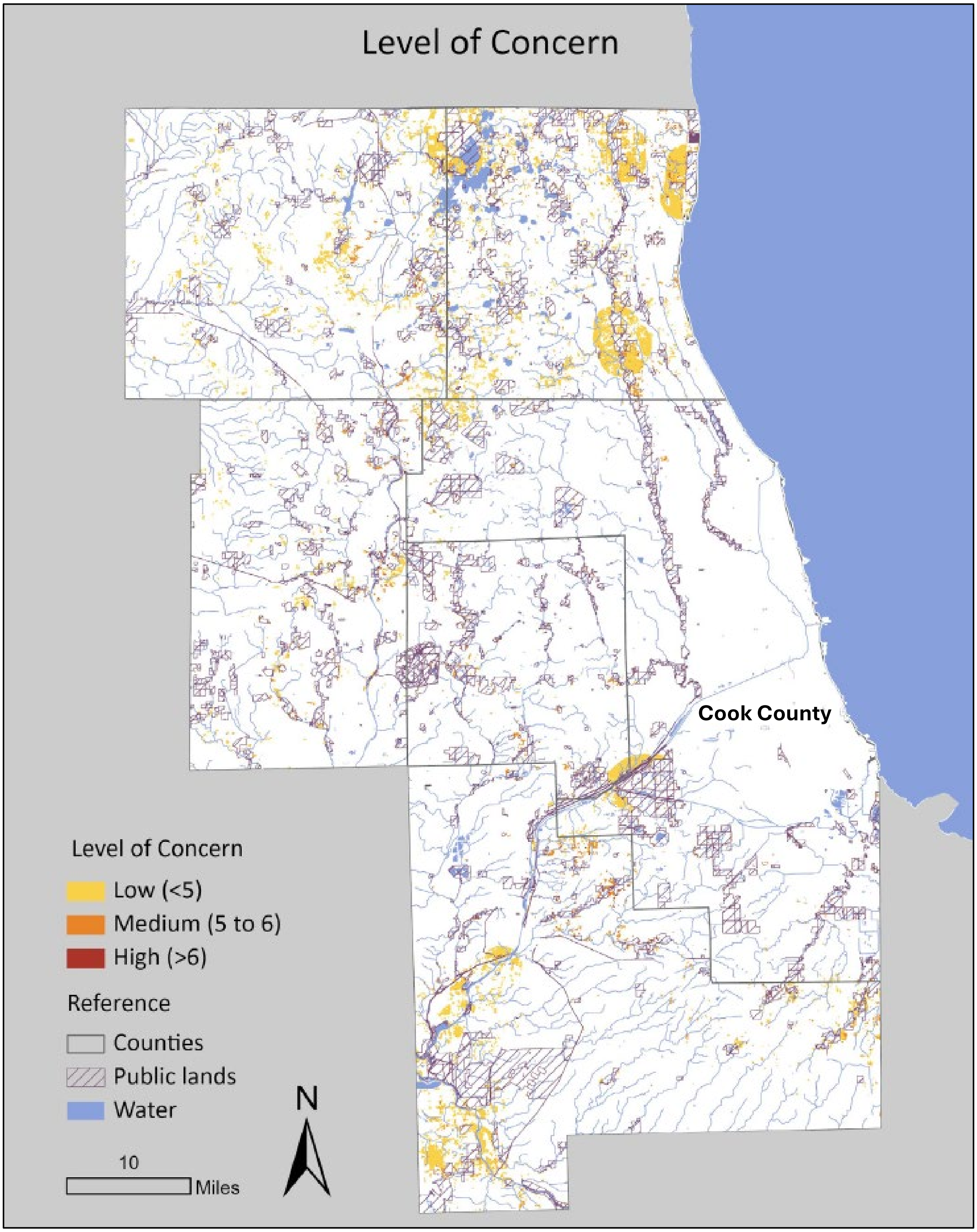
The National Interagency Fire Center (NIFC) employs several measures and tools to assess the extent and intensity of wildfires. These include the acreage burned, which quantifies the size of the affected area, with larger acreage indicating more extensive wildfires. Fire behavior indicators such as the rate of spread, fireline intensity, and flame length offer insights into the wildfire's intensity, with rapid spread and high-intensity flames signifying a more severe fire. The table below illustrates fire suppression interpretations of flame length and fireline intensity.

TABLE: US DOA FLAME LENGTH AND FIRELINE INTENSITY TABLE		
Fire Suppression Interpretations of Flame Length and Fireline Intensity		
Flame Length	**Fire Intensity**	**Interpretation**
Feet	*Btu/ft/s*	Fire can generally be attacked at the head or flanks by persons using hand tools. Handline should hold the lire
< 4	< 100	
4-8	100-500	Fires are too intense for direct attack on the head by persons using hand tools. Handline cannot be relied on to hold fire. Equipment such as plows, dozers, pumpers, and retardant aircraft can be effective.
8-11	500-1,000	Fires may present serious control problems-torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.
>11	>1,000	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.
Source: US Department of Agriculture – Forest Service		

The containment status, measured as the percentage of the fire's perimeter under control, tracks the progress in limiting the wildfire's spread. Meteorological data on temperature, humidity, wind speed, and direction are crucial for understanding fire potential, with critical fire weather conditions contributing to more intense wildfires. The extent of damage to homes, infrastructure, and communities, as well as the scale of evacuation orders issued, reflects the wildfire's impact. Lastly, resource deployment and fire danger ratings are considered, enabling NIFC to assess wildfire severity and effectively manage response efforts (US Department of the Interior, 2024).

The majority of Cook County is considered “Low Level of Concern” as reported by the 2024 Chicago Wilderness Community Wildfire Preparedness Plan. This is determined by assessing levels of fuel volatility and fire occurrence.

TABLE: COOK COUNTY WILDFIRE LEVEL OF CONCERN				
County	**Low (acres)**	**Medium (acres)**	**High (acres)**	**Total (acres)**
Cook	5,777	2,005	252	8,034



Source: 2024 Chicago Wilderness Community Wildfire Preparedness Plan

5.8.4 Probability and Frequency

Probability: The National Interagency Fire Center (NIFC) measures the probability of wildfires by considering various factors and conditions that contribute to the likelihood of ignition and fire spread. Key elements in assessing this probability include:

- Weather Conditions: NIFC monitors weather data, including temperature, humidity, wind speed, and precipitation, to evaluate the fire weather outlook. Dry and windy conditions with low humidity increase the likelihood of wildfires.
- Fuel Moisture: The moisture content of vegetation, such as grasses, shrubs, and trees, is a critical factor. Dry or drought-affected fuels are more susceptible to ignition.
- Lightning Activity: NIFC tracks lightning activity in wildfire-prone regions, as lightning strikes are a common natural cause of wildfires.
- Human Activities: Monitoring human activities that can lead to unintentional ignitions, such as campfires, discarded cigarettes, and equipment sparks, helps assess the human-related wildfire risk.
- Historical Data: Historical wildfire data, including the frequency and size of past wildfires, can inform the probability of future incidents.
- Fire Danger Ratings: Fire danger ratings, such as the Fire Weather Index, provide a standardized assessment of fire risk based on weather and fuel conditions.

Frequency: Between 2004 and 2024, Cook County experienced 1 wildfire event according to the National Centers for Environmental Information. This equates to an average of 0.05 wildfire events/year. The 2024 Chicago Wilderness Community Wildfire Preparedness Plan reports 9,994 fires occurring in the region from January 1, 2013, to December 31, 2022 if the following are considered:

- Brush, or brush and grass mixture fire
- Grass fire
- Natural vegetation fire, other
- Cultivated vegetation, crop fire, other
- Cultivated grain or crop fire
- Cultivated orchard or vineyard fire

Most localized wildland fire reports lack a site-specific address, which makes it difficult to pinpoint location and frequency of events in a given locale.

TABLE: COOK COUNTY FIRES	
County	**Number of Fires**
Cook	9,994

5.8.5 Past Major Events

TABLE: PAST WILDFIRE EVENTS IN COOK COUNTY, ILLINOIS As reported by the National Centers for Environmental Information									
Location	**County**	**State**	**Date**	**Time**	**Type**	**Dth**	**Inj**	**PrD**	**CrD**
Totals:						**0**	0	**2.00M**	**0.00K**
COOK (ZONE)	COOK (ZONE)	IL	05/24/2007	09:40	Wildfire	0	0	2.00M	0
Totals:						**0**	0	**2.00M**	**0.00K**

5.8.6 Vulnerability and Impacts

Impacted FEMA Community Lifelines	
Safety and Security Law Enforcement/ Security, Fire Service, Search and Rescue, Government Service, Community Safety	**Moderate**
Food, Hydration, Shelter Food, Hydration, Shelter, Agriculture	**Minimal**
Health and Medical Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management	**Moderate**
Energy Power Grid, Fuel	**Minimal**
Communications Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch	**Minimal**
Transportation Highway/ Roadway/ Motor Vehicle, Mass Transit, Railway, Aviation, Maritime	**Minimal**
Hazardous Materials Facilities, HAZMAT, Pollutants, Contaminants	**Minimal**
Water Systems Potable Water Infrastructure, Wastewater Management	**Minimal**
Possible Extent of Disruption and Impacts to Community Lifelines from this Hazard **Red** = Significant | **Yellow** = Moderate | **Minimal** = Green | **Grey** = Unknown	

Community Lifelines: Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The integrated network of assets, services and capabilities that make up community lifelines are used day to day to support recurring needs. Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Lifelines were developed to support response planning and operations, but the concept can be applied to the entire emergency management cycle, ***including mitigation***. This basic analysis above is a representation of the hazard's potential impact and disruption to the eight Community Lifeline sectors in Cook County as defined by the planning team and based on an analysis of the potential impacts in this section. Future updates to this plan will continue to integrate Community Lifelines by ensuring all lifeline sectors have active stakeholders in the MJ-HMP and that the plan identifies the vulnerability and impacts to specific lifeline assets in the County, including root cause analyses, interdependencies, and restoration/recovery prioritization based on criticality.

Life Safety and Public Health: Wildfires can have significant life safety and public health impacts. First, wildfires produce smoke and particulate matter that can degrade air quality over large areas, potentially leading to respiratory issues, exacerbating pre-existing conditions, and causing symptoms such as coughing, shortness of breath, and irritation of the eyes and throat. Secondly, wildfires often necessitate the evacuation of communities, temporarily displacing residents from their homes. This displacement can result in stress, anxiety, and potential health risks, particularly for vulnerable populations.

Additionally, the dynamic nature of wildfires can lead to injuries and fatalities among responders and the public. These incidents may occur during evacuations, firefighting efforts, or while navigating hazardous fire conditions. Furthermore, the mental health impact of wildfires is noteworthy, as they can cause stress, anxiety, and trauma for those affected. The loss of homes and possessions, coupled with the uncertainty of wildfire impacts, can contribute to long-term mental health challenges. Wildfires also have the potential to disrupt the food supply chain and water infrastructure, potentially leading to contamination of drinking water sources and causing shortages of essential supplies. Lastly, evacuation centers and crowded living conditions can facilitate the spread of infectious diseases, making disease control and public health management a priority during and after wildfires.

Property Damage and Critical Infrastructure: Overall, wildfires have far-reaching consequences on both property and critical infrastructure, emphasizing the importance of fire prevention and mitigation measures. Wildfires can cause extensive destruction to homes, buildings, and infrastructure, resulting in significant financial losses. Homes and properties situated in or near the path of a wildfire are particularly vulnerable, and even with firefighting efforts, many structures may be lost. In addition to property damage, wildfires can disrupt critical infrastructure such as power lines, electrical substations, transportation networks, and communication facilities.

Power outages can occur as a result of infrastructure damage, impacting not only residents but also essential services like hospitals, water treatment plants, and emergency communication systems. Roads and bridges may be compromised or rendered impassable due to the force of the wildfires, hindering access to affected areas. The aftermath of wildfires can also lead to environmental damage, with erosion, sedimentation, and water quality issues affecting ecosystems and water sources. Cleanup and restoration efforts can be costly and time-consuming, and the long-term economic impact on communities and regions is a significant concern.

All Cook County critical facilities and infrastructure are listed in Section 4.6.

Economy: Wildfires can result in significant economic losses for communities and regions affected by these disasters. Some of the primary economic impacts include property damage and loss, the cost of firefighting efforts, and the expenses associated with recovery and rebuilding. Property damage encompasses homes, businesses, and infrastructure, leading to insurance claims and financial burdens on individuals and organizations. The cost of deploying firefighting resources, including personnel, equipment, and air support, is another significant economic factor. Additionally, post-fire efforts such as erosion control, reforestation, and repair of damaged infrastructure contribute to the economic toll. The disruption of economic activities, such as agriculture, tourism, and outdoor recreation, can further affect the local and regional economies.

Changes in Development and Impact of Future Development: Wildfires can significantly impact changes in development and future development in several ways. The effects of wildfires on communities, infrastructure, and ecosystems can influence land use planning and development decisions. After a wildfire, local authorities may reassess land use and zoning regulations, especially in areas prone to wildfires. They may impose stricter building codes, setback requirements, and vegetation management rules to reduce fire risk in future developments.

Wildfires can also expose vulnerabilities in critical infrastructure, such as power lines, roads, and water supply systems. This can lead to investment in infrastructure upgrades to enhance resilience and prevent future damage. Communities affected by wildfires often face the decision of whether to rebuild in the same location or relocate to safer areas. The experience of a wildfire can influence the choices made by property owners and developers. The increased frequency and severity of wildfires may impact the availability and cost of property insurance. Insurers may adjust premiums or coverage terms, affecting property development decisions. Moreover, wildfires can lead to increased community awareness and preparedness efforts, influencing development decisions. Communities may implement Firewise practices and community wildfire protection plans that affect future development.

Lastly, wildfires can alter ecosystems and natural landscapes. Land managers and conservationists may adjust their plans for ecological restoration and habitat conservation, which can, in turn, influence land development in affected areas. Lastly, the cumulative impact of wildfires on a region can inform long-term planning strategies, influencing where and how future development occurs. It may lead to regional development policies that prioritize resilience and fire risk reduction. In summary, wildfires can prompt changes in development and future development by affecting land use regulations, infrastructure investment, community resilience, and long-term planning. These changes are often driven by the need to reduce the risks associated with wildfires and their potential impacts on communities and the environment.

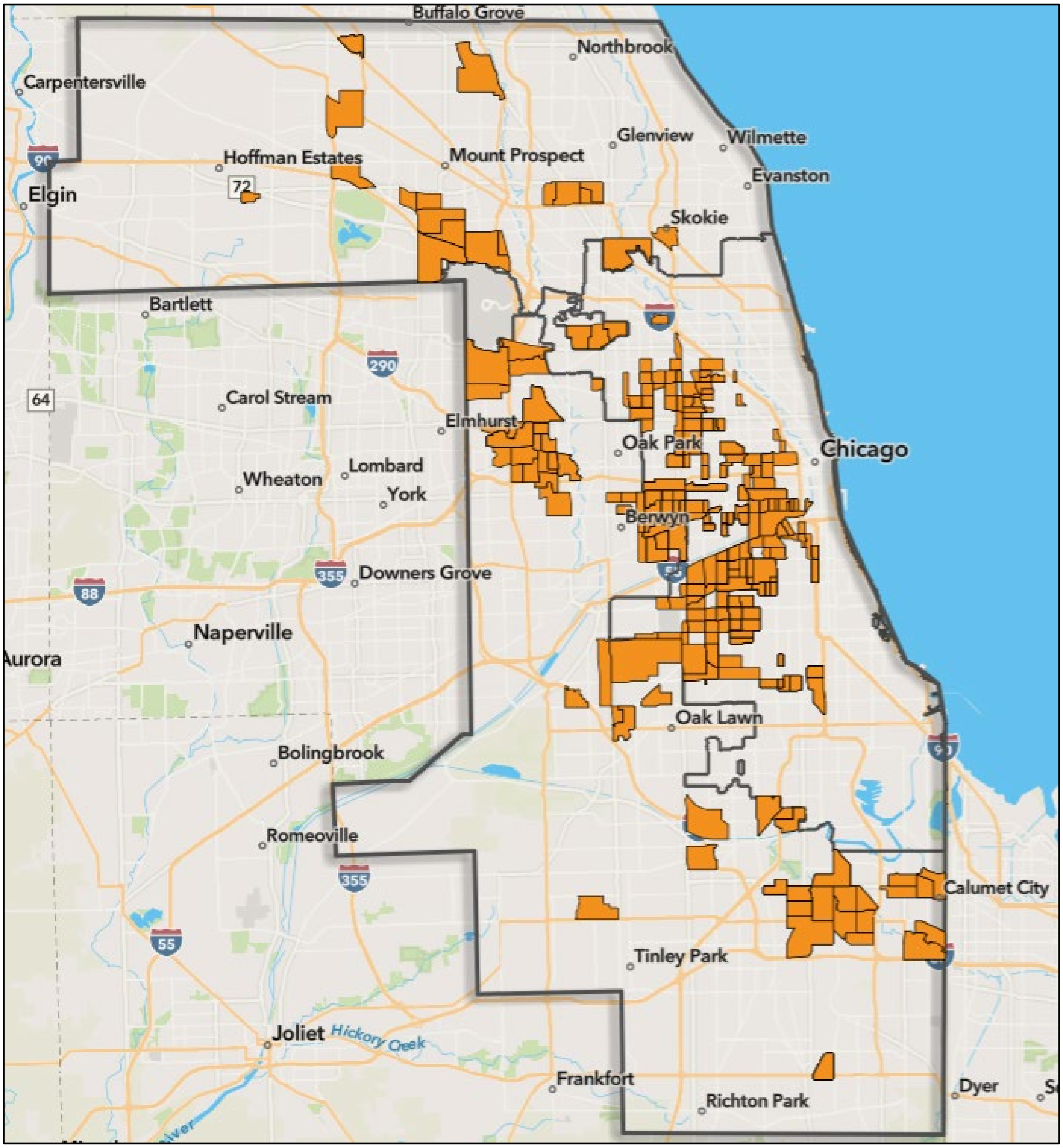
Effects of Climate Change on Severity of Impacts: According to NOAA, climate change is having a profound influence on wildfires. Climate change can manifest its impact in various ways, significantly intensifying the frequency and severity of wildfires. Firstly, escalating global temperatures lead to heightened evaporation rates, causing vegetation to dry out and become more susceptible to ignition. This prolonged warmth results in an extended fire season, providing more opportunities for wildfires to occur. Secondly, climate change can exacerbate drought conditions in many regions, depleting soil moisture and rendering vegetation more flammable. As a result, severe and extended droughts increase the ease with which wildfires ignite and spread. Additionally, alterations in precipitation patterns, driven by climate change, can lead to more intense rainfall events, followed by prolonged dry periods. This cycle promotes rapid vegetation growth, which, in turn, creates additional fuel for wildfires. The impact of climate change is further exacerbated by an increase in extreme weather events, like thunderstorms and lightning strikes, which often serve as ignition sources for wildfires. Changes in wind patterns, brought about by shifting atmospheric circulation, can result in more frequent and intense wind events, facilitating the rapid spread of wildfires. Warmer temperatures can also contribute to increased insect outbreaks, weakening and killing trees, thus providing more fuel for fires. Lastly, climate change can extend the fire season in many regions, heightening the likelihood of wildfires (NOAA).

TABLE: 25-YEAR CLIMATE PROJECTIONS FOR COOK COUNTY, IL
HIGHER EMISSIONS (RCP8.5)
Cook County is expected to experience an **115% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 55°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Cook County is expected to experience an **83% increase** in extremely hot days within 25 years.
By 2049, Cook County is expected to have a **2°F increase** (from 53°F to 54°F) in average annual temperatures.
Source: Neighborhoods at Risk (https://nar.headwaterseconomics.org/17031/explore/climate)

TABLE: FUTURE CLIMATE INDICATORS FOR COOK COUNTY, IL							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Days per Year with No Precipitation	**193 days**	**195 days**	**196 days**	**196 days**	**197 days**	**197 days**	**200 days**
	190-197	187-208	187-212	186-207	184-216	187-208	180-235
Maximum Number of Consecutive Dry Days	**13 days**	**13 days**	**14 days**	**14 days**	**14 days**	**14 days**	**15 days**
	11-14	12-16	12-17	12-16	12-18	12-16	12-20
Days per Year w/ Precipitation	**172 days**	**170 days**	**169 days**	**169 days**	**168 days**	**168 days**	**165 days**
	168-175	157-178	153-178	158-179	149-182	158-179	130-185
Temperature Thresholds							
Annual Days with Maximum Temperature > 90°F	**12 days**	**31 days**	**34 days**	**41 days**	**49 days**	**50 days**	**81 days**
	12-18	19-51	21-50	22-69	30-75	26-86	47-113
Annual Days with Maximum Temperature > 100°F	**0 days**	**2 days**	**2 days**	**4 days**	**7 days**	**7 days**	**24 days**
	0-0	0-6	0-7	0-16	1-23	1-16	2-67
Source: Climate Mapping for Resilience and Adaptation (2024)							

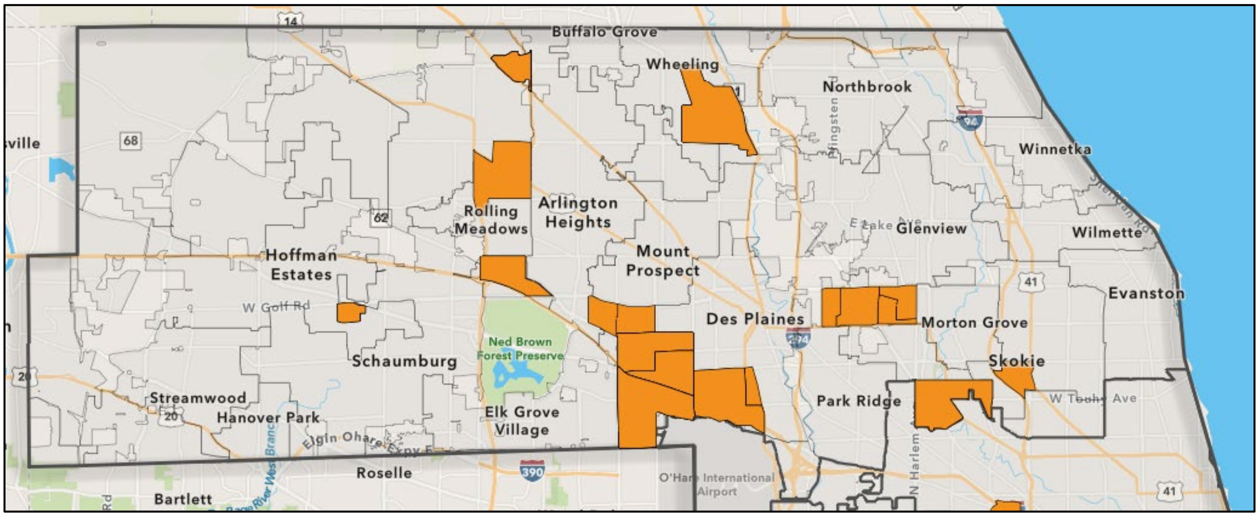
The figure below highlights the highest risk census tracts for extreme heat mitigation and intervention and associated challenges that communities face from climate change. This map examines where areas of high urban heat index, low tree canopy percentage, and high amounts of impervious surface overlap with one of eleven social vulnerability index variables. The resulting data shows census tracts that are at highest risk for extreme heat and contain populations who may be disproportionately affected by extreme heat events caused by climate change.

Climate Change Impact: High Heat Risk Areas for Cook County



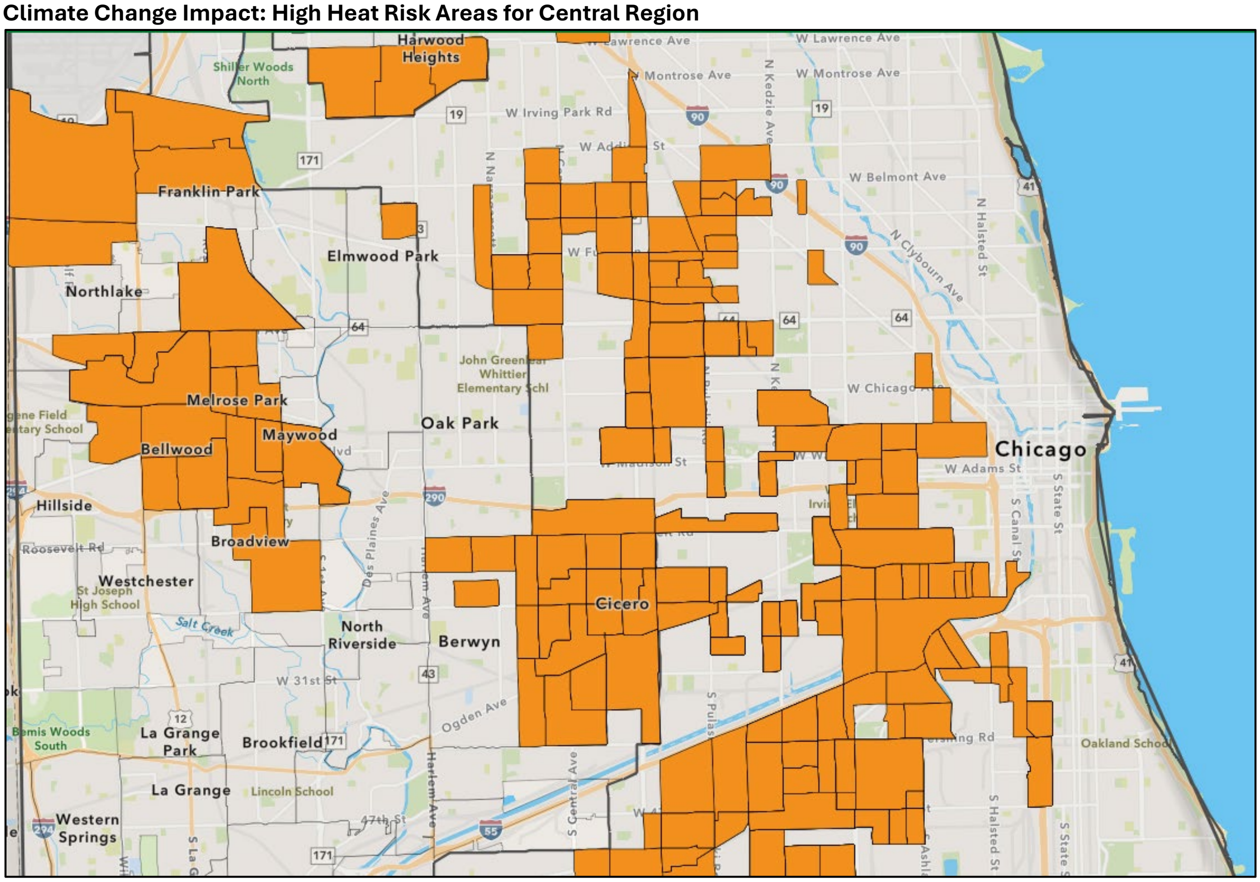
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for North Region



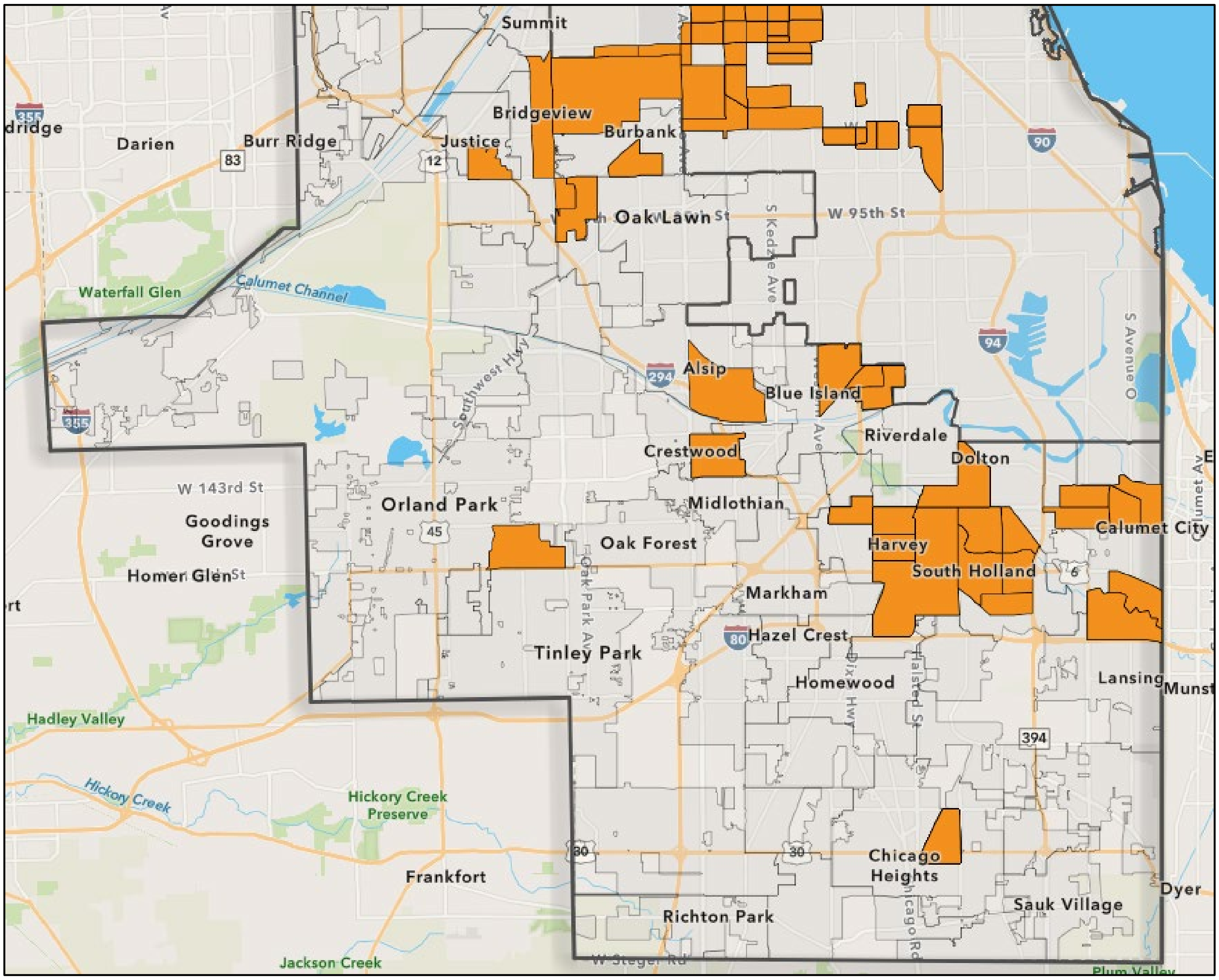
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for Central Region



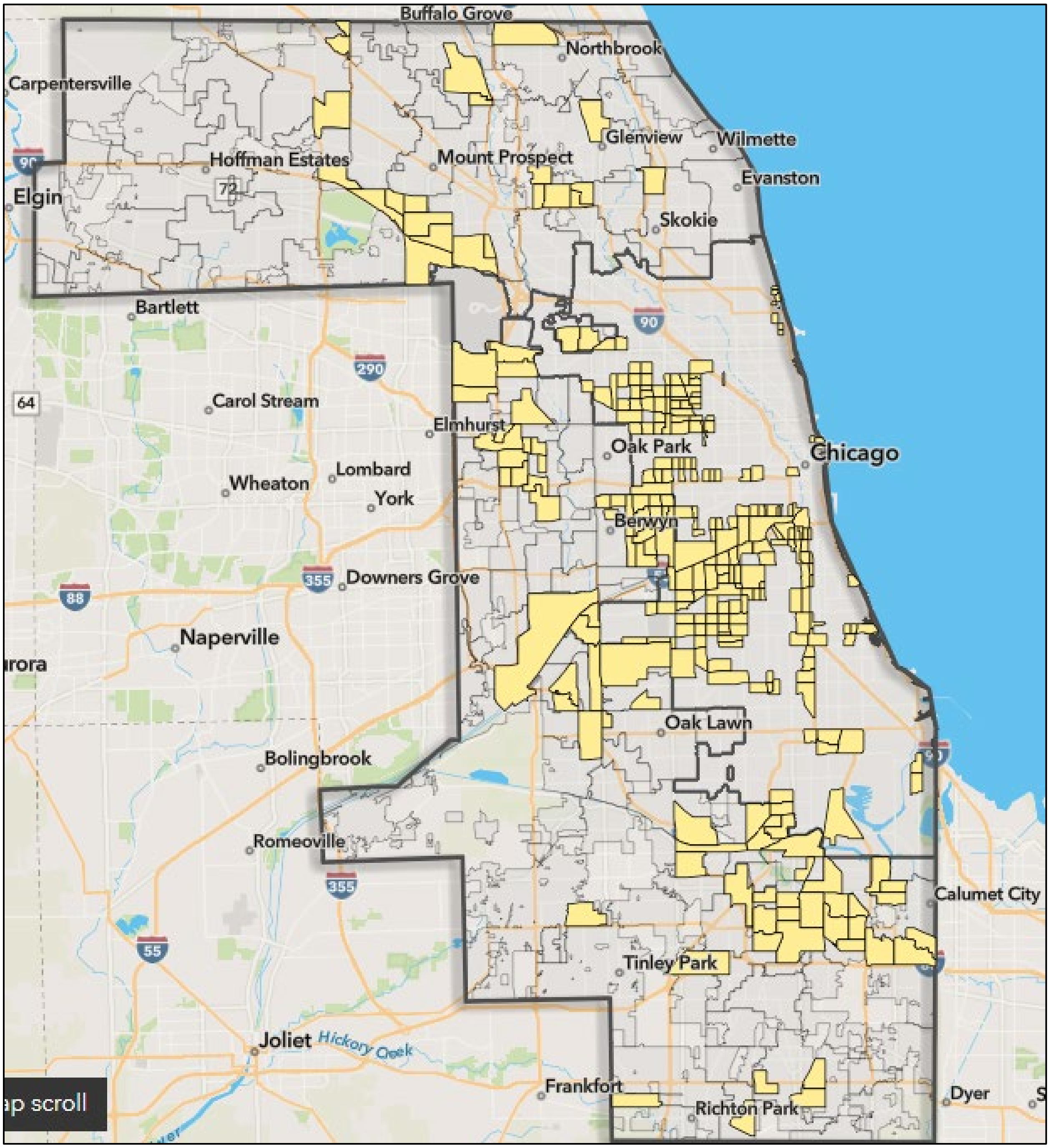
Source: Chicago and Cook County Greenprint Heat Risk Vulnerability Assessment

Climate Change Impact: High Heat Risk Areas for South Region

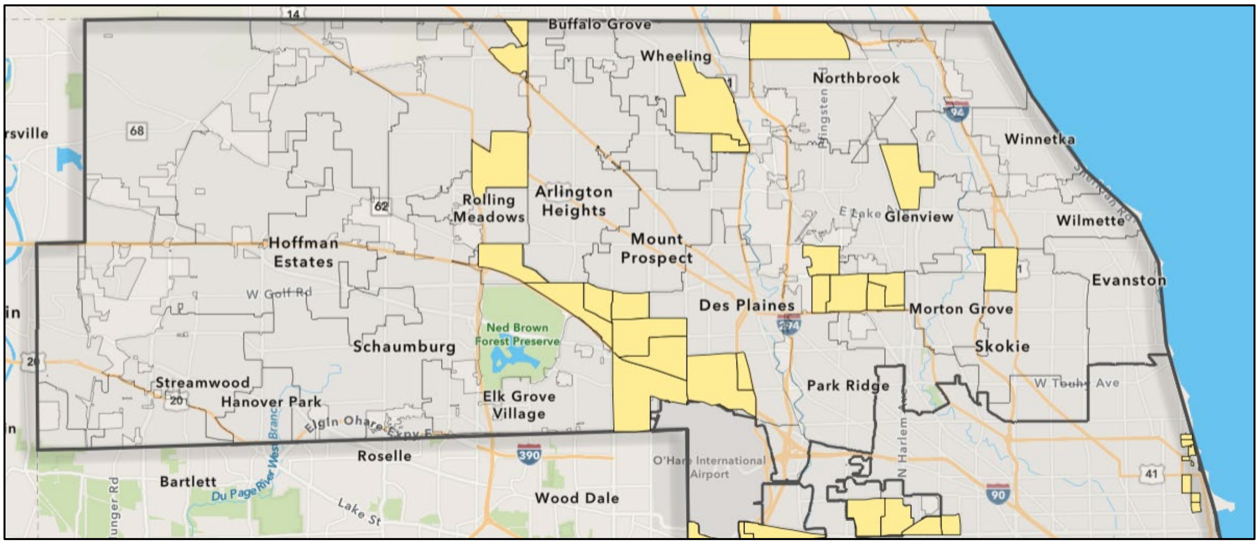


The figure below highlights the highest risk census tracts for poor air quality mitigation and intervention and associated challenges that communities face from climate change. This map examines where areas of high particulate matter, low tree canopy percentage, and high vehicle traffic overlap with one of eleven social vulnerability index variables. The resulting data shows census tracts that are at high risk for poor air quality and contain populations who may be disproportionately affected by prolonged pollution and poor air. Wildfires in Cook County or poor air quality caused by wildfires in other areas may exacerbate air quality conditions.

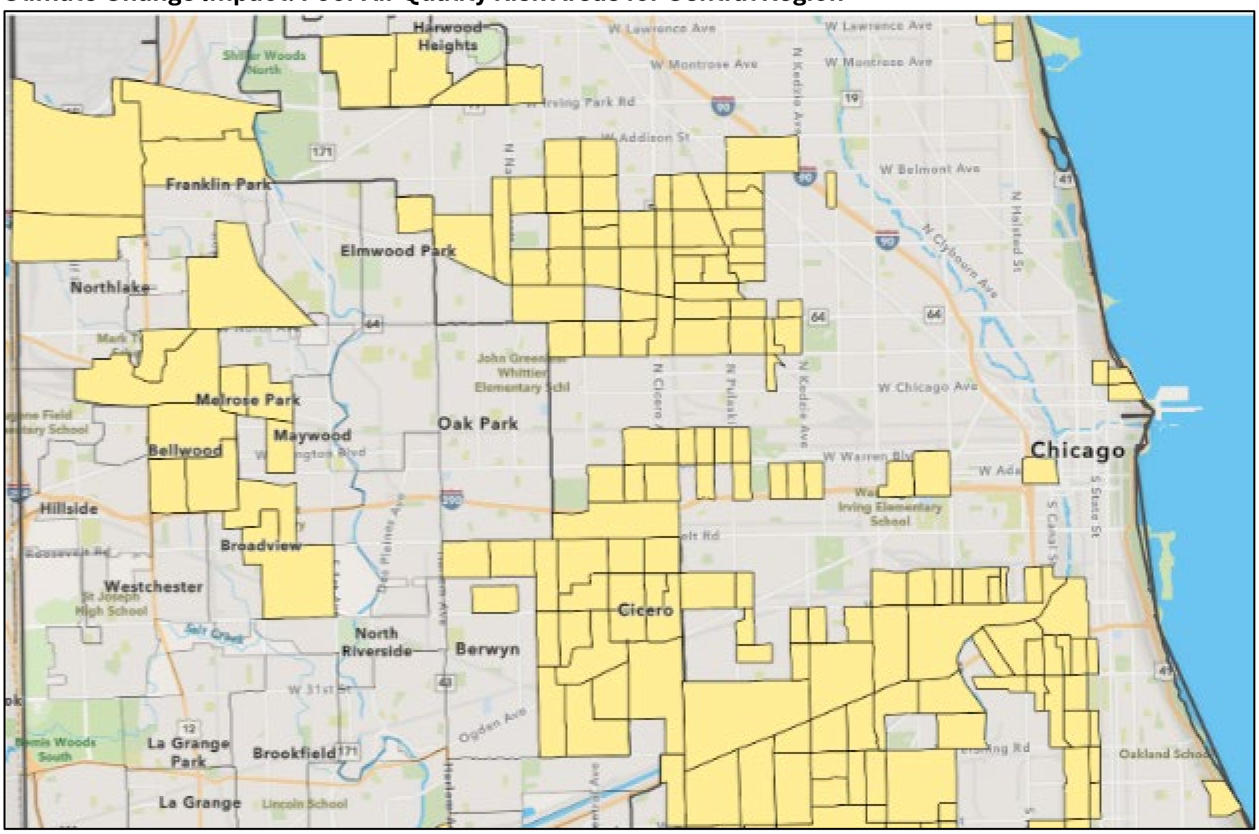
Climate Change Impact: Poor Air Quality Risk Areas for Cook County



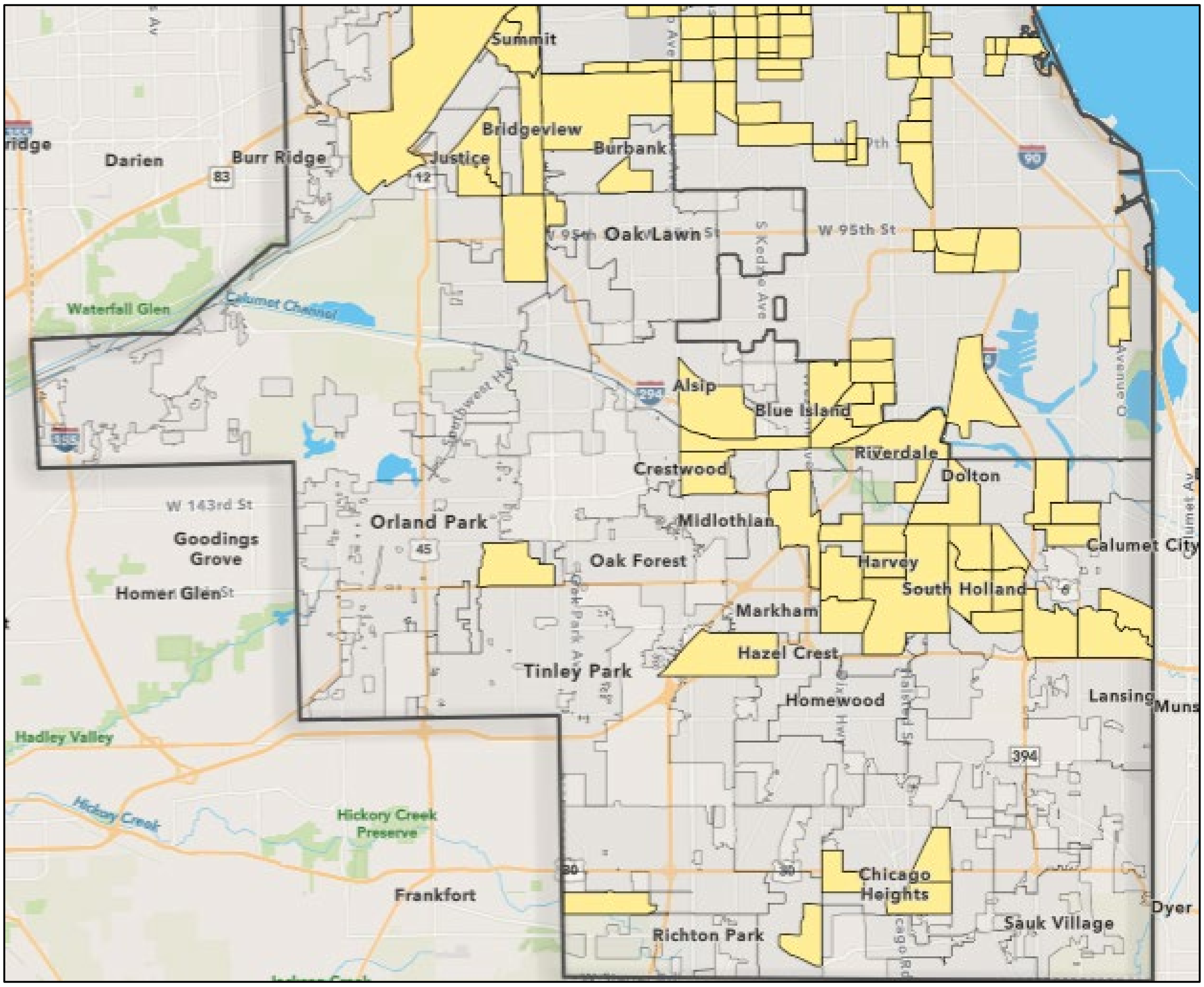
Climate Change Impact: Poor Air Quality Risk Areas for North Region



Climate Change Impact: Poor Air Quality Risk Areas for Central Region



Climate Change Impact: Poor Air Quality Risk Areas for South Region



5.8.7 FEMA Expected Annual Loss Table

COOK COUNTY, ILLINOIS EXPECTED ANNUAL LOSS TABLE FOR WILDFIRE EVENTS							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total EAL Value**	**Expected Annual Loss Rating**	**Expected Annual Loss Score**
0.010% chance per year	0.00	$3,973	$71,542	$4	$75,519	Very Low	60.8
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss Scores*** *are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

5.8.8 FEMA Hazard Specific Risk Index Table

COOK COUNTY, ILLINOIS FEMA HAZARD SPECIFIC RISK INDEX – WILDFIRE EVENTS				
EAL Value	**Social Vulnerability Score**	**Community Resilience Score**	**Risk Value**	**Risk Index Score**
$75,519	Very High	Relatively High	$84,769	60.7
*FEMA Hazard-Type **Risk Index Scores** are calculated using data for only a single hazard type and reflect a community's relative risk for only that hazard type.* *FEMA Hazard-Type **Social Vulnerability Score** represents the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is proportional to a community's risk.* *FEMA Hazard-Type **Community Resilience Score** represents the relative level of a community's resilience compared to all other communities at the same level. The Community Resilience Score is inversely proportional to a community's risk.*				
Source: FEMA National Risk Index (2024)				

5.8.9 FEMA NRI Exposure Values

TABLE: COOK COUNTY, IL EXPOSURE VALUE TABLE - WILDFIRE EVENTS					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Wildfire	$112,637,067,536	$2,691,094,106	$109,944,068,454	9,477.94	$1,904,976
***Buildings**: Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in HAZUS 6.0, which provides 2022 valuations of the 2020 Census.* ***Population:** Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in HAZUS 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million dollars of economic loss (2022 dollars).* ***Agriculture:** Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*					
Source: FEMA National Risk Index (2024)					

5.9 Other Hazards of Concern

Although FEMA does not require non-natural hazards for inclusion in a hazard mitigation plan, Cook County wishes to rank and mitigate against a comprehensive list of hazard events that could impact the county. Due to the nature of non-natural hazards and the discretionary status regarding their inclusion, the following hazards of interest have been briefly and qualitatively assessed for public education and informing their inclusion within the hazard ranking and mitigation process:

- Epidemic or Pandemic
- Nuclear Power Plant Incidents
- Regional Migration Impacts
- Widespread Power Outage
- HAZMAT Incidents
    - Fixed Site
    - Transportation
    - Nuclear
- Civil Disturbance/Riot
- Active Shooter/Active Assailant
- Hostage Situation
- Terrorism & WMD Incident
- Sabotage
- Cyber Attacks
- Fire or Explosion
- Utility Failure: Gas, Phone, Sewer, Water, and Pipeline
- Commercial Transportation Accidents
    - Air
    - Rail
    - Road
    - Waterway
- Structural Collapse
- Special Events Incidents
- Space Weather

5.9.1 Epidemic or Pandemic

5.9.1.4 Hazard Description

Epidemic: the occurrence of more cases of a disease than what is normally expected within a specific group of people or a given area over a particular period of time. This can apply to a variety of conditions, not just infectious diseases, and doesn't necessarily mean that the diseases are contagious. Epidemics are characterized by their increase in cases compared to what is typically expected under normal circumstances.

Pandemic: a global outbreak of a new disease, specifically one that is able to spread easily and sustainably from person to person across a wide geographic area, often worldwide. The term typically refers to new (novel) viruses to which most people do not have immunity, such as a new strain of influenza. The key characteristics of a pandemic include its ability to infect people easily and its efficient and sustained transmission among people.

5.9.1.5 Hazard Extent/Intensity

The Centers for Disease Control and Prevention (CDC) measures the extent or intensity of a public health emergency through a combination of surveillance systems, epidemiological data analysis, and health indicators. Surveillance systems collect data on various health-related events, including the incidence and prevalence of diseases, hospitalization rates, and mortality rates. These systems are crucial for tracking the spread of infectious diseases, identifying outbreaks, and monitoring ongoing health threats. Epidemiological data analysis involves studying the distribution and determinants of health states or events in specific populations, helping to understand the scope and impact of a public health emergency. This analysis can reveal trends, risk factors, and populations most at risk, guiding targeted interventions and resource allocation.

In addition to surveillance and epidemiology, the CDC also uses specific health indicators to gauge the intensity of a public health emergency. These indicators may include the rate of disease transmission, the proportion of healthcare resources utilized, and the effectiveness of public health interventions. The CDC collaborates with local, state, and *international* partners to gather and analyze data, ensuring a comprehensive understanding of the situation. The integration of these methods allows the CDC to assess the severity of a public health emergency accurately, inform decision-making, and communicate risks to the public and policymakers.

5.9.1.3. Probability and Frequency

Public health emergencies vary in their probability and frequency over time. Factors such as emerging infectious diseases, natural disasters, or other health-related events can influence the occurrence of public health emergencies. While the exact probability and frequency of such emergencies over the last ten years can vary, it is essential to note that the World Health Organization (WHO) and other public health agencies continuously monitor and prepare for potential threats.

WHO collects and analyzes data from affected countries and regions to assess health emergencies' magnitude, severity, and impact. They monitor disease outbreaks, conduct epidemiological investigations, and provide technical expertise to understand the dynamics of the crisis. The WHO also collaborates with partners to develop standardized tools and methodologies for data collection and analysis. In addition, they facilitate information sharing, research collaboration, and the dissemination of best practices among countries and stakeholders.

5.9.1.6 Past Events

Over the last five years, the most notable public health emergency is the COVID-19 pandemic, which began in late 2019 and continues to have a global impact at the time of this plan. Another significant international event was the Ebola outbreak in the Democratic Republic of Congo, which persisted from 2018 to 2020. The ongoing crisis of opioid overdoses and addiction in various countries, including the United States, has also been considered a public health emergency. Additionally, the Zika virus outbreak occurred in 2015-2016, primarily affecting the Americas, and raised significant concerns.

Vulnerability and Impacts

Health and Safety: Public health emergencies significantly impact health and safety. These emergencies often result in increased morbidity and mortality rates, posing a threat to the well-being of individuals and communities. They can lead to the rapid spread of infectious diseases, causing widespread illness and potentially overwhelming healthcare systems. Public health emergencies may also disrupt routine healthcare services, delay access to necessary treatments, and hinder the management of chronic conditions. Additionally, these emergencies can result in psychological distress, fear, and social disruption within affected populations.

Property Damage and Critical Infrastructure: Public health emergencies can disrupt essential services and infrastructure systems critical for public health and safety. For instance, healthcare facilities may experience increased demands and strains on resources, potentially affecting their capacity to provide adequate care. In addition, transportation networks, including airports, seaports, and roadways, may face disruptions, impacting the movement of supplies, personnel, and patients. Public health emergencies can also affect the functioning of utilities such as water and wastewater systems, power grids, and communication networks.

Economy: Public health emergencies can often lead to disruptions in various sectors of the economy. For instance, lockdowns, travel restrictions, and social distancing guidelines can result in business closures, reduced consumer spending, and job losses. Industries directly impacted by public health emergencies, such as hospitality, tourism, and retail, may experience a decline in revenue and profitability. Additionally, healthcare systems and public health agencies may face increased financial burdens due to the surge in service demand and the need to invest in emergency response capabilities.

5.9.2 Nuclear Power Plant Incidents

5.9.1.7 Hazard Description

A nuclear power plant accident would involve an actual or potential release of radioactive material at a nuclear facility in a quantity sufficient to threaten off-site populations' health and safety.

5.9.1.8 Hazard Location

There are currently six nuclear power plants in operation within the State of Illinois, providing nearly 50 percent of the electric power to the state. There are no such plants within the borders of Cook County. According to the United States Nuclear Regulatory Commission, the three sites nearest to Cook County and still in operation are in Will County, Grundy County, and LaSalle County. These sites are approximately 55 miles, 40 miles, and 70 miles from Cook County, respectively. Nuclear plants have an Emergency Planning Zone (EPZ) requirement of 10 miles and 50 miles as set by the Nuclear Regulatory Commission. The 10-mile EPZ correlates to the plume pathway for inhalation exposure and airborne contamination exposure. The 50-mile EPZ correlates to potential ingestion pathway exposure. The only site within 50 miles of Cook County is the Dresden Nuclear Power Plant located in Grundy County. Locations within the 50-Mile EPZ are not projected to be at risk for any direct radiological contamination, even in the most severe event. They would only possibly be impacted by residual/indirect contamination, which could enter the region (50-mile EPZ) via waterways, vegetation, or animals originating from within the 10-mile EPZ.

According to 2010 U.S. Census data, there were 7,305,482 people within 50 miles of the Dresden Facility. Chicago is included in this 50-mile area. The Nuclear Regulatory Commission's estimate of the risk each year of an earthquake intense enough to cause core damage to the reactor at Dresden is 1 in 52,632 (Nuclear Regulatory Commission, 2010)

Hazard Extent/Intensity

Hazards related to a nuclear event are:

- **Bright FLASH** can cause temporary blindness for less than a minute.
- **BLAST WAVE** can cause death, injury, and damage to structures several miles from the blast.
- **Radiation** can damage cells of the body. Significant exposures can cause radiation sickness.
- **FIRE AND HEAT** can cause death, burn injuries, and damage to structures several miles out.
- **ELECTROMAGNETIC PULSE (EMP)** can damage electrical power equipment and electronics several miles from the detonation and cause temporary disruptions.
- **FALLOUT** is radioactive, visible dirt and debris raining down from several miles up that can cause sickness to those outside.

Vulnerability and Impacts

Health and Safety: Power plant accidents can result in exposure to harmful radioactive material, causing acute and chronic health effects, including radiation sickness, cancer, and genetic damage. Releasing radioactive materials can also contaminate the environment, making it unsafe for human habitation and wildlife. Additionally, the psychological impact of a nuclear incident on affected individuals and communities can be severe and long-lasting.

Property Damage and Critical Infrastructure: The release of radioactive materials can contaminate nearby buildings, roads, and farmland, rendering them unusable for extended periods. In addition, power plant accidents can lead to power outages and disruptions to transportation networks and communication systems, making it difficult for emergency responders to access the affected areas.

Economy: There is no data demonstrating the impact of nuclear power plant accidents on Cook County. However, estimated costs associated with the loss of property and/or infrastructure can be substantial, and recovery efforts may take years. In addition, the long-term economic impacts of a power plant accident can also be severe, as industries and businesses in the affected region may suffer long-term financial losses.

5.9.3 Regional Migration Impacts

Hazard Description

People evacuated from an outside area can have significant impacts if local receiving jurisdictions are not prepared and lack the capacity to handle the amount of people and their belongings. Under certain conditions, the effects of a large influx of people can lead to a secondary disaster of sorts for a receiving jurisdiction ill-equipped to provide services to evacuees. For Cook County evacuees from the earthquake hazard along the New Madrid Fault line in southern Illinois and other Central U.S. Earthquake Consortium (CUSEC) states, this represents a very significant potential exposure.

In general, evacuees have undergone traumatic events; most likely they have lost most of their belongings. In addition to needing mass basic care services, evacuees may be separated from family, pets, and all that is familiar to them, necessitating evacuee tracking and some type of emotional or psychological support services. Additionally, evacuees will likely have medical needs based on incident-related injuries or because they were evacuated without medications, equipment, etc.

The effects of this were most visible following Hurricane Katrina in 2005, when over 200,000 residents of the area around New Orleans were evacuees. Evacuees were scattered around the country, with most taken to the City of Houston. During the month of September immediately following the hurricane, Houston emergency departments reported treating 4,518 evacuees, with an additional 20,000 cared for at medical clinics set up in area shelters (Med Care, 2008). The top three cities that took in evacuees reported increases in crime in the months following the influx of people, though there is no proof that the crime was caused by evacuees. Once provided with long-term shelter, many evacuees chose not to return to the impacted area and to establish themselves in the host city.

In 2012, the IL-IN-WI Regional Catastrophic Grant Program's Regional Hub Reception Center (RHRC) Plan was created to address a large influx of evacuees from within or outside of the planned area. This regional plan, which includes Cook County and its local jurisdictions, provides a regional and local concept of operation to process, track, and care for evacuees and further spread them out to a much larger area for long-term shelter. The RHRC concept is meant to alleviate the burden to a receiving jurisdiction's existing infrastructure by providing the short-term services needed by evacuees in an ad-hoc setting and then distributing evacuees out of that initial receiving jurisdiction. Services anticipated within an RHRC include the following:

- Evacuee tracking via the National Mass Evacuation Tracking System
- Mass care services
- Pet tracking, support, and care
- Basic medical needs/triage
- Decontamination (as needed)
- Functional and access needs and support services
- Translation services
- Social services for unaccompanied minors
- Emotional/spiritual support services
- Transportation coordination
- Site security.

It is important for the planning partners to develop plans for evacuees, as this will help increase their capabilities for both internal and external evacuees. The following should be considered in the planning process to address the issues:

Duration Variability—Jurisdictions need to ask how long the displacement is expected and whether their resources can sustain evacuees for the anticipated time:

- Short term (< 4 weeks)—Shelters with health and medical support will most likely be adequate.
- Mid-term (4 weeks to 6 months)—Apartments, schooling, financial support will start to be a planning factor.
- Long term to permanent (> 6 months e.g. catastrophic earthquake, tsunami)—Complete integration into community is needed such as jobs, increased capacity for schools, hospitals, law enforcement, etc.

Coordination—The U.S. Department of Homeland Security is the lead for identifying and soliciting states and local jurisdiction to accept evacuees, coordinating transportation to reception area, and staffing support to the receiving jurisdiction.

- Receiving jurisdictions should immediately request and receive a federal disaster declaration for inclusion with an existing declaration for the incident to ensure:

- Actions by receiving jurisdiction will be reimbursed (if properly documented)
- Displaced persons will receive Individual Assistance
- State or receiving jurisdiction should ask for Disaster Case Management from FEMA.
- State and local emergency management should act as lead coordinator for receiving jurisdiction with full emergency operation center activation.
- The State should request a FEMA Type 1 Incident Management Team to assist with coordination as needed.

Evacuee Reception—One or more reception centers as discussed above should be established prior to evacuee arrival and it must be appropriately sized and equipped to handle the anticipated number of evacuees. The reception center should offer all necessary services for evacuee processing as discussed above.

Joint Information Center—A joint information center should be set up immediately within the receiving jurisdiction or at the reception center to ensure clear messaging to the public (both general public and incoming evacuees) and to ensure protection of evacuees from media intrusion during the traumatic time.

Capacity of Local Jurisdiction—Receiving jurisdictions need to consider their existing capacity to care for their citizens and the extent to which they can provide services to incoming evacuees. A census of the local surge capacity for hospitals, shelters, hotels, law enforcement, etc. may be necessary, and then jurisdictions can begin to consider where additional resources can be brought from to support the effort.

Hazard Location

Regional migration is occurring throughout Cook County and greater United States. This is a current crisis due to the significant and unsustainable levels of migration across the Western Hemisphere. The crisis is defined by a combination of factors, including the strain on resources at the U.S. border, the humanitarian implications of mass migration, and the security concerns related to irregular migration flows.

The table below illustrates the approximate number of individuals in the planning area.

TABLE: PROFILE OF THE UNAUTHORIZED POPULATION COOK COUNTY, ILLINOIS		
Demographics	**Estimate**	**% of Total**
Unauthorized Population	257,000	100%
Top Countries of Birth		
Mexico	166,000	64%
India	15,000	6%
Philippines	10,000	4%
China/Hong Kong	8,000	3%
Poland	8,000	3%
Regions of Birth		
Mexico/Central America	180,000	70%

TABLE: PROFILE OF THE UNAUTHORIZED POPULATION COOK COUNTY, ILLINOIS		
Caribbean	-	-
South American	11,000	4%
Europe/Canada/Oceania	18,000	7%
Asia	40,000	16%
Africa	6,000	2%
Years of U.S. Residence		
Less Than 5	38,000	15%
5 to 9	34,000	13%
10 to 14	46,000	18%
15 to 19	66,000	26%
20 or more	72,000	28%
Age		
Under 16	9,000	3%
16 to 24	31,000	12%
25 to 34	71,000	28%
35 to 44	75,000	29%
45 to 54	46,000	18%
55 and over	25,000	10%
Gender		
Female	118,000	46%
Source: Migration Policy Institute (2024) These 2019 data result from Migration Policy Institute (MPI) analysis of U.S. Census Bureau data from the pooled 2015-19 American Community Survey (ACS) and the 2008 Survey of Income and Program Participation (SIPP), weighted to 2019 unauthorized immigrant population estimates provided by Jennifer Van Hook of The Pennsylvania State University.		

Hazard Extent / Intensity

DHS measures the extent and intensity of regional migration by tracking the number of unlawful entries, the effectiveness of enforcement actions, and the use of lawful pathways for migration. This includes assessing the impact of various measures including the implementation of Title 8 immigration authorities, which focuses expediting the removal of individuals who arrive at the U.S. border unlawfully. DHS also monitors the strain on border management resources, the number of migrants processed under expedited and standard immigration procedures, and the impact of public health measures such as the Title 42 order and its transition to Title 8 processing.

Probability and Frequency

DHS measures the probability and frequency of regional migration through data collection and analysis of border encounters, as well as through evaluating the effectiveness of immigration enforcement strategies. DHS utilizes various surveillance and tracking technologies to monitor the number of individuals attempting to cross the border unlawfully. Additionally, DHS assesses the impact of its policies and operational strategies to understand migration trends and pressures on border security. This includes analyzing the success of legal pathways for migration and the efficiency of the expedited removal process under immigration law.

For more detailed insights, DHS conducts comprehensive threat assessments and uses these analyses to forecast migration trends and potential challenges, which helps in strategic planning and resource allocation. The Homeland Threat Assessment is a critical document that provides insights from across the Department, focusing on the most pressing threats to homeland security, including challenges related to migration.

Vulnerability and Impacts

Health and Life Safety: According to the DHS, the primary health and life safety concern of regional migration is the spread of communicable diseases, which is exacerbated by high volumes of people moving across borders. To address this, the DHS has implemented various health and safety measures at border facilities and within immigration processes. These include enhanced medical screenings, the provision of personal protective equipment, and increased access to COVID-19 vaccinations for migrants. Additionally, DHS aims to improve the capacity of border processing facilities to handle large numbers of migrants humanely and efficiently, reducing the risk of overcrowding and ensuring better access to medical care.

Property Damage and/or Critical Infrastructure: According to DHS, regional migration impacts critical infrastructure in several ways. The first concern is to ensure critical infrastructure sectors remain secure and resilient despite the additional strains placed by large movements of people. These sectors include energy, transportation, and public health systems, all of which are crucial for national security and economic stability. Increased migration can strain these systems by increasing demands on services and resources, potentially leading to escalated risks of disruptions or security breaches. For example, higher population densities can put additional pressure on transportation systems and public utilities, requiring enhanced measures to ensure their security and functionality. Similarly, the healthcare sector must be able to manage increased demands without compromising service quality or accessibility.

Economy: According to DHS, there are several economic impacts of regional migration. One of the primary concerns is the strain on border security and immigration processing systems, which has significant financial implications. The increased need for resources to manage and process migrants has led to substantial expenditures on border infrastructure, staffing, and technology. Regional migration also impacts local economies, especially in border areas where the influx of migrants can strain local services and resources.

5.9.4 Widespread Power Outage

Hazard Description

Power Outage: an electric power outage (also power failure or power loss) is the loss of the electricity supply to a geographic area. The area of an outage (scale) can range from a single facility or neighborhood to a multi-state region. The length of the outage (scope) is determined by combination of factors to include the scale of the outage, weather, and redundant equipment and capacity.

A power outage can be described as a blackout if power is lost completely or as a brownout if the voltage level is below the normal minimum level specified for the system. The reasons for a power outage can, for instance, be a defect in a power station, damage to a power line or other part of the distribution system, a short circuit, or the overloading of electricity mains. “Load shedding” is a common term for a controlled way of rotating available generation capacity between various districts or customers, thus avoiding total wide area blackouts.

Power outages are particularly serious for hospitals and other critical facilities and operations. Our society is extremely reliant upon life-critical medical devices, communications, and electronic information all of which require reliable (uninterrupted) electric power.

The entire energy system is complex and consists of three major parts: generation, transmission, and distribution. The control and communication between these parts are extremely important as the failure of one part could disrupt the entire system. The energy system is reliant upon the following factors: continual maintenance, equipment replacement and redundancy, and additional high-load capacity. These factors have to be carefully balanced against operating cost and profit. These initiatives are expensive, but the costs cannot be readily pushed down to the consumer due to public pressure and opinion.

Widespread Power Outage: is typically defined as affecting over 50,000 customers or causing an unplanned loss of 300 megawatts of electric power.

Hazard Extent/Intensity

The U.S. Energy Information Administration (EIA) measures the extent and intensity of widespread power outages primarily through the System Average Interruption Duration Index (SAIDI), which calculates the total duration of power interruptions experienced by an average customer over a year. SAIDI is calculated by dividing the total minutes of customer interruptions in a year by the number of customers served during that year.

Table 11.1 Reliability Metrics of U.S. Distribution System

	IEEE									Any Method					
	All Events (With Major Event Days)			Without Major Event Days			Loss of Supply Removed			All Events (With Major Events)			Without Major Events		
Year	SAIDI (minutes per year)	SAIFI (times per year)	CAIDI (minutes per interruption)	SAIDI (minutes per year)	SAIFI (times per year)	CAIDI (minutes per interruption)	SAIDI (minutes per year)	SAIFI (times per year)	CAIDI (minutes per interruption)	SAIDI (minutes per year)	SAIFI (times per year)	CAIDI (minutes per interruption)	SAIDI (minutes per year)	SAIFI (times per year)	CAIDI (minutes per interruption)
2013	227.2	1.187	191.5	111.9	0.994	112.6	225.5	1.113	202.6	215.7	1.2	179.8	106.1	0.992	106.9
2014	236.2	1.257	188	114.2	1.038	110	244.8	1.202	203.7	219	1.22	179.6	109.7	1.019	107.7
2015	209	1.275	163.9	117	1.073	109.1	198.2	1.163	170.4	205	1.246	164.5	113.1	1.046	108.1
2016	268.4	1.327	202.2	119.8	1.082	110.7	257	1.23	209	249.2	1.292	192.9	116.9	1.062	110
2017	505.9	1.42	356.2	117	1.023	114.3	489.6	1.254	390.6	473.1	1.394	339.3	114.4	1.007	113.6
2018	349.2	1.34	260.5	121.4	1.051	115.5	338.5	1.193	283.8	346.4	1.325	261.5	117.2	1.028	114
2019	295.5	1.332	221.8	122.2	1.04	117.5	289.1	1.189	243	284.6	1.325	214.8	118.6	1.017	116.6
2020	456.1	1.385	329.3	116	1.013	114.5	460.5	1.238	371.9	491.9	1.44	341.7	119	1.037	114.7
2021	475.8	1.436	331.2	125.7	1.039	120.9	404.5	1.294	312.6	440	1.425	308.8	121.5	1.025	118.5
2022	333	1.426	233.5	131.1	1.09	120.2	324.7	1.315	246.9	335.5	1.405	238.8	125.7	1.064	118.1

SAIDI = System Average Interruption Duration Index. It is the minutes of non-momentary electric interruptions, per year, the average customer experienced.
SAIFI = System Average Interruption Frequency Index. It is the number of non-momentary electric interruptions, per year, the average customer experienced.
CAIDI = Customer Average Interruption Duration Index. It is average number of minutes it takes to restore non-momentary electric interruptions.
IEEE refers to the IEEE 1366-2003 or the IEEE 1366-2012 standard. Any method combines data from utilities that use IEEE standard with data from utilities that do not.
For utilities using the IEEE method, a Major Event Day is any day that exceeds a daily SAIDI threshold called Tmed. Tmed is a duration statistic calculated from daily SAIDI values from the past five years. For utilities not using IEEE methods, Major Events are self-determined by the reporting utility.
Loss of Supply Removed excludes outages due to loss of supply from the high-voltage/bulk power system.
For a five minute video explanation of these metrics, go to https://youtu.be/oVH9L0fCMTU.
Source: U.S. Energy Information Administration, Form EIA-861, Annual Electric Power Industry Report.

Probability

Probability: The U.S. Department of Energy (DOE) determines the probability of power outages by analyzing the physical condition of infrastructure, such as power plants, transmission lines, and distribution networks, as well as the likelihood of extreme weather events, natural disasters, and human-induced threats that could lead to disruptions. The DOE also utilizes historical data on past outages, weather patterns, and infrastructure vulnerabilities to model potential scenarios and identify areas at higher risk of prolonged outages. Technological advancements and the integration of renewable energy sources are also considered, as they can influence the grid's adaptability and response to power demands and potential threats.

The DOE also collaborates with other federal agencies, state and local governments, and the private sector to gather comprehensive data on threats to the energy sector. This includes cybersecurity threats to the grid's operational technology systems, which are critical for maintaining power supply and distribution. By employing predictive analytics and risk assessment models, the DOE can estimate the likelihood and potential duration of power outages under various conditions.

Vulnerability and Impacts

Public Health and Safety: According to the Centers for Disease Control and Prevention (CDC), widespread power outages can have significant public health and safety impacts. One of the primary concerns is the loss of refrigeration, which jeopardizes the safety of stored food and vaccines, potentially leading to foodborne illnesses and disruption of essential medical services. Additionally, the lack of heating or cooling systems during extreme weather conditions can result in temperature-related health issues, including hypothermia during cold spells and heat-related illnesses during heatwaves. The absence of power also affects the functionality of medical devices, water treatment plants, and sewage systems, increasing the risk of medical emergencies and waterborne diseases.

Moreover, widespread power outages can hinder communication and access to information, complicating emergency response efforts and public health advisories. The inability to charge electronic devices can leave individuals isolated, especially those who are vulnerable or require special care. The CDC also highlights the increased risk of accidents and injuries in the dark, including falls, burns from candles or generators, and carbon monoxide poisoning from improper use of alternative heating or power sources.

Property Damage and Critical Infrastructure: According to the DOE, widespread power outages can lead to significant property damage and critically impact infrastructure systems. For residential and commercial properties, the absence of electrical power affects heating, cooling, and ventilation systems, potentially leading to water pipes freezing and bursting in cold weather or exacerbating heat-related deterioration and mold growth in warmer climates. Electronic devices and appliances may suffer damage from power surges when electricity is restored, and the lack of lighting and security systems increases the vulnerability of properties to theft and vandalism.

On a larger scale, critical infrastructure such as water treatment facilities, communication networks, transportation systems, and hospitals rely heavily on continuous power supply. Widespread outages compromise the delivery of essential services, including public transportation, emergency response, healthcare services, and water supply, posing significant risks to public health and safety.

Furthermore, the economic impact of outages on businesses and industries can be substantial, affecting local and national economies.

Economy: According to the DOE, widespread power outages can impact the economy, affecting various sectors in both direct and indirect ways. Directly, businesses that rely on electric power for production, storage, and operations may experience significant losses due to halted operations, spoilage of perishable goods, and damage to sensitive equipment. The service sector, particularly those that depend on electronic transactions and digital communications, can also be severely disrupted. This immediate halt in business activities not only affects the revenue of individual companies but also impacts the wages of employees who may be unable to work during outages.

Indirectly, widespread power outages can erode consumer confidence and deter investment, leading to broader economic repercussions beyond the immediate areas affected. Critical infrastructure failures, such as those in transportation, communication, and financial services, can disrupt supply chains and logistics, affecting local and national markets. The cumulative effect of these disruptions can contribute to economic downturns, particularly in regions where the economy is heavily reliant on industries vulnerable to power outages.

Changes in Development and Impact of Future Development: According to the DOE, widespread power outages can impact changes in development and future development strategies, particularly in terms of enhancing resilience and sustainability in urban planning and infrastructure design. The experience of widespread outages highlights the vulnerabilities in existing energy systems and underscores the need for integrating more resilient power solutions. This realization is driving a shift towards the development of smart grids, renewable energy sources, and microgrid technologies that can operate independently of the main grid during outages. Such advancements not only aim to minimize the impact of future power outages but also contribute to sustainable development goals by incorporating clean energy solutions. Lastly, the DOE emphasizes the importance of adaptive infrastructure that can withstand various disruptions, including power outages. This includes designing buildings and communities that are energy-efficient and capable of utilizing backup power systems such as solar panels and battery storage.

Effects of Climate Change on Severity of Impacts: There is no data illustrating the impact of climate change on the severity of widespread power outages.

5.9.5 Hazardous Materials Incident

Hazard Definition

Hazardous Materials (HAZMAT): are substances that, because of their chemical or physical characteristics, are hazardous to humans and living organisms, property, and the environment are regulated by the U.S. Environmental Protection Agency (EPA) and, when transported in commerce, by the U.S. Department of Transportation (DOT). The EPA regulations address “hazardous substances” and “extremely hazardous substances.”

The EPA chooses to specifically list hazardous substances and extremely hazardous substances rather than providing objective definitions. Hazardous substances, as listed, are generally materials that, if released into the environment, tend to persist for long periods and pose long-term health hazards for living organisms. They are primarily chronic rather than acute health hazards.

Regulations require that spills of these materials into the environment in amounts at or above their individual "reportable quantities" must be reported to the EPA. Extremely hazardous substances, on the other hand, while also generally toxic materials, are acute health hazards that, when released, are immediately dangerous to the life of humans and animals and can cause serious damage to the environment. There are currently 355 specifically listed extremely hazardous substances listed along with their individual threshold planning quantities (TPQ) (eCFR, 2023).

When facilities have these materials in quantities at or above the TPQ, they must submit "Tier II" information to appropriate state and/or local agencies to facilitate emergency planning.

DOT regulations provide the following definition for the term "hazardous material": A hazardous material is "a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" and has been designated as hazardous under section 5103 of federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of the same chapter (U.S. Compliance, 2023).

When a substance meets the DOT definition of a hazardous material, it must be transported under safety regulations providing for appropriate packaging, communication of hazards, and proper shipping controls.

In addition to EPA and DOT regulations, the National Fire Protection Association (NFPA) develops codes and standards for the safe storage and use of hazardous materials. These codes and standards are generally adopted locally and include the use of the NFPA 704 standard for communication of chemical hazards in terms of health, fire, instability (previously called "reactivity"), and other special hazards (such as water reactivity and oxidizer characteristics).

While somewhat differently defined by the above organizations, the term "hazardous material" may be generally understood to encompass substances that have the capability to harm humans and other living organisms, property, and/or the environment. There is also no universally accepted, objective definition of the term "hazardous material event." A useful working definition, however, might be framed as "any actual or threatened uncontrolled release of a hazardous material, its hazardous reaction products, or the energy released by its reactions that poses a significant risk to human life and health, property, and/or the environment."

Materials that are generally of concern for exposure in a hazardous material incident include, but are not limited to the following:

- Ammonia
- Sulfuric acid
- Nitric acid
- Hydrofluoric acid
- Bromine
- Chlorine

- Cyanide solutions.

Many hazardous-material facilities have specific reporting and emergency planning guidelines mandated by the Emergency Planning and Community Right-to-Know Act and regulated by the state emergency response agency. These reporting requirements are known as Tier II reporting requirements. The Illinois Emergency Management Agency maintains Tier II reports for the state, so IEMA has a clear understanding of the materials located within its jurisdiction. Reports are also generally required to be on file with local emergency planning committees or fire departments.

In 2013, the City of Chicago undertook a risk assessment of hazardous material transportation routes to better inform planners on the risks to the city and its inhabitants in the shipment of hazardous materials through its borders by road, water, and rail. *Table: Chemical Buffer Zone And Spill Size* describes the recommended buffer zone for various hazardous chemicals and spills of a certain size.

Types of HAZMAT Incidents

- **Fixed Site HAZMAT Incident:** is defined as an uncontrolled release of a hazardous material originating from a building, structure, or fixed equipment capable of posing a risk to life, health, safety, property, or the environment.
- **Transportation HAZMAT Incident:** is an uncontrolled release of a hazardous material during transport capable of posing a risk to life, health, safety, property, or the environment.
- **Nuclear HAZMAT Incident:** involves a release or potential release of radioactive materials that could pose significant risks to health, safety, or property. These incidents require immediate reporting and specific response actions to mitigate any potential dangers associated with the release of nuclear materials.

Hazard Extent/Intensity

Diamond-shaped NFPA 704 signs ranking the health, fire, and instability hazards on a numerical scale from zero (least) to four (greatest) along with any special hazards are usually required to be posted on chemical storage buildings, tanks, and other facilities. Similar NFPA 704 labels may also be required on individual containers stored and/or used inside facilities.

The Environmental Protection Agency (EPA) uses several factors to assess the extent and intensity of HAZMAT incidents. First, the EPA considers the type and quantity of hazardous materials involved in the incident, recognizing that different substances present varying risks to human health and the environment. Second, they assess the incident's location and geographic scope, determining whether it is localized to a laboratory, industrial facility, or if it has broader implications for densely populated areas or sensitive ecosystems.

Next, the EPA examines the release or exposure pathways to understand how hazardous materials are released and the potential routes of exposure to humans and wildlife. This includes evaluating whether the substances have become airborne, entered water bodies, or contaminated the soil. In addition, the agency investigates the immediate and long-term health and environmental effects stemming from the incident, encompassing the impact on air and water quality, ecosystems, and human health.

The response and cleanup measures taken during and after the incident play a pivotal role in assessing its extent and intensity. This involves evaluating the effectiveness of containment, control, and remediation efforts. Regulatory compliance is another crucial aspect, determining whether the incident involves non-compliance with environmental regulations and whether enforcement actions are necessary. The EPA also considers the impact on local communities, including evacuation orders, shelter-in-place advisories, public health consequences, and economic impacts. Lastly, the duration of the incident and the persistence of hazardous materials in the environment are taken into account to understand its intensity and the potential for prolonged consequences.

In planning for hazardous materials incidents, local jurisdictions should consider conducting a risk assessment to profile the potential hazardous concerns within their jurisdiction and to further assess health and safety impacts on their population, potential economic impacts, consequences, and the overall probably or frequency of incident.

TABLE: CHEMICAL BUFFER ZONE AND SPILL SIZE		
Hazardous Material	**Amount (gallons)**	**Buffer Zone Distance**
Ammonia	800	2,640 feet
Hydrofluoric Acid Solution (12%)	700	4,752 feet
Sulfuric Acid	800	9,504 feet
Ammonia	2,000	2,640 feet
Ammonia	600	2,640 feet
Sodium Cyanide	833	1,056 feet
Ammonia	100	528 feet
Nitric Acid	3,781	1,584 feet
Sulfuric Acid	2,594	9,504 feet
Ethylenediamine	4,000	2,640 feet
Hydrofluoric Acid Solutions	4,000	4,752 feet
Ammonia	1,000	2,640 feet
Bromine	115	9,504 feet
Epichlorohydrin	420	2,640 feet
Ammonia, Solution (27%)	4,000	2,640 feet
Ammonia, Solution (27%)	4,000	2,640 feet
Anhydrous Ammonia	600	2,640 feet
Nitric Acid	142	1,584 feet
Sulfuric Acid	311	9,504 feet
Anhydrous Ammonia	1,200	2,640 feet
Sodium Cyanide	500	1,056 feet

Probability

Probability: The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) determines the probability of hazardous incidents through risk assessment, data analysis, and regulatory compliance monitoring. PHMSA employs risk assessment methodologies that consider the physical condition of pipelines, the nature of the materials transported, historical incident data, environmental conditions, and human factors. This analysis identifies potential vulnerabilities and the likelihood of incidents occurring. PHMSA also relies on extensive data collection from pipeline operators and hazardous materials handlers, including reports on incidents, safety violations, and maintenance activities. This data is analyzed to identify trends, assess risk levels, and prioritize safety measures.

Vulnerabilities and Impacts

Life Safety and Public Health: According to the EPA, HAZMAT incidents can have substantial life safety and public health impacts. These impacts encompass immediate health risks due to exposure to hazardous materials, resulting in injuries, respiratory problems, chemical burns, or physical harm. In addition, long-term health effects may occur from prolonged exposure to contaminants, leading to respiratory diseases, cancers, and other chronic illnesses. Evacuations and displacement are often necessary in severe incidents, which can disrupt residents' lives, causing stress and mental health concerns. Contaminants released during such incidents can pollute air and water sources, affecting air quality and posing risks to communities through water contamination.

Soil and crops may also become contaminated, impacting local agriculture and posing food safety risks. The need for emergency healthcare resources may overwhelm hospitals and healthcare facilities, affecting the availability of medical care for various health issues. The psychological impacts, such as fear and uncertainty, can result in stress, anxiety, and mental health challenges among affected individuals and communities.

Property Damage and Critical Infrastructure: HAZMAT incidents can result in significant property damage and critical infrastructure impacts. Property damage occurs when hazardous materials are released, leading to contamination and destruction of structures, both residential and commercial. The extent of property damage can be severe, particularly in cases of chemical spills, explosions, or fires.

Critical infrastructure, including water treatment facilities, power plants, transportation systems, and communication networks, can also be affected. Hazardous materials may contaminate water sources, disrupting water treatment plants and affecting the supply of clean water to communities. Power outages or damage to electrical infrastructure can result from fires or explosions, impacting energy supply and potentially causing additional safety risks. Transportation networks, including roads and bridges, can be compromised due to accidents or contamination, hindering access for emergency responders and the general public.

Economy: HAZMAT incidents can result in costs associated with emergency response, containment, cleanup, and environmental remediation. The financial burden of addressing the incident and managing hazardous materials can also be substantial. These costs can include expenses related to deploying first responders, hazmat teams, and emergency services to the scene. This encompasses personnel, equipment, and resources necessary to contain and mitigate the incident promptly.

There are also costs related to cleaning up and decontaminating an affected area, which can involve the removal and disposal of hazardous materials. In addition, there can be financial repercussions, damage to research facilities, scientific equipment, and valuable experimental materials can be expensive to replace or repair.

Changes in Development and Impact of Future Development: Changes in development and future development can be impacted by HAMZAT incidents in several ways. First, such incidents may trigger a reassessment of environmental compliance and regulations in the university's laboratory and research facilities. This may lead to stricter oversight and increased regulatory requirements for handling hazardous materials and waste management, affecting the design and operation of future development projects.

Effects of Climate Change on Severity of Impacts: Changes in climate patterns can lead to extreme weather events such as floods, which can directly damage or disrupt HAZMAT storage facilities. For example, flooding can result in the release of hazardous materials from storage tanks or laboratories, posing significant risks to public health and the environment.

Climate change can also affect the transportation of hazardous materials. Increased temperatures can lead to heat-related transportation incidents, such as the overheating of vehicles carrying hazardous cargo, potentially causing leaks or accidents.

Lastly, changes in climate can alter the risk landscape by affecting the types and quantities of hazardous materials used in various industries. For example, changes in temperature and humidity levels can impact the stability of certain chemicals, making them more susceptible to accidental spills or reactions.

5.9.6 Civil Disturbance

Hazard Definition

The FBI defines a civil disturbance as a collective act of public disorder or violence by a group of individuals which is aimed at challenging government authority or obstructing the functioning of governmental institutions. This can encompass a wide range of activities, including protests, riots, demonstrations, and other forms of public unrest. Civil disturbances are characterized by their potential to disrupt the peace and security of a community, potentially leading to harm to persons, damage to property, and a general state of chaos if not managed properly. Civil disturbances are often driven by social, economic, political, or environmental grievances, where participants seek to draw attention to their cause or demand change from governmental or societal structures. In cases where civil disturbances escalate to violence or criminal activities, law enforcement may intervene to restore order, protect lives and property, and uphold the rule of law.

Hazard Extent/Intensity

The FBI measures the extent or intensity of a civil disturbance through situational assessments, intelligence gathering, and analysis of the level of disruption caused. The extent of a civil disturbance is determined by several factors, including the number of participants, the geographic area affected, the duration of the event, and the presence of any violent activities or significant property damage. The intensity is further assessed by evaluating the level of aggression displayed, the use of weapons or destructive devices, and the response required by law enforcement and emergency services.

Probability

The FBI determines the probability of civil disturbance incidents through intelligence gathering, monitoring of social and political trends, and evaluation of specific triggers or events that could incite public unrest. This involves collecting and analyzing data from a wide range of sources, including law enforcement agencies, social media, public forums, and intelligence networks, to identify potential threats and assess the mood and sentiments of communities. The FBI also monitors upcoming events of political, social, or economic significance that might serve as catalysts for civil disturbances, such as elections, court decisions, or incidents of perceived injustice.

Vulnerability and Impacts

Health and Safety: According to the FBI, civil disturbance incidents can impact health and safety, posing both immediate and long-term risks to communities. In the short term, events can lead to injuries among participants, law enforcement personnel, and bystanders, resulting from physical confrontations, the use of crowd-control measures, or accidents in chaotic environments. Additionally, civil disturbances often result in the destruction of property, including homes, businesses, and public infrastructure, which can disrupt essential services such as healthcare, transportation, and access to food and water, further endangering public health and safety.

In the longer term, the impacts of civil disturbances can extend to the mental health and well-being of individuals and communities. The stress and trauma associated with experiencing or witnessing violence and destruction can lead to a range of psychological issues, including anxiety, depression, and post-traumatic stress disorder (PTSD). Finally, the disruption of community cohesion and trust in public institutions can have lasting effects, potentially hindering recovery efforts and resilience-building.

Property Damage and Critical Infrastructure: According to the FBI, civil disturbance incidents can impact property damage and critical infrastructure. Civil disturbance incidents can often lead to vandalism, looting, arson, and the destruction of buildings, vehicles, and storefronts, which can result in substantial financial losses for businesses and homeowners. The impact on critical infrastructure, such as utilities, transportation networks, emergency services, and communication systems, can disrupt essential services and pose serious challenges to public safety and the overall functioning of communities. Such disruptions can hinder emergency and law enforcement responses, complicating efforts to restore order and provide assistance to those affected by the disturbance.

According to the FBI, the extent of property damage and infrastructure impact can vary widely depending on the scale and intensity of the civil disturbance, as well as the preparedness and response of law enforcement and emergency services. In the aftermath of such incidents, rebuilding and repairing damaged infrastructure and properties can be a lengthy and costly process, often requiring coordination between government agencies, private sector entities, and community organizations. The psychological impact on communities, including a sense of insecurity and decreased trust in public institutions, can also have lasting effects.

Economy: According to the FBI, civil disturbance incidents can impact the economy with immediate and long-term effects. In the short term, civil disturbance incidents can disrupt business operations, leading to significant losses in revenue, especially for small businesses that may not have the resources to recover quickly. The physical damage to property and infrastructure necessitates costly repairs and can deter future investment and tourism in the affected areas. Additionally, civil disturbances can strain public resources, as local and state governments may need to allocate significant funds towards law enforcement, emergency response, and rebuilding efforts, diverting funds from other public services and development projects.

In the long term, the economic impact of civil disturbances can extend beyond the immediate area of the incidents. The perception of instability can decrease investor confidence, potentially leading to a decline in investment at both local and national levels. Insurance premiums in affected areas may rise, imposing additional costs on businesses and property owners. Lastly, the disruption to supply chains during civil disturbances can have ripple effects on the broader economy, affecting industries and markets beyond the immediate region.

5.9.7 Active Shooter/Active Assailant

Hazard Description

Active Shooter: an individual actively engaged in killing or attempting to kill people in a populated area. This definition often implies that the shooter uses firearms and does so in a confined and populated area, but it can extend to similar behaviors in more open spaces. The emphasis is on the ongoing nature of the threat, indicating that the situation is in progress and law enforcement responses are typically urgent and immediate.

Active Assailant: an individual actively engaged in killing or attempting to kill people in a confined and populated area. This definition is broader than that of an "active shooter" as it can include attacks carried out with methods other than firearms, such as knives, vehicles, or other weapons. The key aspect of this definition is the active, ongoing threat posed by the assailant, necessitating an immediate response to stop the violence and mitigate harm to civilians.

Hazard Location

An active shooter/active assailant could occur anywhere in Cook County. However, incidents tend to occur in places of (former) employment or at schools/universities. Mass Shootings can also occur in other crowded venues such as shopping centers and arenas. However, mass shootings in residential neighborhoods typically center around individuals the gunmen are familiar with.

Hazard Extent/Intensity

The FBI measures the extent and intensity of an active shooter or active assailant incident using several key metrics:

1. **Number of Casualties**: This includes the count of fatalities and injuries. The FBI often differentiates between victims killed by the assailant and those who were injured.
2. **Location and Setting**: The environment in which the incident occurs (e.g., schools, places of worship, businesses) is considered, as it affects the response and the impact of the event.
3. **Duration**: The length of the incident from the beginning of the attack to the end of active threat can indicate the intensity and potential for higher casualty numbers.

4. **Assailant's Methodology and Motivation**: Understanding the weapons used, the level of planning, and the motivation behind the attack helps in categorizing and analyzing the intensity of the incident.
5. **Law Enforcement Response**: The response time of law enforcement and the methods used to stop the assailant are important metrics that influence the outcomes of active shooter incidents.

Vulnerability and Impacts

Life Safety and Public Health: Active shooter/active assailant incidents encompassing a wide spectrum of short and long-term consequences. The most immediate and severe consequence is the loss of life, with incidents often resulting in multiple fatalities that deeply affect not just the victims but also their families and wider communities. Alongside loss of life, these events frequently cause a variety of physical injuries, ranging from minor to critical, necessitating long-term medical care and rehabilitation for many survivors.

The psychological toll on survivors, witnesses, and first responders can also be significant. Many individuals affected by such events suffer from acute stress reactions, post-traumatic stress disorder (PTSD), anxiety, and depression. These mental health issues can persist long after the incident, impacting individuals' ability to function and their overall quality of life. The broader community also faces substantial impacts; the pervasive sense of vulnerability and fear following such incidents can alter everyday behaviors and diminish the public's sense of safety in communal spaces. This often leads to a grieving process and a disruption of community cohesion and social interactions.

First responders, who face the dual risk of physical injury and long-term psychological stress, experience additional burdens. The intense nature of their work during these incidents can lead to significant mental health challenges and affect their longevity and effectiveness in their roles.

Property Damage and Critical Infrastructure: Active shooter incidents result in a range of impacts on property and critical infrastructure, which extend beyond immediate physical damage to encompass longer-term economic and operational disruptions. These events often cause significant physical damage to the venues they occur in, such as bullet holes in walls and windows, and furniture destruction. Additionally, the necessary law enforcement interventions can further damage properties through breaches and the use of tactical equipment. Facilities such as hospitals, schools, and government buildings may experience temporary halts in essential services due to evacuations or lockdowns, further compounding the disruption.

In the aftermath of active shooter/active assailant incidents, affected locations frequently invest in enhanced security measures. This includes upgrading surveillance systems, strengthening entry points, and improving access controls, which all require substantial financial investments. Economically, the costs associated with repairs and security upgrades can be significant, alongside potential business downturns caused by temporary closures or diminished consumer confidence. This is particularly true if the event targets critical infrastructure, where the economic repercussions can have broader regional effects.

Moreover, these events can undermine public confidence in the safety of key infrastructures, leading to changes in public behavior and heightened demands for security. In response, there may be a prolonged period of recovery as communities reassess and revise their emergency response and preparedness plans. This often involves changes to local policies, building codes, and safety practices aimed at bolstering the resilience of public spaces and infrastructure against future threats.

Economy: Active shooter incidents cause economic impacts that are both immediate and long-lasting, encompassing a broad range of direct and indirect costs. The immediate financial burdens include substantial expenses related to emergency response mobilization, which involves law enforcement, emergency medical services, and other first responders. Additionally, medical expenses can be considerable, covering everything from emergency treatments to long-term rehabilitation for those injured. The investigative processes following such incidents also generate significant costs, encompassing criminal investigations, forensic analyses, and subsequent legal proceedings.

The indirect economic impacts can also be substantial. Local businesses can face disruptions due to forced closures or reduced customer traffic, particularly in areas directly affected by the incidents or perceived as unsafe. Property values in such areas may decline due to heightened safety concerns, potentially affecting the local real estate market for an extended period. Insurance premiums may also rise for properties and businesses in the vicinity of the incidents, reflecting an increased risk profile.

In a long-term sense, businesses and institutions frequently invest in extensive security upgrades, including the installation of advanced surveillance systems, employment of additional security personnel, and physical infrastructural modifications to enhance safety. The local tourism sector can also suffer, especially in regions where such incidents are highly publicized, leading to a downturn in visitor numbers and impacting economies reliant on tourism. Lastly, the broader community impacts, including the psychological well-being of the affected population, can lead to diminished workforce productivity and increased demand for mental health services.

Changes in Development and Impact of Future Development

Active shooter/assailant incidents can influence development strategies and future developments across various sectors. There has been a pronounced shift towards integrating security enhancements directly into building designs. This approach includes features such as secure entry points, advanced surveillance systems, and layouts optimized for safe evacuation and minimal vulnerabilities, becoming integral to the initial planning phases of new constructions.

Active shooter/assailant incidents have also necessitated revisions to emergency preparedness and response plans. Organizations and communities are now placing greater emphasis on comprehensive training for employees, alongside regular implementation of emergency drills, which are increasingly viewed as critical components of operational planning.

Legislative responses to active shooter/assailant incidents have led to changes in building codes and safety standards. New laws may mandate specific security measures in both public and private structures, such as the installation of reinforced safe havens or specialized door locks that enhance security during emergencies.

In terms of public space design, there is a growing trend to create environments that prioritize safety without compromising on functionality and aesthetic appeal. Designs now often feature less dense layouts, improved sightlines, and enhanced access to multiple exits to facilitate quicker evacuations when necessary.

5.9.8 Hostage Situation

Hazard Description

According to the FBI, a hostage situation is defined as an incident in which a person or group of people are held against their will by one or more hostage-takers. The captors usually threaten to harm the hostages in order to gain leverage over a third party, typically for fulfilling certain demands. These demands can be varied, including monetary ransom, political concessions, or the release of other prisoners.

The key elements that distinguish a hostage situation include the use of threat or actual force to detain individuals, the presence of demands made by the captors as conditions for the release of the hostages, and the involvement of a third party that the hostage-takers believe can fulfill these demands. The situation is usually highly volatile and dynamic, requiring careful negotiation and often law enforcement intervention to ensure the safety and release of the hostages.

Hazard Extent/Intensity

The extent and intensity of hostage situations are typically evaluated based on the following key factors:

1. Number of Hostages: The number of individuals taken hostage can significantly impact the resources and strategies required to manage the situation. More hostages might necessitate a larger response team and more complex negotiation strategies.
2. Number of Hostage-Takers: The dynamics of the situation can change based on whether there is a single hostage-taker, or multiple individuals involved. Multiple hostage-takers can complicate the negotiation process and increase the potential for violence.
3. Demands of the Hostage-Takers: The nature and scale of demands made by the hostage-takers can indicate the intensity of a situation. Demands involving significant political or monetary stakes, or those that are particularly extreme, can escalate the severity of the situation.
4. Location and Duration: The location of the hostage-taking, whether in a public space, a private residence, or a high-security facility, affects the response strategy and the operation's complexity. The duration of the hostage situation also plays a critical role, as longer durations can increase the risk to hostages' safety and complicate rescue operations.
5. Background and Motivation of the Hostage-Takers: Understanding the hostage-takers' motivation—whether political, criminal, or personal—helps in assessing the threat level and potential for violence. This also influences the negotiation approach and the urgency of resolving the situation.
6. Potential for Violence: The weaponry and readiness to use violence displayed by the hostage-takers are critical in assessing the situation's intensity. The presence of firearms or explosives significantly increases the risk of harm to the hostages and responders.

7. Impact on the Surrounding Community: The broader impact on the local community, such as disruptions, evacuations, and the general climate of fear, can also be indicators of the situation's intensity.

Vulnerability and Impacts

Life Safety and Public Health: Hostage situations can have significant life safety and public health impacts, affecting hostages, first responders, and the broader community in both immediate and long-term capacities. Hostages are at direct risk of physical harm, which can include injury or death from violence by the hostage-takers or during rescue efforts. The health of hostages can also deteriorate due to inadequate access to medical care, medication, or proper nutrition, particularly in prolonged hostage scenarios. Other public health concerns include unsanitary conditions, which can exacerbate the risk of communicable diseases.

The psychological impact of hostage situations can also be significant, with hostages potentially suffering from acute stress reactions and long-term conditions such as post-traumatic stress disorder (PTSD), anxiety, and depression. This psychological trauma can extend beyond the hostages themselves to affect their families and the wider community, including the perpetrators of the hostage situation. First responders also face considerable stress and physical danger, tasked with making critical decisions quickly under high-pressure conditions, which can lead to both immediate and delayed psychological strain. County-wide impacts can include a heightened sense of vulnerability and fear, impacting community cohesion and overall mental health.

Property Damage and Critical Infrastructure: Hostage situations can impact property and critical infrastructure in different ways depending on the specifics of each incident, such as its location, duration, and the actions of the hostage-takers. Direct property damage is a common consequence, including structural damage from forced entries and exchanges of gunfire, as well as internal destruction affecting furnishings, windows, and utilities. Hostage situations can also disrupt essential services, particularly when they occur in facilities housing critical infrastructure like hospitals, schools, government buildings, or utilities. The necessity for security perimeters and potential evacuations can halt normal operations, impacting not only the immediate area but also the broader community relying on these services.

If critical infrastructure such as power, water, and telecommunications services are directly involved or are located near the hostage situation, the resulting interruptions or damage can extend disruptions well beyond the vicinity of the incident. Economically, the repercussions include both the immediate costs associated with damage repairs and security enhancements, as well as potential long-term effects if public perceptions of safety are negatively affected, which can influence local business activities and property values.

Economy: Hostage situations can cause economic impacts that encompass immediate and long-term consequences affecting individuals, businesses, and the broader community. Initially, significant resources are mobilized for the emergency response, including the deployment of police, SWAT teams, and other specialized units, which incur considerable expenses related to personnel, equipment, and operational activities. Additionally, those injured during the incident may face substantial medical costs, encompassing emergency care, hospitalization, and ongoing rehabilitation. Local businesses in proximity to the incident often experience temporary closures or reduced operations, leading to revenue losses and affecting employees and supply chains. Such disruptions can also result in increased insurance claims for business interruption and property damage, potentially driving up premiums for area businesses.

Over the longer term, hostage situations can adversely affect investor confidence, leading to hesitancy in new investments or business expansions in the area. This can contribute to declining property values if the locale is perceived as unsafe. In addition, if the incident receives extensive media coverage, the perceived safety of the area might deter tourists, negatively impacting local businesses that depend on tourism. Post-incident, there can be surges in investments toward enhanced security measures. Businesses and public facilities might allocate significant funds to upgrade surveillance systems, hire additional security personnel, and tighten access controls. These security upgrades, while necessary, add to the economic strain on local entities.

Changes in Development and Impacts to Future Development

Hostage situations can impact development strategies and future urban and architectural planning, prompting a comprehensive reevaluation of security measures. After an incident occurs, there can be a shift towards incorporating enhanced security features into building design, including advanced surveillance systems, reinforced entry points, and evacuation-friendly layouts. These considerations increasingly become standard practice, particularly in sectors such as finance, government, and education that may be viewed as high-risk.

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Urban planners, in response to hostage scenarios, often redesign public spaces to improve safety and reduce vulnerabilities. This includes enhancing visibility with open sightlines and minimizing hidden areas where threats could potentially hide, alongside integrating modern technology for real-time monitoring and swift response capabilities. Legislative and policy changes may follow significant incidents, leading to stricter building and safety regulations that mandate specific security measures in new and existing structures, thus influencing the broader development standards.

5.9.9 Terrorism and WMD Incidents

Hazard Definition

According to the FBI, terrorism is defined as the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. This definition encompasses both domestic and international terrorism, emphasizing the intent behind the acts more than the scale or the methods used.

Domestic terrorism: characterized by acts that are dangerous to human life that violate federal or state law and are intended to intimidate or coerce a civilian population, influence the policy of a government by intimidation or coercion, or affect the conduct of a government by mass destruction, assassination, or kidnapping. These acts must occur primarily within the jurisdictional boundaries of the U.S.

International terrorism: involves violent, criminal acts committed by individuals and/or groups who are inspired by or associated with designated foreign terrorist organizations or nations. These acts are intended to intimidate or coerce a civilian population, influence the policy of a government, or affect the conduct of a government by mass destruction, assassination, or kidnapping, and occur outside the jurisdiction of the U.S., or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to coerce or intimidate, or the locale in which their perpetrators operate or seek asylum.

Weapons of mass destruction (WMD) Incident: defined as an event that involves the release, dissemination, or impact of a chemical, biological, radiological, or nuclear (CBRN) agent that is capable of causing a high order of destruction or mass casualties. Additionally, the term can also refer to the use of explosive devices intended to cause a high number of deaths or significant damage to structures or the environment.

CBRNE Incident refers to an event involving the use, release, or discovery of chemical (C), biological (B), radiological (R), nuclear (N), or explosive (E) materials that pose significant risks to public safety and security. These materials can cause widespread harm to people, property, and the environment. The FBI categorizes CBRNE incidents based on the type of hazardous material involved and the potential scale of the threat:

- **Chemical incidents** involve the release or potential release of hazardous chemicals that can cause toxic effects, physical damage, or contamination.
- **Biological incidents** relate to the deliberate or accidental release of viruses, bacteria, or other microorganisms that can cause illness, death, or contamination.
- **Radiological incidents** are characterized by the dispersion of radioactive materials, which can cause radiation poisoning and long-term health effects.
- **Nuclear incidents** involve the release of nuclear energy as a result of an explosion or nuclear reactor accident, leading to immediate and severe radiation threats.
- **Explosive incidents** pertain to the use of conventional explosives that can cause destruction through blast effects, often targeted at causing casualties, structural damage, or creating fear.

Improvised Nuclear Device (IND): involves the detonation or attempted detonation of a device that incorporates nuclear material without the sophistication of a traditional nuclear weapon. These devices can be constructed by non-state actors using diverted or stolen nuclear material, and they are intended to cause mass casualties, significant physical destruction, and widespread psychological impact through the explosive release of nuclear energy and radiation.
The key characteristics of an IND include:

- **Use of Fissile Material**: INDs typically incorporate fissile materials such as highly enriched uranium or plutonium, which can be obtained illicitly.
- **Simpler Design and Construction**: Unlike advanced nuclear weapons developed by nation-states, INDs are more rudimentary in design and construction, reflecting the technical limitations of the builders.
- **Intent to Cause Widespread Harm**: The primary intent behind deploying an IND is to create mass casualties, extensive physical damage, and instill fear and disruption.

The Center for Terrorism and Disaster Preparedness at the Fire Department of the City of New York frames **Vertical Terrorism** in terms of the use of semi-automatic weapons, explosives, or fire as weapons in attacks on high-rise buildings.

Except for the September 11 attacks, where terrorists flew commercial airplanes into high-rise buildings, Vertical Terrorism remains a theoretical potentiality in a context of evolving terrorists' tactics and dynamic methods of attack. Vertical Terrorism is seen as an operational strategy that can be used to exploit the physical characteristics of tall buildings that contain large numbers of people to cause a greater number of casualties.

Hazard Extent/Intensity

The extent/intensity of terrorism can be measured through different quantitative and qualitative criteria. This includes the number of casualties, including deaths and injuries, which serves as a primary indicator of an attack's severity, with high-casualty events generally considered more significant. The economic impact is also crucial, encompassing damage to infrastructure and the broader economic disruptions at local and national levels. The geographic scope of an attack—whether it is localized or has national or international ramifications—helps determine its scale.

Vulnerability and Impacts

Health and Safety: Acts of terrorism or WMD can have severe consequences regarding loss of life and injuries, leading to physical harm, trauma, and long-term health effects for victims and their families. Such acts' psychological and emotional impact can be profound, generating fear, uncertainty, and anxiety within individuals and communities, potentially resulting in increased stress, PTSD, anxiety disorders, and other mental health issues. Additionally, attacks targeting critical infrastructure, including transportation systems, energy, and healthcare facilities, can disrupt essential services and compromise public safety. Disruptions in these areas can impede travel, commerce, and access to medical care during emergencies. Lastly, acts of terrorism and sabotage are designed to instill fear and panic and disrupt societal order, potentially leading to public alarm, social unrest, and a breakdown of trust within communities. These consequences can hinder effective emergency responses and compromise community resilience, further impacting public health and safety.

Property Damage and Critical Infrastructure: Acts of terrorism or WMD can result in extensive property damage, with explosions, arson, and other destructive methods destroying buildings, infrastructure, and physical assets. Additionally, terrorists and saboteurs often target critical infrastructure, encompassing systems, and facilities vital for societal functioning, such as power plants, transportation networks, communication systems, water treatment plants, and healthcare facilities. Damage to or disruption of critical infrastructure has wide-ranging consequences, affecting public safety, essential services, and economic stability. Social disorder occurs as critical infrastructure becomes a target, resulting in a breakdown of normal functioning. For example, transportation system disruptions hinder the movement of people and goods, affecting daily routines, commerce, and emergency response capabilities. Damage to healthcare facilities hampers access to medical care during emergencies, posing public health and safety risks. Such disruptions can have cascading effects on the overall functioning of society.

Economy: The economic impacts of terrorism or WMD can be profound and multifaceted, affecting local, national, and even global economies. These impacts include:

1. **Direct Costs**:

   - Infrastructure Damage: Terrorist attacks or WMD incidents can cause substantial damage to infrastructure, including buildings, transportation systems, and utilities, requiring significant funds for repairs and reconstruction.
   - Emergency Response: The immediate response to an incident, including emergency services, healthcare, and law enforcement mobilization, entails substantial financial expenditures.
2. **Business Impact**:
   - Business Disruptions: Attacks can disrupt business operations, resulting in lost productivity, lost income, and sometimes permanent closure of businesses.
   - Insurance Costs: These incidents often lead to higher insurance claims, which in turn can result in increased premiums for businesses in affected and even potentially unaffected areas.
3. **Economic Activity**:
   - Investment: Terrorism and WMD threats can deter investment in regions perceived to be at high risk. The uncertainty and increased risk associated can make both local and foreign investors hesitant to invest in affected areas.
   - Tourism: Tourist destinations often suffer significant declines in visitor numbers after high-profile attacks, which can have a lasting impact on the local economy.
4. **Long-Term Economic Growth**:
   - Economic Growth: The long-term economic growth of a region can be stunted due to the destruction of infrastructure and a decline in investment and tourism. Recovery from such incidents can take years, during which growth opportunities are lost.
   - Market Volatility: Financial markets can react negatively to terrorism or WMD incidents, leading to volatility. This can affect national and global markets, influencing economic stability worldwide.
5. **Government Spending**:
   - Increased Security and Defense Spending: Governments often increase spending on security and defense in the aftermath of terrorist attacks or WMD incidents, which might divert funds from other important areas like education, health, and welfare.
6. **Public Confidence**:
   - Consumer Confidence: Such incidents can significantly affect consumer confidence, leading to decreased spending and saving, which further slows economic growth.

5.9.10 Sabotage

Hazard Definition

Sabotage refers to the deliberate damage, destruction, or disruption of property, equipment, or services intended to harm the national defense or war effort of a country. In broader terms, sabotage is often aimed at disrupting or harming the operations of government, organizations, or specific industries. This can include acts such as damaging machinery, software, or infrastructure to hinder a company's operations or a country's capability to function effectively, especially in a military or strategic context.

Sabotage can be motivated by a variety of reasons including political, economic, or social objectives, and it is considered a serious federal crime when it endangers national security or public safety. The intent behind sabotage is typically to weaken the target while avoiding large-scale violence or direct confrontation, making it a preferred tactic in asymmetric warfare situations or in efforts by insiders within an organization to cause disruption.

Hazard Extent/Intensity

The extent and intensity of sabotage incidents are typically based on the following:

1. Scope of Damage: This includes the physical extent of the destruction caused by the sabotage, such as the amount of property destroyed, the cost of the damage, and the disruption to services or operations. The more extensive the damage and disruption, the higher the intensity of the incident.
2. Target Significance: The nature and significance of the targeted asset play a crucial role in assessing the incident's severity. Sabotage of critical infrastructure, military assets, or key industries would be considered more severe due to the potential national security implications.
3. Economic Impact: The economic repercussions of the sabotage, including repair costs, lost productivity, and the broader economic effects on the local or national economy, are significant indicators of the incident's intensity.
4. Impact on Public Safety and National Security: The degree to which the sabotage affects public safety or compromises national security is a critical measure. Incidents that pose a direct threat to public safety or have the potential to significantly weaken national defense are treated with heightened seriousness.
5. Method and Sophistication: The complexity and sophistication of the methods used in the sabotage also reflect its intensity. More elaborate and technically advanced methods suggest higher planning and capability, indicating a more serious threat level.
6. Motive and Intent: Understanding the perpetrators' motives and the strategic intent behind the sabotage can also influence the assessment of its severity. Acts driven by high-stakes political, social, or economic objectives might be evaluated as more impactful.
7. Duration and Frequency: The duration of the sabotage (whether it is a single, isolated incident or part of an ongoing campaign) and its frequency also affect the overall assessment of its intensity and scope.

Vulnerability and Impacts

Health and Safety: According to the FBI, sabotage can involve critical infrastructure such as power plants, water treatment facilities, or transportation systems, and can directly endanger lives. For example, sabotage that compromises the safety of a chemical plant could lead to toxic releases, posing immediate health risks to nearby populations. Additionally, sabotage targeting utilities or essential services can disrupt vital functions like electricity, water supply, and healthcare services, which can have cascading effects on public health, particularly if it impedes access to medical care or sanitation.

Environmental damage resulting from sabotage can lead to long-term health issues. This could include contamination of air, water, or soil contamination causing chronic health problems for communities exposed to these elements and/or disrupting ecosystems that support public health.

The psychological impact of sabotage can also impact national stability or critical community infrastructure and can create widespread anxiety and fear, affecting mental health and overall community well-being.

Property Damage and Critical Infrastructure: Sabotage incidents can impact property and critical infrastructure, with consequences that extend beyond immediate physical damage. Sabotage can lead to substantial destruction of infrastructure, including transportation systems such as bridges and railways, utilities like power plants and water treatment facilities, and communication systems including telecommunication towers and data centers. The damage to such essential structures and technology not only incurs high repair costs but also disrupts the functionality of societal systems.

The disruption of services is another significant impact of sabotage. For instance, damaging a power grid can result in widespread power outages, while targeting a water facility might compromise the water supply, affecting not just the immediate area but potentially causing ripple effects throughout a broader region. Such disruptions can impede economic activities and daily living, highlighting the interconnectedness of modern infrastructure.

The recovery from a sabotage incident can also be a long and challenging process. Infrastructure projects, particularly those involving utilities or major transportation hubs, may require months or even years to fully rebuild. During this recovery period, sustained impacts on service delivery and economic activities are common. Additionally, in response to sabotage incidents, there is often an increase in spending on security measures aimed at protecting critical infrastructure. This includes not only physical security enhancements, such as barriers and surveillance systems but also cybersecurity measures to safeguard digital infrastructure.

Economy: Sabotage incidents have significant economic impacts that can reverberate through various sectors and levels of society. The most immediate impact is the direct cost associated with repairing or replacing damaged infrastructure, which can include vital physical structures, machinery, and technology crucial for daily operations across industries. The financial burden to restore functionality can be considerable, especially when major infrastructure is involved.

Beyond the direct costs, business disruptions resulting from sabotage can lead to extensive losses in productivity and revenue. In severe cases, these disruptions can force businesses to close temporarily or permanently, adversely affecting local and national economies. Additionally, insurance premiums tend to rise following sabotage incidents, affecting not only the entities directly impacted but potentially across the sector as insurers adjust to the heightened risk. This increase in operational costs can deter further investment in regions perceived as high-risk.

Investor confidence is also notably affected by sabotage, particularly if such incidents are frequent or highly disruptive. The hesitancy to invest in vulnerable regions or sectors can stifle economic growth and innovation. Moreover, in the aftermath of sabotage, there is often a significant reallocation of resources, with increased spending on security measures potentially diverting funds from other critical areas such as research and development, education, or social services.

In the long term, repeated or high-profile sabotage incidents can hinder economic growth and development. Regions or countries perceived as unstable may struggle to attract and retain businesses and skilled workers, which are crucial for economic expansion.

5.9.11 Cyber-attacks

Hazard Definition

Cyber-attacks are "deliberate exploitation of computer systems, technology-dependent enterprises, and networks." Cyber-attacks use malicious code to alter computer operations or data. The vulnerability of computer systems to attacks is a growing concern as people and institutions become more dependent upon networked technologies. The FBI reports that, "cyber intrusions are becoming more commonplace, more dangerous, and more sophisticated," with implications for private- and public-sector networks.

Malware, or malicious software, can cause numerous problems once on a computer or network, from taking control of users' machines to discreetly sending out confidential information. Ransomware is a specific type of malware that blocks access to digital files and demands a payment to release them. Hospitals, schools, state and local governments, law enforcement agencies, businesses, and even individuals can be targeted by ransomware.

Cyber spying or espionage is the act of illicitly obtaining intellectual property, government secrets, or other confidential digital information, and often is associated with attacks carried out by professional agents working on behalf of a foreign government or corporation.

According to cybersecurity firm Symantec, in 2016 "…the world of cyber espionage experienced a notable shift towards more overt activity, designed to destabilize and disrupt targeted organizations and countries." A major data breach is when hackers gain access to large amounts of personal, sensitive, or confidential information and have become increasingly common. A 2018 report from the security firm Symantec found that more than seven billion identities have been exposed in data breaches over the last eight years. In addition to networked systems, data breaches can occur due to the mishandling of external drives.

Cyber-crime can refer to any of the above incidents when motivated primarily by financial gain or other criminal intent. The most severe type of attack is cyber terrorism, which aims to disrupt or damage systems in order to cause fear, injury, and loss to advance a political agenda.

Cyber-attacks can be divided into two main categories: attacks against data, and attacks against physical infrastructure. Because our society is so dependent on technology, a large-scale cyberattack could overwhelm government and/or private-sector resources quickly, as well as threaten lives, property, the economy and national security.

Phishing is a technique employed in many of the above attacks and involves sending fraudulent emails purporting to be from known contacts or reputable companies to induce individuals to reveal personal information, such as passwords and credit card numbers, or to click on links that put the user at risk.

Hazard Location

Cyber-attacks are not central to one geographic area; they can occur anywhere across Idaho where technological systems exist or are utilized. A breach can originate at one computer and affect any other computer in the world. Targets include individual computers, networks, organizations, business sectors, or governments.

Hazard Extent/Intensity

The extent of a cybersecurity breach is dependent on various factors. These factors include the system that is attacked, protective measures put in place, training of the people involved, warning time, and the firewalls that exist to protect different levels of the system.

Probability and Frequency

Cyberattacks have increased nationwide in recent years, particularly targeting the energy sector. Cyberattacks have also increased in the banking and finance sectors. Hackers have attacked company computers by distracting employees and interfering with Internet Security Providers (ISP) to divert resources, to steal proprietary information and PII. Small devices can wreak havoc and disrupt systems. Some USBs have been manufactured with viruses or may become infected and spread viruses to multiple computers. Firewalls, access via signatures, and anti-virus are becoming antiquated security methods.

While specific data on the number of occurrences is not known, the probability of future cyberattacks is high.

Other jurisdictions have been impacted by ransomware attacks in recent years. The City of Atlanta was hit by a major ransomware attack in 2018, recovery from which wound up costing a reported $2.6 million, significantly more than the $52,000 ransom demand. A similar attack against the City of Baltimore in 2019 affected the city government's email, voicemail, property tax portal, water bill and parking ticket payment systems, and delayed more than 1,000 pending home sales. In March 2019, Orange County, North Carolina was attacked with a ransomware virus, causing slowdowns and service problems at key public offices such as the Register of Deeds, the sheriff's office and county libraries. The attack impacted a variety of county services, including disrupting the county's capability to process real estate closings, issue marriage licenses, process fees or permits, process housing vouchers, and verify tax bills.

Vulnerability and Impacts

Cyber-attacks can have a wide range of impacts, ranging from minimal to significant, depending on if Cook County or its jurisdictions are the main target for the attack or if they are one of many targets. Some of these attacks may be malicious and can result in catastrophic damage to the nervous system of a community's cyber infrastructure. Back-up systems, redundancy, heightened awareness, integrity restoration, and recovery will provide means to adequately manage the consequence of an attack.

Direct Damage: Cyber-attacks can inflict damage on physical systems by manipulating the technology supporting the built environment.

Economic Damage: Cyber-attacks can inflict huge amounts of economic damage in many different ways. Cyber-attacks targeting financial institutions (banks, stock markets, etc.) can directly impact the overall economy while other attacks may target individual businesses. Large scale cyber-attacks can greatly affect the economy. Symantec reports that in the last three years, businesses have lost $3 billion due to phishing email scams alone. In an electronic-based commerce society, any disruption to daily activities can have disastrous impacts to the economy. It is difficult to measure the true extent of the impact.

5.9.12 Fire or Explosion

Hazard Description

A **fire incident** refers to any occurrence in which a fire breaks out and poses a threat to life, property, or the environment. This definition covers a wide range of situations, from small accidental fires in a residential setting to large-scale industrial or wildland fires. Key components of a fire incident typically include:

1. **Ignition Source**: The element or event that initiated the fire, which could be due to human activity (such as cooking or smoking), mechanical or electrical malfunction, or natural causes (like lightning or spontaneous combustion).
2. **Fuel**: Materials that feed the fire, which can be anything combustible such as wood, paper, gasoline, or chemicals.
3. **Oxygen**: The air that sustains the combustion process.

Fire incidents are categorized by their nature, cause, and where they occur, such as residential fires, commercial fires, industrial fires, transportation fires, and wildland fires. Each type of fire incident may require different responses and mitigation strategies, depending on the specific risks and potential for damage to life and property. Fire incidents can lead to serious injuries, fatalities, significant property damage, and environmental degradation, thereby necessitating robust fire prevention, response, and investigation efforts to manage and mitigate their impacts effectively.

An **explosion incident** refers to an event where a sudden and violent release of energy occurs, typically in the form of a rapid expansion of gases or high-pressure shock waves. This release of energy can result from chemical reactions, mechanical failures, or other processes that generate a rapid increase in volume and release of energy in an extreme manner. Key elements of an explosion incident include:

1. **Cause**: The source of the explosion, which could be chemical (such as explosives or reactive chemicals), mechanical (due to pressure vessel failure, for example), or even nuclear.
2. **Medium**: The environment in which the explosion takes place, which can influence the extent and nature of the explosion. This includes confined spaces which can amplify the effects of the explosion, or open areas where the dispersion of energy might be different.
3. **Impact**: The immediate physical effects of the explosion, including shock waves, fragmentation, and heat, which can cause destruction of structures, ignite fires, and result in injuries or fatalities.

Hazard Extent/Intensity

Fire: The United States Fire Administration (USFA) measures the extent and intensity of a fire using the following metrics:

1. Size of the Fire: This is often measured in terms of the area affected, usually expressed in square feet or acres, depending on the type of structure or land involved. For wildfires, acres burned is a common metric.
2. Fire Growth and Spread Rate: The rate at which a fire expands, including how quickly it moves through materials or across areas, is a critical measure of its intensity. This rate can indicate how challenging a fire will be to control and extinguish.
3. Heat Release Rate (HRR): This is a measure of the energy output of a fire and is considered one of the most important quantitative descriptors of a fire's physical characteristics. The higher the heat release rate, the more intense the fire, and the greater the potential for structural damage and danger to life.
4. Structural Damage: The extent of damage to structures, including both the primary structure involved and any secondary structures affected, provides a measure of a fire's intensity and impact.
5. Flame Height and Length: Observing the flame characteristics can also provide insights into the fire's intensity. Longer and higher flames typically indicate a more intense fire.
6. Smoke Production: The amount and type of smoke produced can indicate the nature of the fire, including what materials are burning, which can affect both firefighting tactics and safety measures.
7. Casualties and Evacuations: The number of injuries, fatalities, and the necessity for evacuations are also indirect measures of a fire's severity.

Explosion: The U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) assesses the extent and intensity of an explosion through the following metrics:

1. Blast Effects: The ATF evaluates the radius of the explosion's effect, which includes the blast wave (overpressure), fragmentation range, and thermal effects. The extent of damage within these zones provides a measure of the explosion's intensity.
2. Material Damage: This includes assessing the damage to buildings, vehicles, and other structures. Structural integrity studies and the pattern of debris dispersion help determine the power of the explosion. Damage assessments can indicate the amount of explosive material used and the effectiveness of the device.
3. Casualties: The number of injuries and fatalities is a direct indicator of the explosion's severity. This aspect also involves examining the nature of injuries to understand the blast's impact.
4. Cratering: If the explosion creates a crater, its size and depth can be analyzed to gauge the strength and composition of the explosive used. Crater dimensions help reconstruct the event and understand the explosion dynamics.
5. Seismic and Acoustic Data: The ATF might use data from seismic and acoustic sensors to measure the energy release of the explosion. These readings can provide objective data on the blast's power and range.
6. Chemical Residue Analysis: Post-explosion, chemical residues are analyzed to identify the type of explosives used. This information can relate to the explosive's potential energy and, by extension, the intensity of the explosion.
7. Investigation of Detonation Mechanism: Understanding how the explosion was initiated is crucial. The type of detonator and the method of delivery can influence the efficiency and intensity of the explosion.

Vulnerability and Impacts

Life Safety and Public Health: According to USFA, fires and explosions can have profound impacts on life safety and public health. The most immediate and severe consequence of these incidents is the potential for fatalities and a range of injuries, including burns, trauma from blasts, and respiratory issues due to smoke inhalation. Additionally, these events often displace people from their homes, leading to both short-term and sometimes long-term housing instability, further exacerbating the stress and challenges faced by affected individuals and families.

Beyond immediate physical injury, long-term health effects of exposure to smoke and chemicals released during fires and explosions can be significant. This exposure can lead to respiratory problems, cardiovascular issues, and chronic conditions resulting from contact with toxic substances. The psychological impact is also notable, with victims and first responders potentially suffering from post-traumatic stress disorder (PTSD), anxiety, depression, and other mental health issues that can persist well beyond the actual event.

The strain on public health and emergency response infrastructure is another critical concern. Large-scale fires and explosions can overwhelm medical facilities and emergency services, compromising the care available to the broader community and reducing the accessibility of healthcare services. Additionally, the environmental health risks associated with the release of pollutants into air, water, and soil require extensive cleanup and remediation efforts, posing further public health challenges.

Critical Facilities and Infrastructure: According to USFA, fires and explosions can severely impact critical facilities and infrastructure, with significant repercussions for communities and regions. These incidents can disrupt essential services provided by critical infrastructure like power plants, water treatment facilities, or communication hubs. The interruption of these services can affect large populations, leading to considerable safety concerns and inconveniences, such as loss of electricity, water contamination, or communication breakdowns.

Fires and explosions involving chemicals can cause extensive environmental damage by releasing harmful pollutants into the air and water, as well as contaminating the soil. This not only affects the immediate area but also requires extensive cleanup efforts and has broader ecological impacts. Beyond the immediate life safety threats posed by the fire or explosion itself, there are significant public health risks associated with the exposure to toxic substances released during such incidents. These substances can lead to both acute and chronic health effects on the exposed populations.

Damage to critical infrastructure can also expose vulnerabilities in a community's or nation's security, especially if the infrastructure is integral to security or emergency services. This can compromise the ability to respond to future emergencies and protect against various threats. Moreover, recovering from a fire or explosion that affects critical infrastructure involves a long and complex process, requiring coordinated efforts between various levels of government and private sector entities.

Economy: According to the USFA, the economic impacts of fire or explosion incidents are extensive and varied, affecting immediate areas and broader regions. Direct costs for damage and repairs following such incidents are significant, encompassing the restoration of buildings, infrastructure, and personal property. This often necessitates a substantial financial commitment from businesses, homeowners, insurance companies, and government bodies.

Business disruptions due to fires or explosions can lead to profound financial losses, characterized by lost productivity and revenue during downtime, as well as the permanent loss of critical business assets. This impact is particularly severe in industries that rely heavily on physical infrastructure, such as manufacturing. Additionally, these incidents typically result in high insurance claims, driving up premiums across the board in the affected industries or areas and impacting long-term business operations.

The employment sector also faces negative consequences, with potential job losses either temporarily during rebuilding and recovery phases or permanently if businesses fail to reopen. This affects not just the individuals employed but also the local economy, which may depend on these jobs.

5.9.13 Utility Failure: Electrical, Gas, Telecommunications, Sewer, Water, and Pipeline

Hazard Description

Electrical Failure: any disruption or malfunction within the systems operated by an electrical utility company that prevents the normal delivery of electrical power. This can include failures in generation, transmission, or distribution systems that result in a loss of service to customers.
Specifically, an electrical utility failure might involve:

- Power outages or blackouts caused by equipment failure, severe weather, or operational errors.
- Failures at power plants or other generation facilities decrease the power supply below demand levels.
- Problems in the transmission network, such as downed lines or substation failures, which prevent power from being efficiently distributed across a region.
- Distribution failures that directly affect the final delivery of electricity to homes and businesses.

Gas Failure: any disruption within the gas supply system that prevents the normal delivery of gas to consumers. This can encompass a range of issues from the production stage through to the end user, including:

- Breakdowns in infrastructure such as pipelines, storage facilities, or processing plants that impede gas flow.
- Failures due to operational errors or maintenance issues that cause interruptions in service.
- External influences such as severe weather, natural disasters, or third-party damage that result in leaks, ruptures, or complete shutdowns of parts of the gas distribution network.

Telecommunications Failure: a disruption or breakdown in the systems and networks that provide communication services, such as telephone, cellular, and internet services. This type of failure can result from a variety of causes, including:

- Technical malfunctions**:** Faults in the hardware or software components that manage and facilitate communication services.
- Network congestion**:** Overloading of network resources leading to significant slowdowns or total cessation of service.

- Physical damage: Damage to physical infrastructure such as cables, antennae, and satellites due to natural disasters, accidents, or vandalism.
- Operational errors: Mistakes or oversight in the management and operation of telecommunications systems.
- Cyber-attacks: Deliberate targeting of communication networks by malicious entities attempting to disrupt services.

Sewer Failure: any breakdown or malfunction within the sewer system that impedes its normal operation of collecting and transporting wastewater from residential, commercial, and industrial sources to treatment facilities.

Water Failure: a disruption in the systems and services that supply water for residential, commercial, or industrial use. This kind of failure can significantly impact daily life and operations and may arise from various issues, including the following:

- Infrastructure breakdowns: This includes the failure of pipes, pumps, or reservoirs due to aging materials, corrosion, or external damage such as from construction or natural events.
- Contamination: The presence of pollutants in the water supply that make it unsafe for use. This can be due to chemical spills, backflow incidents, or breaches in the system that allow contaminants to enter.
- Service interruptions: Loss of water supply caused by power outages, severe weather conditions, or operational errors that affect water treatment plants or distribution systems.
- System overloads: High demand that exceeds the system's capacity to supply water, often occurring during heatwaves or droughts when usage spikes unexpectedly.

Pipeline Failure: a significant disruption or malfunction in the systems used to transport gas, oil, water, or other substances through pipelines. This type of failure can involve various scenarios:

- Leaks and ruptures: These occur due to corrosion, material failure, or external damage (e.g., from construction activities or natural disasters) that compromise the structural integrity of the pipeline.
- Blockages: Obstructions within the pipeline can impede the flow of the transported substance, potentially leading to pressure build-up and ruptures.
- Operational failures: Issues with the equipment or systems that control the flow and pressure within the pipelines, including valve failures or malfunctions in monitoring systems.
- External impacts: Natural disasters such as earthquakes, landslides, or severe weather conditions can damage pipelines, as can human activities like digging without proper clearances.

Vulnerability and Impacts

Life Safety and Public Health: Utility failure presents significant public health and life safety risks. Electrical failures pose critical health risks for those reliant on power for medical devices and increase accident risks in darkened environments. They can also elevate crime and traffic incidents due to non-functional streetlights and security systems. Gas utility failures can lead to poisoning or asphyxiation from leaks and raise the potential for explosions and fires. Telecommunications failures compromise access to emergency services and information, crucial during health crises or for vulnerable populations, and impede emergency response and recovery during disasters.

Sewer system failures introduce severe health hazards by contaminating environments and water supplies with raw sewage, leading to waterborne diseases and costly cleanups. Water utility disruptions inhibit hydration, sanitation, and firefighting efforts, facilitating disease spread and increasing fire risks. Lastly, pipeline failures, particularly those involving hazardous materials, pose risks of toxic exposure and environmental damage, with consequent fire and explosion hazards.

Critical Facilities and Infrastructure: Utility failure can significantly impact critical facilities and infrastructure, disrupting essential services across multiple sectors.
Electrical failures can compromise the functionality of hospitals and emergency services that depend on steady power for life-saving equipment and operations, as well as transportation systems that require electricity for traffic lights and railway signals. This can result in operational disruptions and increased accidents.

Gas utility failures may pose risks to facilities like hospitals and residential buildings that rely on natural gas for heating and potentially for power generation, especially during cold weather. Industrial plants that use gas as a primary energy source can experience shutdowns, leading to economic losses.

Telecommunications failures can critically affect emergency response capabilities, which depend on reliable communication networks to coordinate and manage crisis responses effectively. Additionally, sectors such as banking, security, and transportation, which rely on uninterrupted telecommunications, face significant operational challenges during such failures.

Sewer system disruptions can impact facilities like hospitals, where sanitation is crucial to prevent infections and maintain hygiene. Wastewater treatment plants, essential for public health, when compromised by sewer failures, can lead to environmental contamination and public health crises.

Water utility failures may jeopardize hygiene and healthcare in critical facilities like hospitals and can cause cooling systems in data centers to fail, risking overheating and technological damage. Public water supply disruptions also hinder firefighting efforts, exacerbating other emergencies.

Pipeline failures can disrupt the continuous supply of fuels and chemicals, affecting facilities that rely on these materials. They can also cause environmental damage and lead to widespread energy shortages, affecting broader infrastructure and energy availability.

Economy: The economic impacts of utility failure can often include the following:

1. Productivity Losses:
    - Business Interruptions: Utility failures often lead to direct downtime for businesses, resulting in lost productivity and revenue. Industries that rely heavily on continuous power, water, or telecommunications—such as manufacturing, tech, and service sectors—are particularly vulnerable.
    - Work Disruptions**:** In the modern economy, many jobs depend on stable internet and telecommunications. Failures here can halt remote work, disrupt communication, and delay services.
2. Increased Operational Costs:
    - Repairs and Maintenance**:** Following a utility failure, the costs of repair and restoration of service can be substantial for businesses and utility companies alike.

   - Backup Systems**:** Investing in generators, water tanks, and other contingency systems to mitigate the effects of future failures adds financial strain on businesses and public services.
3. Consumer Spending:
   - Reduced Consumer Confidence**:** Frequent or prolonged utility disruptions can lead to decreased consumer and business confidence, which in turn can affect local and regional economies.
   - Direct Costs to Consumers**:** Households may face higher costs due to spoiled food, damaged electronics, and the need for temporary accommodation or alternative water supplies.
4. Economic Growth Impacts**:**
   - Investment Deterrence**:** Persistent instability in utility services can deter investment in affected regions. Investors often seek stability and predictability, which are undermined by frequent utility failures.
   - Tourism and Attractions**:** Areas reliant on tourism can suffer if utility issues affect tourists' experiences, leading to a decrease in visitor numbers and spending.
5. Insurance and Risk Management**:**
   - Insurance Claims**:** Businesses and homeowners often face higher insurance premiums following frequent claims related to utility failures. Moreover, insurers may be reluctant to cover businesses in high-risk areas without significant cost adjustments.
   - Legal and Compliance Costs**:** Companies must also navigate the regulatory implications of failures, which can include fines and mandatory upgrades.
6. Long-term Strategic Shifts:
   - Infrastructure Investment**:** Long-term economic planning may shift towards enhancing resilience and sustainability, requiring significant investment in infrastructure upgrades and new technologies, further straining public and private financial resources.

5.9.14 Commercial/Industrial Transportation Accidents

Hazard Description

Air Accident: an incident involving an aircraft that is operated by a commercial airline or for industrial purposes, which results in significant damage to the aircraft, injury to its occupants, or both. This can include a range of situations including:

- Crashes during takeoff, flight, or landing**:** Any situation where an aircraft fails to complete its journey as planned due to a crash.
- Incidents on the ground**:** This can involve collisions with other aircraft, vehicles, or structures at an airport.
- System or mechanical failures**:** Failures of critical aircraft systems while in operation that could lead to emergency landings or other hazardous situations.
- External factors**:** Such as severe weather conditions, bird strikes, or other environmental issues that impact the safe operation of the flight.

Rail Accident: any incident involving trains that are used for commercial (passenger or freight services) or industrial purposes (such as those in mining or manufacturing environments), resulting in damage, injury, or disruption. Types of incidents include:

1. Collisions: When trains collide with each other, vehicles, or obstacles on the tracks.
2. Derailments: When trains come off their tracks, which can be caused by mechanical failures, track problems, or external factors.
3. Infrastructure Failures: Damage to or failure of rail infrastructure, such as bridges, tracks, or signaling systems.
4. Human Factors: Errors made by train operators, maintenance crews, or other personnel involved in the train's operation and maintenance.

Roadway Accident: any incident involving vehicles used for business purposes, such as transporting goods or passengers and typically occurring on public roads or within industrial facilities. Typical elements include:

1. Vehicle Types: The vehicles involved can range from large trucks and buses to vans and specialized industrial vehicles used within manufacturing plants or construction sites.
2. Incidents: These can include collisions between vehicles, collisions with pedestrians, single-vehicle accidents where a vehicle crashes into an obstacle or rolls over, and accidents involving the spilling of hazardous materials.
3. Causes: Common causes include driver error, mechanical failures, adverse road conditions, and insufficient maintenance of vehicles or infrastructure.
4. Consequences: Such accidents can lead to injuries or fatalities, significant property damage, environmental damage (especially in the case of hazardous material spills), and economic losses due to interrupted services and legal liabilities.

Waterway Accident: refer to incidents occurring on navigable waters, involving vessels used for purposes such as cargo and passenger transport, fishing, offshore drilling, or towing operations. These accidents can include collisions with other vessels, stationary objects, or navigational aids, and groundings on sandbanks, reefs, or shorelines. Other common types of incidents are capsizing and sinking, which may be due to factors like poor stability, overloading, or hull breaches. Additionally, onboard fires or explosions pose severe risks, especially on vessels carrying flammable or explosive materials. Environmental spills are also a significant concern, with the potential release of oil, chemicals, or other hazardous substances into the water, leading to ecological risks. Equipment and mechanical failures, such as those affecting steering or propulsion, can further contribute to these accidents.

Vulnerability and Impacts

Life Safety and Public Health: Commercial and industrial transportation accidents can significantly impact public health and life safety. These incidents frequently result in fatalities and a wide spectrum of injuries, ranging from minor to severe. Air accidents, for instance, often have a high fatality rate, while road accidents are notable for their high incidence of injuries and fatalities due to dense traffic and proximity to pedestrian areas. Rail and maritime accidents, though less common, can also lead to considerable casualties, particularly in high-speed rail incidents or large-scale maritime disasters.

The psychological aftermath of these accidents can be profound, affecting survivors, witnesses, and emergency responders with long-term effects such as post-traumatic stress disorder (PTSD), anxiety, and depression. The impact is especially acute following sudden and large-scale disasters like plane crashes and shipwrecks.

Accidents involving hazardous materials pose additional public health risks, leading to emergencies that can contaminate air, water, and soil. This contamination can cause both acute and chronic health problems for local populations, potentially necessitating prolonged public health interventions.

Such incidents also place a heavy burden on local healthcare and emergency services, often overwhelming them and disrupting routine health care delivery in the affected areas. The strain on these resources highlights the critical need for robust emergency preparedness and response strategies.

Lastly, the environmental and community health ramifications of significant contaminations are substantial, leading to long-term health issues within affected communities and necessitating ongoing public health measures to mitigate these effects.

Critical Facilities and Infrastructure: Commercial and industrial transportation accidents can often result in substantial physical damage to essential infrastructure, including bridges, roads, railway tracks, airports, and ports. For example, derailments can devastate rail infrastructure, while accidents involving ships can disrupt operations at ports. These accidents can also lead to temporary or long-term disruptions in transportation services, which can ripple throughout the economy. A significant accident at a major airport, for instance, could disrupt air services regionally or globally, while incidents on key highways or railway lines might block routes, causing delays and necessitating the rerouting of traffic and goods.

Commercial and industrial transportation accidents can also strain local emergency services and utilities. Significant accidents requiring extensive firefighting resources or medical responses can overextend local emergency capabilities. In addition, collisions that impact utility infrastructure can disrupt essential services like electricity and water, compounding the challenges for emergency response and recovery.

The environmental impacts of such accidents, particularly those involving hazardous materials, can also be severe. Spills in waterways, for example, might contaminate water supplies, and toxic fumes from fires could require the shutdown of air handling systems, posing broader environmental risks. Lastly, these accidents can pose direct risks to public safety and security, especially if critical infrastructure is damaged or hazardous materials are involved. This can lead to extensive public safety concerns, necessitating rigorous security measures and safety protocols to protect the public.

Economy: The economic impacts of commercial and industrial transportation accidents can be substantial, including expenses related to emergency response, medical care for injuries, environmental cleanup for accidents involving hazardous materials, and the repair of damaged infrastructure and vehicles. Additionally, such accidents often disrupt business operations, leading to significant losses in productivity and revenue. This is particularly evident when key trade routes are affected, disrupting supply chains and affecting businesses down the line.

Insurance costs also rise as these incidents increase claims, leading to higher premiums for businesses within the transportation sectors. Moreover, the aftermath of these accidents typically involves substantial legal and liability expenses as parties seek to determine fault and settle claims, which can include hefty compensation or fines for regulatory violations.

High-profile accidents can shake consumer and investor confidence, potentially reducing the market value of affected companies or sectors and deterring investment. In response to accidents, regulatory bodies often enhance safety regulations, imposing additional costs on businesses as they strive to comply with new standards through equipment upgrades, staff training, or procedural changes. Accidents in tourist-frequented areas or routes can deter visitors, negatively impacting local economies dependent on tourism revenue.

5.9.15 Structural Collapse

Hazard Definition

A structural collapse is defined as an event where one or more building components lose their structural integrity, resulting in part or all of the structure failing or falling. This type of incident typically occurs suddenly and can be caused by various factors, including natural disasters (such as earthquakes), accidents (like explosions or vehicle impacts), or structural failure due to poor design, construction faults, or lack of maintenance. There are four (4) different types of structural collapse as follows:

1. **Type 1 Collapse**: This involves light damage where components of the structure are partially damaged. It typically includes non-structural elements and does not pose significant risks to trapped individuals regarding additional collapses. The rescue operations might be simpler, involving fewer hazards to both victims and responders.
2. **Type 2 Collapse**: This category includes a moderate level of damage where key structural components are affected but the overall structural integrity may still partially support rescue operations. Rescues in a Type 2 collapse are more complex and riskier than Type 1, often requiring more technical skills and equipment to stabilize the structure and access victims.
3. **Type 3 Collapse**: This represents heavy damage where the structure is extensively compromised and there is a high risk of further collapse. These scenes are the most hazardous and challenging, demanding a high level of technical expertise and stabilization equipment to conduct rescue operations safely. The structure is largely unstable, and accessing trapped individuals is significantly more difficult and dangerous.
4. **Type 4 Collapse**: Sometimes recognized in various descriptions, this refers to total or near-total collapses with extremely limited chances of survival for anyone caught within, and operations may shift more towards recovery rather than rescue.

PART 3. MITIGATION STRATEGY

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation goals and objectives were reevaluated and updated; and mitigation actions/projects were updated/amended, identified, evaluated, and prioritized.

Chapter 6 Mission, Goals, and Objectives

Hazard mitigation plans must identify goals for reducing long-term vulnerabilities to identified hazards (44 CFR Section 201.6(c)(3)(i). The Steering Committee established a mission, a set of goals, and measurable objectives for this plan update, based on data from the preliminary risk assessment and the results of the public involvement strategy. The mission, goals, objectives, and actions in this plan all support each other. Goals were updated to support the mission. Objectives were selected that met multiple goals. Actions were prioritized based on the action addressing multiple goals and objectives.

6.1 Mission

A mission focuses on the range of objectives and actions to be considered. This is not a goal because it does not describe a hazard mitigation outcome, and it is broader than a hazard-specific objective. The mission for the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan is as follows:

- Identify risks and sustainable cost-effective actions to mitigate the impact of natural hazards in order to protect the life, health, safety, welfare, and economy of the communities of Cook County.

6.2 Goals

The following are the mitigation goals for this plan:

1. Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.
2. Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards.
3. Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events and potential damage from such events.
4. Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of natural hazards.
5. Develop, promote, and integrate mitigation action plans.
6. Promote public understanding of and support for hazard mitigation.

The effectiveness of a mitigation strategy is assessed by determining how well these goals are achieved.

6.3 Objectives

Each selected objective meets multiple goals, serving as a stand-alone measurement of the effectiveness of a mitigation action, rather than as a subset of a goal. The objectives also are used to help establish priorities. The objectives are as follows:

1. Eliminate or minimize disruption of local government operations caused by natural hazards through all phases of emergency management.
2. Increase the resilience of (or protect and maintain) infrastructure and critical facilities.

3. Consider the impacts of natural hazards on future land uses in the planning area, including possible impacts from climate change.
4. Integrate hazard mitigation policies into land use plans in the planning area.
5. Develop, improve, and protect systems that provide early warnings, emergency response communications, and evacuation procedures.
6. Use the best available data, science and technologies to educate the public and to improve understanding of the location and potential impacts of natural hazards, the vulnerability of building types and community development patterns, and the measures needed to protect life safety.
7. Retrofit, purchase, or relocate structures in high-hazard areas, including those known to be repetitively damaged.
8. Establish partnerships among all levels of local government, the private sector, and/or nongovernmental organizations to improve and implement methods to protect people, including underserved and underrepresented groups, and property.
9. Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.
10. Strengthen codes and land use planning and their enforcement so that new construction or redevelopment can avoid or withstand the impacts of natural hazards.
11. Encourage mitigation through incentive-based programs like the Community Rating System and StormReady programs.
12. Reduce natural hazard-related risks and vulnerability to potentially isolated and underserved populations within the planning area and ensure mitigation strategies result in equitable outcomes.
13. Encourage hazard mitigation measures that have the least adverse effect on the natural environment and use natural processes.

6.4 Community Lifelines

FEMA developed the community lifelines construct to increase effectiveness in disaster operations and better position the jurisdictions to respond to incidents. Lifelines are the most fundamental services in a community that, when stabilized, enable all other aspects of society. A lifeline enables the continuous operation of critical business and government functions and is essential to human health and safety or economic security. There are seven FEMA-identified lifeline categories, each of which has its own components:

- Safety and Security
- Food, Hydration, Shelter
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials
- Water Systems

The goals and objectives of this plan promote using mitigation to reduce the risk to community lifelines before a disaster and to quickly stabilize a community after a disaster by preventing cascading impacts.

FEMA's Building Resilient Infrastructure and Communities grant program focuses on projects and initiatives that reduce the likelihood that community lifelines will fail as a result of an incident. During the HMP planning process, the vulnerability of these lifelines was analyzed in relation to each hazard to determine any gaps and opportunities for mitigation that may exist and be identified in the jurisdictional annexes. As part of the planning process, plan participants were encouraged to identify mitigation strategies that addressed their community lifelines.

Chapter 7 Mitigation Action Plan

The action plan helps to prioritize mitigation initiatives according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The action plan also provides the framework for how the proposed projects and initiatives will be implemented and administered over the next five years. It is also meant to programmatically guide the annual updates and progress for each mitigation initiative.

Each **new** mitigation project identified during the 2024 plan update has been organized based on the following table below.

TABLE: NEW MITIGATION ACTION FORM

<table>
<tr><th colspan="6">Mitigation Action:</th></tr>
<tr><td>Lead Agency/Department Organization:</td><td>Supporting Agencies/ Organizations:</td><td>Estimated Cost:</td><td>Potential Funding Source:</td><td>Estimated Projected Completion Date:</td><td>Hazard(s) Mitigated:</td></tr>
<tr><td colspan="2">Year Initiated</td><td colspan="4">2024</td></tr>
<tr><td colspan="2">Applicable Jurisdiction</td><td colspan="4"></td></tr>
<tr><td colspan="2">Applicable Goal</td><td colspan="4"></td></tr>
<tr><td colspan="2">Applicable Objective</td><td colspan="4"></td></tr>
<tr><td colspan="2">Cost Analysis (Low, Medium, High)</td><td colspan="4"></td></tr>
<tr><td colspan="2">Priority and Level of Importance (Low, Medium, High)</td><td colspan="4"></td></tr>
<tr><td colspan="2">Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)</td><td colspan="4"></td></tr>
<tr><td colspan="2">Action/Implementation Plan and Project Description:</td><td colspan="4"></td></tr>
<tr><td colspan="2">Actual Completion Date or Ongoing Indefinite</td><td colspan="4"></td></tr>
<tr><td colspan="2">Project Status & Changes in Priority

Completion status legend:
N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed</td><td colspan="4"></td></tr>
</table>

7.1 Mitigation Strategy/Action Timeline Parameters

While the preference is to provide definitive project completion dates, this is not possible for every mitigation strategy/action. Therefore, the parameters for the timeline (**Projected Completion Date**) are as follows:

- **Short Term** = to be completed in 1 to 5 years
- **Long Term** = to be completed in greater than 5 years
- **Ongoing** = currently being funded and implemented under existing programs.

7.2 Mitigation Strategy/Action Benefit Parameters

Benefit ratings were defined as follows:

- **High—**Project will provide an immediate reduction of risk exposure for life and property.
- **Medium—**Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low—**Long-term benefits of the project are difficult to quantify in the short term.

7.3 Mitigation Strategy/Action Estimated Cost Parameters

While the preference is to provide definitive costs (dollar figures) for each mitigation strategy/action, this is not possible for every mitigation strategy/action. Therefore, the estimated costs for the mitigation initiatives identified in this Plan were identified as high, medium, or low, using the following ranges:

- **High—**Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium—**The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low—**The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

7.4 Mitigation Strategy/Action Prioritization Process

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

The priorities are defined as follows:

- **High Priority—**A project that meets multiple objectives (i.e., multiple hazards), has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for the HMGP or BRIC grant program. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority—**A project that meets goals and objectives, which has benefits that exceed costs, and for which funding has not been secured but that is grant eligible under HMGP, BRIC or other grant programs. The project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority—**A project that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for HMGP or BRIC grant funding, and for which the timeline for completion is long term (1 to 10 years). Low priority projects may be eligible for other sources of grant funding from other programs.

For many of the strategies identified in this action plan, the partners may seek financial assistance under the HMA programs, which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the partners reserve the right to define "benefits" according to parameters that meet the goals and objectives of this plan.

Chapter 8 Mitigation Alternatives and Strategies

Plan participants assessed and included a comprehensive range of hazard mitigation strategies/actions, including strategies from FEMA documents, strategies from the 2019 Cook County Multi-Hazard Mitigation Plan and suggestions from participating communities and their respective stakeholders during a series of workshops that took place throughout the County in April of 2024.

Each of the participating communities, including Cook County, were invited to participate in a series of workshops in which goals, objectives, and strategies were discussed, identified, updated and prioritized. Each participant in this session was provided with a number of resources to help them identify relevant mitigation strategies. These include the following documents:

- FEMA Mitigation Ideas Handout (see Appendix B. Plan Process and Development Documentation)
- Cook County Mitigation Examples Handout (see Appendix B. Plan Process and Development Documentation)

All potential strategies that arose through this process are included in this Plan. A final draft of the Plan was presented to all stakeholders to allow them to provide final edits and approval of the strategies and their priority.

One of the benefits of using the Online Planning System, and organizing jurisdictions by North, Central and South regions, was to ensure neighboring communities had full visibility of each other's mitigation initiatives. This was done to ensure synergies were identified, when applicable, and that mitigation actions in one community would not adversely impact another nearby community.

The following form was used to determine new mitigation strategies for 2024.

2024 Cook County New Mitigation Action Form

Instructions: Please complete one (1) Mitigation Action Form for each proposed mitigation action or project with as much detail as possible.

Name: ______________________ **Jurisdiction/Organization:** ______________________

E-mail: ______________________ **Phone:** ______________________

New Mitigation Action (Please Describe)

____

____

Year Initiated (i.e. 2024)	
Applicable Jurisdiction/Special District	
Lead Agency/Organization	
Supporting Agencies/Organizations (if applicable)	
Potential Funding Source **Examples:** Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low, Medium, or High)	
Benefits (Indicate Low, Medium, or High)	
Projected Duration (If estimated duration is unknown, indicate Short Term, Long Term, or Ongoing)	
PRIORITY (High, Medium, Low)	

Please indicate if the mitigation goals below are applicable to the new mitigation action/project). Check All That Apply.

X	Place an "X" by the applicable goals, if applicable
	Goal 1: Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.
	Goal 2: Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards.
	Goal 3: Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events and potential damage from such events.
	Goal 4: Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of natural hazards.
	Goal 5: Develop, promote, and integrate mitigation action plans.
	Goal 6: Promote public understanding of and support for hazard mitigation.

Page **1** of **2**

2024 Cook County New Mitigation Action Form

This mitigation action:

The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

Instructions: Circle the best option

	Strongly Disagree (1)	Disagree (2)	Neither Agree or Disagree (3)	Agree (4)	Strongly Agree (5)
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts?	1	2	3	4	5
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).	1	2	3	4	5

Place an "X" by the hazard(s) this action/project will mitigate:

Mitigated Hazards			
X	Place an "X" by the applicable hazard		
	All Hazards		Severe Weather (Extreme Heat, Lightning. Hail, Fog, High Winds)
	Dam and Levee Failure		Severe Winter Weather (Ice Storm, Heavy Snow, Blizzards, Extreme Cold)
	Drought		Tornado
	Earthquake		Wildfire/Wildfire Smoke
	Flood (Riverine, Urban, Coastal/Shoreline)		Other

Page 2 of 2

8.1 Mitigation Strategies by County or Regional Agencies/Departments

The mitigation strategies and actions from county departments/agencies are included in **Volume 2**. Mitigation strategies that are applicable for **all participating jurisdictions** are also included in **Volume 2**. They include:

- Cook County - Unincorporated 2024 MJ-HMP Jurisdictional Annex: Mitigation Strategies and Actions
- MWRD 2024 MJ-HMP Jurisdictional Annex: Mitigation Strategies and Actions
- Countywide Mitigation Actions

Each entities' Mitigation Strategies & Actions are organized as follows:

- **New Mitigation Actions—**New actions identified during this 2024 update process.
- **Ongoing Mitigation Actions—**These ongoing actions were included in the previous update and have yet to be completed. Some of these actions have no definitive end. During the 2024 update, these "ongoing" mitigation strategies/actions were modified and/or amended, as needed, to better define the strategy/action.
- **Completed Mitigation Actions—**Completed actions since 2014. Completed actions also included a brief description of the "Resulting Reduction or Limitation of Hazard Impact(s) Achieved" in order to show the resulting benefits of implementing the mitigation initiative.

8.2 Mitigation Strategies by Community

The mitigation strategies and actions from the participating jurisdictions are included in **Volume 2**.

Each entities' Mitigation Strategies & Actions are organized as follows:

- **New Mitigation Actions—**New actions identified during this 2024 update process.
- **Ongoing Mitigation Actions—**These ongoing actions were included in the previous update and have yet to be completed. Some of these actions have no definitive end. During the 2024 update, these "ongoing" mitigation strategies/actions were modified and/or amended, as needed, to better define the strategy/action.
- **Completed Mitigation Actions—**Completed actions since 2014. Completed actions also included a brief description of the "Resulting Reduction or Limitation of Hazard Impact(s) Achieved" in order to show the resulting benefits of implementing the mitigation initiative.

8.3 NFIP-Specific Mitigation Actions and Implementation

The following mitigation strategies demonstrate Cook County and its participating jurisdictions' continued support and compliance with NFIP requirements, as appropriate. Only those actions that demonstrate specific support and compliance to the program are included. Other flood-related projects were not included in this section.

- **Countywide Action 15—**Identify and promote local, state, and federal funding sources for local flood mitigation projects.

- **Countywide Action 19**—Support planning partner education by requesting mobile training courses covering the National Flood Insurance Program and Community Rating System information during the period of this plan.

Other priorities within the county related to NFIP include: 1) Increased CRS participation throughout the county; 2) Increase in the number of flood insurance policies; 3) Increased number of CFMs throughout the county; 4) Post-flood damage estimate training for county and municipal staff; 5) Acquisition of severe repetitive loss and repetitive loss properties; 6) Higher regulatory standards including higher freeboard, cumulative substantial damage and substantial improvement threshold, and enforcing floodplain regulations in areas of known urban, typically shallow depth, flooding.

Chapter 9 Plan Integration Strategy

Plan integration is the process by which communities look critically at their existing planning framework and align efforts with the goal of building a safer, smarter community. Plan integration involves a two-way exchange of information and incorporation of ideas and concepts between the Cook County Multi-Jurisdictional Multi-Hazard Mitigation Plan and other community plans. Specifically, plan integration involves the incorporation of hazard mitigation principles and actions into community plans and community planning mechanisms.

The following demonstrates Cook County's and its participating jurisdictions' continued effort to integrate mitigation into other community plans and efforts:

- **Goal #5**: Develop, promote, and integrate mitigation action plans.
- **Objective #4**: Integrate hazard mitigation policies into land use plans in the planning area.
- In 2014, Cook County committed to the "Develop of a countywide hazards task force to create a collective approach to natural hazard mitigation through the unification of plans, actions, and data" (Countywide Action #14). This task force is now the Cook County Hazard Mitigation Steering Committee and has been tasked with ensuring the integration of mitigation strategies across all plans and actions throughout the County.
- In 2019, Cook County committed to the "Implementation of the Cook County Multi-Jurisdictional Hazard Mitigation Plan to more effectively establish a "programmatic" approach that integrates new and existing mitigation initiatives throughout the County by maximizing regional coordination and two-way information sharing of stakeholders" (Countywide Action #23). This action will ensure the County proactively enhances their information-sharing networks, meetings, and outreach efforts among key stakeholders to ensure mitigation initiatives are considered in all planning engagements. This effort will continue in 2024.

9.1 Process and Mechanism for Plan Integration

Each participating jurisdiction annex in Volume II includes a Plan Integration section. This section in each jurisdiction/special district's annex describes the process and mechanism to integrate the Cook County MJ-HMP into other planning mechanisms. This will occur during the Annual Update Process and be reflected in the Jurisdictional Annual Report each year. Specific plan integration opportunities will include:

- The goals and actions of the Hazard Mitigation Plan will be considered in the next capital improvement planning process.
- The hazards, goals, and actions of the Hazard Mitigation Plan will be considered in the next update of the Comprehensive Plan.
- The hazards, goals, and actions of the Hazard Mitigation Plan will be considered in the next update of the jurisdiction's land use plans, zoning, and subdivision codes.

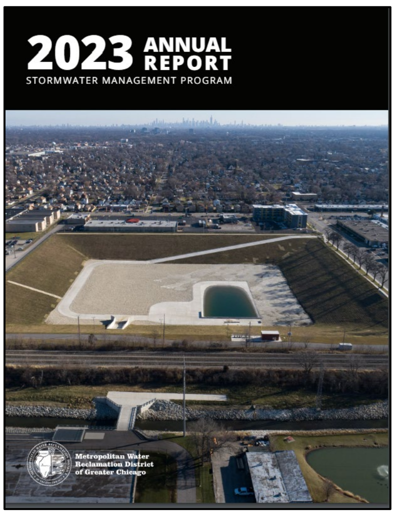
9.2 Examples of Plan Integration

9.2.1 Emergency Planning

Cook County EMRS is supporting communities to develop and update their respective Emergency Operations Plans, Continuity of Operations Plan/Continuity of Government Plan, and Recovery Plan in 2024. The Cook County MJ-HMP and the hazards in the mitigation plan have been integrated into each of the aforementioned plans, as appropriate.

9.2.2 MWRD

An example of this effort to continue integrating across all plans can be found in the most recent MWRD Stormwater Management Program: 2023 Annual Report.



COOK COUNTY HAZARD MITIGATION PLAN

The Cook County Hazard Mitigation Plan is the use of long-term and short-term policies, programs, projects, and other activities to alleviate the death, injury and property damage that can result from a disaster. Cook County, the MWRD, and a coalition of planning partners prepared the Cook County Multi-Jurisdictional Hazard Mitigation Plan in order to identify the risks posed by hazards and find ways to reduce their impacts. The plan reduces risk for those who live in, work in, and visit the County. MWRD continues to work closely with Cook County and our other planning partners to mitigate flooding through projects identified in our annual report.

A view to the west shows a flood-prone section of Willow Road along Hillcrest Lake in Prospect Heights, which becomes unpassable during heavy rain events.

9.2.3 Climate Resiliency Planning

Another example is the integration of Climate Resiliency Planning for communities in Cook County. Cook County allocated nearly $16 million in American Rescue Plan Act (ARPA) funds to support suburban municipalities in developing Climate Resiliency Plans and to fund initial implementation of those plans. On August 10, 2023, the County announced the five communities selected to participate including the Villages of Bellwood, Franklin Park, Justice, Lynwood and the City of Markham. Through this program, Cook County hopes to help communities prepare for these extreme events to prevent damage and losses, while maintaining the well-being and health of residents. Transforming infrastructure, implementing nature-based solutions and ensuring social structures are adaptable are imperative for resiliency, but the costs and time associated with planning and funding such measures can be a barrier to completion and success.

9.2.4 Climate Action Plan for the Chicago Region

The Climate Action Plan for the Chicago Region is built on a foundation of work by the Metropolitan Mayors Caucus (Caucus) to lead local and regional climate action. The strategies contained in this plan are specifically tailored for action at the municipal level. The plan spotlights six high-priority climate hazards and their potential impacts to people, assets, and resources: Heat and Health; Flooding and Homes; Flooding and Infrastructure; Flooding and Transportation; Drought and Water Supply; and Air Quality, Flooding, and Public Health. The following are excerpts from the plan to link directly with the Cook County Multi-Jurisdictional Hazard Mitigation Plan goals and objectives.


CLIMATE ACTION PLAN
FOR THE CHICAGO REGION
2021
Metropolitan Mayors Caucus | NOAA
MMC NOAA

OVERARCHING ACTIONS TO BUILD RESILIENCE

ENGAGE AND EDUCATE THE COMMUNITY:

- Inform the community about changing weather hazards and risks.
- Encourage families to prepare an emergency response plan.
- Foster community spirit to recover, adapt and "bounce forward" from disaster.
- Employ an effective early warning and response system.

INCORPORATE EQUITY AND INCLUSION:

- Collaborate to ensure residents most vulnerable to heat, air pollution and flooding are connected to emergency relief services.
- Include vulnerable populations in planning and prioritize investments to protect them.
- Assure community education messages are accessible in all languages and formats.

COLLABORATE AND BUILD CAPACITY:

- Coordinate resiliency efforts with federal, state, and regional agencies.
- Access and share timely weather data.
- Manage public and private landscapes to optimize ecosystem services and support biodiversity
- Strengthen emergency and adaptive response skills among staff, civic leaders, and allied organizations.

ADAPT OPERATIONS AND INVESTMENTS:

- Integrate climate resiliency into decision-making about capital expenditures.

ENACT PLANS AND POLICIES:

- Assess climate vulnerability and risks to local infrastructure.
- Adopt and integrate county hazard mitigation plan into local plans and policies.
- Integrate climate impacts and vulnerability into relevant plans and regulations.
- Proactively update codes to reflect evolving climate conditions.
- Incentivize or require resilient building design.
- Reduce sprawl by promoting infill development.
- Prioritize transit-oriented development and transit-supportive land uses.
- Participate in the Community Rating System and National Flood Insurance Program.
- Guide future development plans to conserve and restore open space, soil, trees, and native landscapes to preserve ecosystem services.

FLOODING AND TRANSPORTATION

Flooding limits emergency access to neighborhoods. Roads provide vitally important access for safety, essential goods, and emergency services, and many neighborhoods and businesses can become isolated during flood events.

Of course, roads are also essential for people to move from where they live to where they work and meet with others. Flooding can be both acute due to heavy precipitation or chronic due to failing infrastructure. Both issues need to be addressed to create a truly resilient community.

MITIGATION CO-BENEFITS:

Resilient transit systems reduce vehicle miles traveled.

Image credit, above: CMAP, Image credit, right: Lake County Stormwater Management Commission

ACTIONS TO BUILD RESILIENCE

INCORPORATE EQUITY AND INCLUSION:

Assure transit along routes serving vulnerable populations is accessible and operable during a flood. Include vulnerable residents in planning and prioritize investments to protect them.

COLLABORATE AND BUILD CAPACITY:

Coordinate resiliency efforts with federal, state, county, and regional planning agencies. Collaborate on emergency transportation and logistics plans to move vital resources. Monitor and share real-time roadway conditions.

ENACT PLANS AND POLICIES:

Conduct climate vulnerability assessment and risks to local transportation infrastructure. Adopt and integrate county hazard mitigation plan into local plans and policies. Promote connected and walkable neighborhoods. Prioritize transit-oriented development.

ADAPT OPERATIONS AND INVESTMENTS:

Assess and adapt vulnerable transportation infrastructure to be responsive to changing climate conditions. Integrate stormwater management into transportation projects. Respond to weather events to ensure mobility.

STORMWATER AND INFRASTRUCTURE

Floods are the most common and most costly disasters in Illinois. Heavy rainfall events are increasing in frequency and severity, pushing existing bridges and culverts beyond capacity and causing more flooding across the region. Cities and towns struggle to maintain that infrastructure, let alone replace it. Many structures are in floodplains and urban flood risk areas.

Stormwater management must be part of regional planning. Green infrastructure includes preserved habitat, open space, and wetlands, each of which buffers these problems and improves quality of life. Gray infrastructure includes basins, sewers, and other engineering solutions, such as those included in the Tunnel and Reservoir Plan (TARP).

Image credit: CMAP

ACTIONS TO BUILD RESILIENCE

ENGAGE AND EDUCATE THE COMMUNITY:
Foster community spirit to recover, adapt and "bounce forward" from disaster. Encourage residents and businesses to disconnect downspouts from sewers and adopt water efficient behaviors.

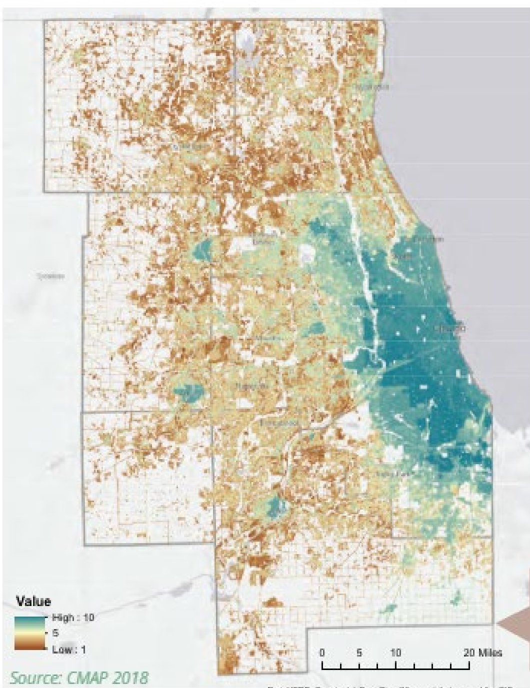
INCORPORATE EQUITY AND INCLUSION:
Include vulnerable populations in planning and prioritize investments to protect them.

COLLABORATE AND BUILD CAPACITY:
Coordinate with federal, state, and regional agencies to manage stormwater.

ENACT PLANS AND POLICIES:
Integrate climate impacts and vulnerability into relevant plans and regulations. Adopt and integrate county hazard mitigation plan into local plans and policies. Participate in the Community Rating System and National Flood Insurance Programs. Guide development to conserve land and ecosystem services. Allow developments flexibility to meet stormwater requirements.

ADAPT OPERATIONS AND INVESTMENTS
Assess and adapt stormwater systems to respond to future rainfall projections. Establish green infrastructure and include maintenance in capital improvement plans.

URBAN FLOOD SUSCEPTIBILITY INDEX 2017



Source: CMAP 2018

The Urban Flood Susceptibility Index highlights areas with attributes associated with an elevated risk of urban flooding.

4. ENACT PLANS AND POLICIES FOCUSED ON ADAPTATION AND RESILIENCE

SUSTAINABLE DEVELOPMENT GOALS ADDRESSED

3 GOOD HEALTH AND WELL-BEING; 6 CLEAN WATER AND SANITATION; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE; 10 REDUCED INEQUALITIES; 11 SUSTAINABLE CITIES AND COMMUNITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION; 13 CLIMATE ACTION; 15 LIFE ON LAND

	Strategy	*Overarching resilience*	*Heat & Health*	*Flooding & Homes*	*Stormwater & Infrastructure*	*Flooding & Transport*	*Drought & Water*	*Air Pollution & Health*	*Municipal Role*	*Solution Status*	*Cost*	*Effort Required*	*Lead Partners & Resources*	*Outcomes (Co-benefits)*
a	Adopt and integrate county hazard mitigation plan into local plans and policies.	x			x	x			ENACT	Proven	$$	Med-High	FEMA, BRIC, IEMA, ISI, counties, APA, CMAP	Assets and operations prepared; greater adaptive capacity; investments protected; safe and healthy constituents
b	Integrate climate impacts and vulnerability into relevant plans and regulations.	x			x			x	ENACT	Evolving	$$	High	APA, APWA, stormwater agencies, CMAP	
c	Proactively update codes and standards to reflect evolving climate conditions.	x	x					x	ENACT	Evolving	$$	Med	CMAP, ICC, IDNR, ISI, GLISA, stormwater agencies	
d	Incentivize or require resilient building design.	x	x	x					ENACT, ENCOURAGE	Evolving	$$	Med	APA, ISI	
e	Guide future development to conserve land and ecosystems services.	x	x	x	x				ENACT, ENCOURAGE	Proven	$$$	High	CMAP, APA	Landscapes preserved and optimized for ecosystem services; more pervious surfaces; more sustainable transportation systems; energy and resources conserved; positive health outcomes; greater adaptive capacity; planning for prioritized investment; assets protected; safe and healthy constituents
f	Promote connected, complete, and walkable neighborhoods.		x			x			ENACT, ENCOURAGE	Evolving	$$$	Med-High	CMAP, APA	
g	Prioritize transit-oriented development and transit-supportive development.	x				x			ENACT, ENCOURAGE	Evolving	$$$	High	CMAP, APA, RTA	
h	Participate in the Community Rating System and National Flood Insurance Program.	x		x	x				ENACT, LEAD	Proven	$$	Med-High	FEMA, IEMA, IDNR, CRS, NFIP, IAFSM	
i	Protect surface and groundwater from contamination.						x		ENACT, ENCOURAGE	Proven	$$$	High	IEPA, IDNR, ISWS, counties, watershed organizations	Water supply protected and conserved; safe and healthy constituents
j	Allow developments flexibility to meet stormwater requirements.				x				ENACT, ENCOURAGE	Proven	$$	Med-High	APA, counties, stormwater agencies	Landscapes conserved for ecosystem services; energy and resources conserved
k	Adopt a water conservation plan.						x		ENACT	Evolving	$$	High	CMAP, AWWA, U.S. EPA WaterSense, IISG	Water supply protected and conserved; energy for water distribution conserved, costs reduced
l	Enact and enforce outdoor watering regulations responsive to drought conditions.						x		ENACT	Proven	$	Med	CMAP, NWPA, MPC, IISG	
m	Optimize tree planting and protect existing trees for maximum shading and stormwater benefits.		x	x					LEAD, ENACT, ENCOURAGE	Proven	$$	High	USFS, IDNR, utilities, public gardens, watershed organizations, stormwater agencies, SWCD, park & forest preserve districts	Heat and flooding hazard lessened, cooling energy demand lessened; air and water quality improved

89

9.2.5 ARPA Sustainability Initiatives

Cook County received over $1 billion through the American Rescue Plan Act (ARPA). The County's robust planning process developed a responsible, comprehensive spending plan to use ARPA one-time resources to support immediate recovery from the effects of COVID-19 and long-term transformative initiatives, and to promote equitable recovery for populations that were historically disinvested or disproportionally impacted by COVID-19.

Cook County Board President Toni Preckwinkle announced over $100 million in ARPA funding to support a clean environment for all and fight climate change. These projects are found throughout the County's bureaus and departments, reflecting President Preckwinkle's commitment to Sustainable Communities as one of the six pillars of her Policy Roadmap. Examples include the Bureau of Economic Development's project to replace dangerous lead water service lines, the Department of Transportation and Highway's partnership with the Metropolitan Water Reclamation District to reduce flooding, and the Forest Preserves' acquisition of land in underserved areas.

ARPA projects that support the goals of the mitigation plan include:

Rain Ready Green Infrastructure Plan implementation for Calumet area municipalities

This project will implement green infrastructure projects already identified through a Rain Ready Plan for Blue Island, Calumet City, Calumet Park, Dolton, Riverdale and Robbins, which have a history of disinvestment and flooding. DES will partner with community leaders to put these six communities on a path towards greater resilience by improving stormwater management through green infrastructure and sustainable economic development.

Resilience hubs to better serve communities in disaster and non-disaster times.
DES and the Department of Emergency Management and Regional Security will work through a bottom-up approach with south suburban communities to create three Resilience Hubs. Resilience Hubs are existing physical facilities that provide day-to-day services to address chronic community stressors and provide support during disaster events. These hubs address building emergency functions, capacity and local power and leadership.

PART 4. PLAN MAINTENANCE STRATEGY

A hazard mitigation plan must present a plan maintenance process that includes the following (44 CFR Section 201.6(c)(4)):

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over a five-year cycle.
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate
- A discussion on how the community will continue public participation in the plan maintenance process.

This section details the formal process that will ensure that the Cook County Multi-Jurisdictional Hazard Mitigation Plan remains an active and relevant document and that the planning partners maintain their eligibility for applicable funding sources. The plan's format allows sections to be reviewed and updated when new data becomes available, resulting in a plan that will remain current and relevant.

Chapter 10 Steering Committee

The steering committee is a volunteer body that oversaw the update of the plan and made recommendations on key elements of the plan, including the maintenance strategy. The steering committee will have an active role in the plan maintenance strategy. The steering committee will remain a viable body involved in key elements of the plan maintenance strategy. The steering committee should strive to include representation from the planning partners, as well as other stakeholders in the planning area.

The steering committee will convene to perform annual reviews at a place and time to be determined. The make-up of this committee will be dynamic, allowing differing views to have a say in the implementation of the plan. EMRS will strive for diverse stakeholder representation on this committee. Current Steering Committee members, planning partners and other stakeholders involved in this planning process will be contacted and given the option to remain involved in the process.

Chapter 11 Plan Implementation

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into partner jurisdictions' existing plans, policies, and programs. Together, the action items in the plan provide a framework for activities that the partnership can implement over the next five years. The planning team and the Steering Committee have established goals and objectives and have prioritized mitigation actions that will be implemented through existing plans, policies, and programs.

Cook County Emergency Management and Regional Security (EMRS) will assume lead responsibility for **implementation** and **monitoring** of this plan maintenance strategy. Although EMRS will have primary responsibility, plan implementation and **evaluation** will be a shared responsibility among all planning partners and agencies identified as lead agencies in the mitigation action plans. Completion of this strategy is the responsibility of each planning partner. This was conveyed to each planning partner as an expectation at the beginning of the planning process.

The Steering Committee will continue to monitor, evaluate, and update the plan, specifically focusing on progress toward each action item within the Hazard Mitigation Plan (Plan). The Steering Committee will dedicate one meeting annually to discuss the report's findings, progress each community has made, issues each community has experienced, and proposed projects. The annual meeting will also give the Steering Committee the opportunity to discuss needed revisions/amendments to this Plan.

Developing an annual report and meeting annually to discuss progress keeps the Steering Committee involved in the plan maintenance process, formalizes the maintenance process, and provides a level of accountability to work toward accomplishing the action items within the MJ-HMP. EMRS and staff assigned shall be responsible for coordinating and overseeing the development of the annual report and its associated meeting. In addition, to continue to encourage community participation, annual meetings will be open to the public and a public comment period will be incorporated into each meeting.

11.1 Formal Review Process

The Plan will be reviewed on an annual basis by the Steering Committee to determine the effectiveness of programs and to reflect changes that may affect mitigation priorities. EMRS will be responsible for contacting the Steering Committee and organizing the review. The Steering Committee will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. The Steering Committee will review the goals and action items to determine their relevance to changing situations in the county as well as changes in Federal policy and to ensure they are addressing current and expected conditions. The Steering Committee will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The organizations responsible for the various action items will report on the status of the projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised or removed.

11.2 Monitoring, Evaluation, and Assessing Plan Effectiveness

To ensure the MJ-HMP continues to provide an appropriate path for risk reduction throughout the county, it is necessary to regularly evaluate and update it. EMRS and the Steering Committee will be responsible for monitoring the status of the plan and gathering appropriate parties to report the status of mitigation actions. As stated previously, the Steering Committee will convene on an annual basis to determine the progress of the identified mitigation actions. The Steering Committee will also be an active participant in the next plan update. As the MJ-HMP matures, new stakeholders, specifically those stakeholders and organizations that represent underserved populations and groups in the county, will be identified and encouraged to join the existing Steering Committee.

EMRS is responsible for contacting Steering Committee members and organizing the annual meeting. The Steering Committee's responsibilities include:

- Annually reviewing each goal to determine its relevance and appropriateness.
- Monitor and evaluate the mitigation strategies in this Plan to ensure the document reflects current hazard analyses, development trends, code changes and risk analyses and perceptions.
- Ensure the appropriate implementation of annual reports and regular maintenance of the plan.
- Create future action plans and mitigation strategies. These should be carefully assessed and prioritized using benefit-cost analysis (BCA) methodology that FEMA has developed.
- Ensure the public is invited to comment and be involved in mitigation plan updates.
- Ensure that the county complies with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR.
- Reassess the plan in light of any major hazard event. The Steering Committee will convene within 45 days of any major event to review all applicable data and to consider the risk assessment, plan goals, and action items given the impact of the hazard event.
- Review the plan in connection to other plans, projects, developments, and other significant initiatives.
- Coordinate with appropriate municipalities and authorities to incorporate regional initiatives that transcend the boundaries of the county.
- Update the plan every five years and submit for FEMA approval.
- Amend the plan whenever necessary to reflect changes in State or Federal laws and statutes required in 44 CFR.

11.3 Annual Steering Committee Planning Meetings

During each annual Steering Committee meeting, the Steering Committee will be responsible for a brief evaluation of the 2024 MJ-HMP and to review the progress on mitigation actions.

11.3.1 Plan Evaluation

To evaluate the plan, the Steering Committee should answer the following questions:

- Are the goals still relevant?

- Is the risk assessment still appropriate, or has the nature of the hazard and/or vulnerability changed over time?
- Are current resources appropriate for implementing this Plan?
- Have lead agencies participated as originally proposed?
- Has the public been adequately involved in the process? Are their comments being heard?
- Have county departments and participating jurisdictions been integrating mitigation into their planning documents?

If the answer to each of the above questions is “yes,” the plan evaluation is complete. If any questions are answered with a “no,” the identified gap must be addressed.

11.3.2 Review of Mitigation Actions

Once the plan evaluation is complete, the Steering Committee will review the status of the mitigation actions. To do so, the Steering Committee should answer the following questions:

- Have the mitigation actions been implemented as planned?
- Have outcomes been adequate?
- What problems have occurred in the implementation process?

11.3.3 Meeting Documentation

Each annual Steering Committee meeting must be documented, including the plan evaluation and review of mitigation actions.

Chapter 12 Annual Progress Report

An annual progress report will be prepared for the Cook County Multi-Jurisdiction Hazard Mitigation Plan. The purpose of the annual progress report is to enhance the opportunities for the implementation of action items and opportunities for funding. The annual progress report will include the following:

- A summary of any hazard events that occurred during the prior year and their impact on the planning area.
- A review of mitigation actions identified in the plan. Each newly identified mitigation action/strategy in the 2024 Cook County MJ-HMP includes the following table (Mitigation Action and Project Maintenance) to track annual updates and progress for each mitigation action. Lead agencies/organizations will be tasked to provide an annual status update for each action. In addition to utilizing the Annual Progress Report (Appendix E) to track the status of each of the actions, the Online Planning System, of which each planning partner has their own system, can be utilized to allow planning partners to comment and provide the status of each mitigation action. The comments tool can be used to encourage collaboration and transparency. Comments for each of the actions are visible to all administrators and users who have editing privileges for a given page. To make a comment, users click on the Comment link on the bottom of the content page and a pop-up box appears. The person uses the drop-down box to designate whether the comment is Feedback or an Observation. After entering the comment, they click the Send Comments button to submit. The comment appears after the page refreshes (if user is allowed to view comments). An email notification is sent to users who are designated to receive comment notifications.

Annual Report Status Update **Completion status legend:** **N = New I = In Progress Toward Completion O = Ongoing Indefinitely** **C = Project Completed R = Want Removed from Annex X = No Action Taken/Delayed**		
Annual Report Year	**Status:**	**Comments/Description of Progress Made**
2025		
2026		
2027		
2028		
2029		

N = **New**
Indicates a mitigation project/action that has not previously been identified in the annex/plan.

I = **In Progress Toward Completion**
Indicates a mitigation project/action that has **been initiated** and that steps have been taken toward completion.

O = **Ongoing Indefinitely**
This applies to projects that have made **progress** but do not necessarily have a definitive end (i.e. some projects, like educating the public, are always ongoing and do not have a definitive completion date).

R = **Want Removed from Annex**
Indicates a mitigation project/action that is no longer relevant and can be **removed** from the annex/plan.

X = **No Action Taken**
Indicates a mitigation project/action in which **no substantial actions** have been taken. For example, this would apply to projects that are dependent on a funding source in order to initiate.

C = **Project Completed**
Indicates a mitigation project/action that has been **completed/finished** and no additional mitigation measures are needed.

As stated above, the annual progress report will include:

- A re-evaluation of the action plans to determine if the timeline for identified projects needs to be amended (for example, changing a long-term project to a short-term project because of funding availability)
- A list of recommendations for new projects
- A summary of changes in or potential for new funding options (grant opportunities)
- A brief discussion of the impact of any other planning programs or actions within the planning partnership that involve hazard mitigation.
- A brief discussion about why targeted strategies were not completed.

EMRS will assume the responsibility of initiating the annual progress reporting process. A template to guide planning partners in preparing a progress report is included in Appendix E. The plan maintenance steering committee will provide feedback to the planning team on items included in the template. EMRS will then prepare a formal annual report on the progress of the plan. The framework for the annual report is as follows:

- The reporting period shall cover January through December of each reporting year (one calendar year).
- The timeframe for the Steering Committee review of the annual progress report will be June to August of each reporting period.
- A final annual progress report will be produced no later than October 1 of each reporting year.
- The annual progress report will be posted on the Cook County Hazard Mitigation Plan website.
- Notice of the annual progress report will be provided to the local media through a press release.
- The annual progress report will be provided to all planning partners to inform them of the actions implemented during the reporting period.
- For planning partners that participate in the Community Rating System, the report can be provided as part of the CRS annual re-certification package. The CRS requires an annual

recertification to be submitted by October 1 of every calendar year for which the community has not received a formal audit.

- For planning partners that participate in the Community Rating System, the report can be provided as part of the CRS annual re-certification package. The CRS requires an annual recertification to be submitted by October 1 of every calendar year for which the community has not received a formal audit.

Each planning partner will have discretion in how to use the annual progress report. Annual progress reporting is not a requirement specified under 44 CFR, but it may enhance the planning partnership's opportunities for funding. While failure to implement this component of the plan maintenance strategy will not jeopardize a planning partner's compliance under the DMA, it may jeopardize its opportunity to partner and leverage funding opportunities with the other planning partners. Each planning partner was informed of these protocols at the beginning of this planning process and acknowledged these expectations by submitting a letter of intent to participate in this process.

Chapter 13 Plan Update Process

Local hazard mitigation plans must be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits under the DMA (44 CFR, Section 201.6(d)(3)). The planning partnership intends to update the hazard mitigation plan on a five-year cycle from the date of initial plan adoption. This cycle may be accelerated to less than five years based on the following triggers:

- A Presidential Disaster Declaration that impacts the planning area
- A hazard event that causes loss of life
- A comprehensive update of the County or participating municipality's comprehensive plan

It will not be the intent of future updates to develop a completely new hazard mitigation plan for the planning area. The update will, at a minimum, include the following elements:

- The update process will be convened through a steering committee.
- The hazard risk assessment will be reviewed and, if necessary, updated using the best available information and technologies.
- The action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or new partnership policies identified under other planning mechanisms (such as the comprehensive plan).
- The draft update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the update prior to adoption.
- The partnership governing bodies will adopt their respective portions of the updated plan.

13.1 Five-Year Action Plan

This section outlines the implementation agenda that the Hazard Mitigation Steering Committee, led by Cook County EMRS, should follow five (5) years after adoption of this Plan, and then every five (5) years thereafter.

The Steering Committee will consider the following action plan for the five (5) year planning cycle. It should be noted that the schedule can be modified as necessary and does not include any meetings and/or activities that would be necessary following a disaster event (e.g., reconvening the Hazard Mitigation Steering Committee within 45 days of a disaster or emergency to determine what mitigation projects should be prioritized during the community recovery). If an emergency meeting of the Hazard Mitigation Steering Committee occurs, this proposed schedule may be altered to fit any new needs.

Year 0	
2024	Update the 2019 Hazard Mitigation Plan and submit it to IEMA and FEMA Region 5 for approval.
Year 1	
2025	• Work on mitigation actions. • Cook County EMRS will stay in contact with its key stakeholders and plan participants to keep track of project status. • Encourage Plan integration efforts.

	• Reconvene the Steering Committee for an annual meeting. • Discuss opportunities for Plan integration with other planning documents. • Discuss recent hazard events. • Update the status of projects. • Hosting a public meeting.
Year 2	
2026	• Work on mitigation actions. • Cook County EMRS will stay in contact with its key stakeholders and plan participants to keep track of project status. • Encourage Plan integration efforts.
	• Reconvene the Steering Committee for an annual meeting. • Discuss opportunities for Plan integration with other planning documents. • Discuss recent hazard events. • Update the status of projects. • Hosting a public meeting.
Year 3	
2027	• Work on mitigation actions. • Cook County EMRS will stay in contact with its key stakeholders and plan participants to keep track of project status. • Encourage Plan integration efforts.
	Apply for hazard mitigation grant funds (e.g., HMGP, BRIC) to update the next iteration of the Hazard Mitigation Plan.
	• Reconvene the Steering Committee for an annual meeting. • Discuss opportunities for Plan integration with other planning documents. • Discuss recent hazard events. • Update the status of projects. • Hosting a public meeting.
Year 4	
2028	• Work on mitigation actions. • Cook County EMRS will stay in contact with its key stakeholders and plan participants to keep track of project status. • Encourage Plan integration efforts.
	Update the 2024 Hazard Mitigation Plan and conduct a series of meetings with stakeholders, plan participants, and the public.

Year 5	
2029	• Update the 2024 Hazard Mitigation Plan and submit it to IEMA and FEMA Region 5 for approval. • Repeat.

Chapter 14 Continuing Public Involvement

The public will continue to be apprised of the plan's progress through the Cook County hazard mitigation website and by copies of annual progress reports provided to the media. Each planning partner has agreed to provide links to the County hazard mitigation plan website on their individual jurisdictional websites to increase avenues of public access to the plan. EMRS has agreed to maintain the hazard mitigation plan website. This site will not only house the final plan, but it will also become the one-stop shop for information regarding the plan, the partnership, and plan implementation. EMRS will make copies of the plan for the Cook County Library system.

Additionally, the Steering Committee, led by EMRS, will look for opportunities to raise community awareness about the 2024 Cook County MJ-HMP and the hazards that affect the County. This effort will include attendance and provision of materials at County and planning partner-sponsored preparedness events and social media posts (such as Facebook, X, and NextDoor). Participating jurisdictions will be encouraged annually to inform EMRS and the Steering Committee of upcoming and planned events.

The County, on behalf of all planning partners, will circulate the Community Preparedness and Hazard Mitigation Questionnaire annually every fall to engage the public and gather data about the planning area's priorities, level of resilience, hazards of concern, and what mitigation activities should be prioritized. The Community Preparedness and Hazard Mitigation Questionnaire will be circulated via regional EMRS meetings (planning partners will be asked to disseminate), shared with key community organizations, and social media. A flyer and hard copies of the questionnaire will also be available to community organizations to ensure underserved and underrepresented population groups have an opportunity to participate. The Hazard Mitigation Questionnaire will be available in multiple languages. Results will be shared to all plan participants as part of the annual reporting process to ensure all jurisdictions have an opportunity to consider public input.

EMRS, on behalf of all planning partners, will hold an annual townhall meeting to engage the public and provide them with an opportunity to inform EMRS and the Steering Committee about hazards of concern and mitigation priorities. The townhall-style meeting will be advertised via the media, invitations to community organizations, and social media. Partnerships with organizations, such as Build Up Cook, will be leveraged to ensure underserved communities are represented.

Upon initiation of future update processes, a new public involvement strategy will be initiated based on guidance from a new steering committee. This strategy will be based on the needs and capabilities of the planning partnership at the time of the update. At a minimum, this strategy will include the use of local media outlets within the planning area.

Chapter 15 Incorporation into Other Planning Mechanisms

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was prepared. The Cook County Comprehensive Plan and the comprehensive plans of the planning partners are considered to be integral parts of this plan. The County and partner municipalities, through adoption of comprehensive plans and zoning ordinances, have planned for the impact of natural hazards. The plan development process provided the County and the municipalities with the opportunity to review and expand on policies contained within these planning mechanisms. The planning partners used their comprehensive plans and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the planning area. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

All municipal planning partners are committed to creating a linkage between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation action as such and giving that action a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Partners' emergency response plans
- Capital improvement programs
- Municipal codes
- Community design guidelines
- Water-efficient landscape design guidelines
- Stormwater management programs
- Water system vulnerability assessments

Some action items do not need to be implemented through regulation. Instead, they can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

PART 5. PLAN ADOPTION

A hazard mitigation plan must document that it has been formally adopted by the governing body of the jurisdiction requesting federal approval of the plan (44 CFR Section 201.6(c)(5)). For multi-jurisdictional plans, each jurisdiction requesting approval must document that it has been formally adopted. This plan will be submitted for a pre-adoption review to the Illinois Emergency Management Agency (IEMA) and FEMA prior to adoption. Once pre-adoption approval has been provided, all planning partners will formally adopt the plan. All partners understand that DMA compliance and its benefits cannot be achieved until the plan is adopted.

After a thorough review, the Cook County Board of Commissioners adopted the plan on July 25, 2024.

Copies of the resolutions adopting this plan for all planning partners can be found in **Appendix G** of this volume.

Appendices

Appendix A Acronyms and Definitions

Acronyms

44 CFR—Title 44 of the Code of Federal Regulations

AQI—Air quality index

CCSPM—Cook County Stormwater Management Plan

CFR—Code of Federal Regulations

cfs—Cubic feet per second

CIP—Capital Improvement Plan

CMAP—Chicago Metropolitan Agency for Planning

CRS—Community Rating System

CWA—Clean Water Act

DFIRM—Digital Flood Insurance Rate Maps

DMA —Disaster Mitigation Act

DWP—Detailed watershed plan

EF—Enhanced Fujita (tornado rating scale)

EMRS— Cook County Department of Emergency Management and Regional Security

EPA—U.S. Environmental Protection Agency

EPZ—Emergency planning zone

ESA—Endangered Species Act

FEMA—Federal Emergency Management Agency

FERC—Federal Energy Regulatory Commission

FIRM—Flood Insurance Rate Map

FMA—Flood Mitigation Assistance program

GIS—Geographic Information System

HAZUS-MH—Hazards, United States-Multi Hazard

HUD—U.S. Department of Housing and Urban Development

HMGP—Hazard Mitigation Grant Program

IBC—International Building Code

IDNR—Illinois Department of Natural Resources

IEMA—Illinois Emergency Management Agency

ILCS—Illinois Compiled Statutes

IPCC—Intergovernmental Panel on Climate Change

IRC—International Residential Code

ISGS—Illinois State Geological Survey

MABAS— Mutual Aid Box Alarm System

MM—Modified Mercalli Scale

MWRD—Metropolitan Water Reclamation District of Greater Chicago

NASA—National Aeronautics and Space Administration

NCDC—National Climatic Data Center

NEHRP—National Earthquake Hazards Reduction Program

NFIP—National Flood Insurance Program

NFPA—National Fire Protection Association

NOAA—National Oceanic and Atmospheric Administration

NRC—National Research Council

NWS—National Weather Service

OTA—Congressional Office of Technology Assessment

PDM—Pre-Disaster Mitigation Grant Program

PDSI—Palmer Drought Severity Index

PGA—Peak Ground Acceleration

RHRC—Regional Hub Reception Center

RSI—Regional Snowfall Index

SFHA—Special Flood Hazard Area

SHELDUS—Spatial Hazard Events and Losses Database for the U.S.

SPI—Standardized Precipitation Index

USACE—United States Army Corps of Engineers

USGCRP—United States Global Change Research Program

USGS—U.S. Geological Survey

Definitions

100- Year Flood: The term "100-year flood" can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 percent chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency (FEMA) defines it as the 1 percent annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program (NFIP).

Acre-Foot: An acre-foot is the amount of water it takes to cover 1 acre to a depth of 1 foot. This measure is used to describe the quantity of storage in a water reservoir. An acre-foot is a unit of volume. One acre foot equals 7,758 barrels; 325,829 gallons; or 43,560 cubic feet. An average household of four will use approximately 1 acre-foot of water per year.

Asset: An asset is any man-made or natural feature that has value, including, but not limited to, people; buildings; infrastructure, such as bridges, roads, sewers, and water systems; lifelines, such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, wetlands, and landmarks.

Base Flood: The flood having a 1% chance of being equaled or exceeded in any given year, also known as the "100-year" or "1-percent-annual-chance" flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program (NFIP) are protected to the same degree against flooding.

Basin: A basin is the area within which all surface water—whether from rainfall, snowmelt, springs, or other sources—flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains, and ridges. Basins are also referred to as "watersheds" and "drainage basins."

Benefit: A benefit is a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents, and functions) and protection of human life.

Benefit/Cost Analysis: A benefit/cost analysis is a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost-effectiveness.

Building: A building is defined as a structure that is walled and roofed, principally aboveground, and permanently fixed to a site. The term includes manufactured homes on permanent foundations on which the wheels and axles carry no weight.

Capability Assessment: A capability assessment provides a description and analysis of a community's current capacity to address threats associated with hazards. The assessment includes two components: an inventory of an agency's mission, programs, and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community's actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified. The following capabilities were reviewed under this assessment:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability

Community Rating System (CRS): The CRS is a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

Critical Area: An area defined by state or local regulations as deserving special protection because of unique natural features or its value as habitat for a wide range of species of flora and fauna. A sensitive/critical area is usually subject to more restrictive development regulations.

Critical Facility: Facilities and infrastructure that are critical to the health and welfare of the population. These become especially important after any hazard event occurs. For the purposes of this plan, critical facilities include:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials;
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a hazard event.
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for disaster response before, during, and after hazard events, and
- Public and private utilities, facilities and infrastructure that are vital to maintaining or restoring normal services to areas damaged by hazard events.

- Government facilities.

Dam: Any artificial barrier or controlling mechanism that can or does impound 10 acre-feet or more of water.

Dam Failure: Dam failure refers to a partial or complete breach in a dam (or levee) that impacts its integrity. Dam failures occur for a number of reasons, such as flash flooding, inadequate spillway size, mechanical failure of valves or other equipment, freezing and thawing cycles, earthquakes, and intentional destruction.

Debris Slide: Debris slides consist of unconsolidated rock or soil that has moved rapidly down slope. They occur on slopes greater than 65 percent.

Disaster Mitigation Act of 2000 (DMA): The DMA is Public Law 106-390 and is the latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before they occur. Under the DMA, a pre-disaster hazard mitigation program and new requirements for the national post-disaster hazard mitigation grant program (HMGP) were established.

Drainage Basin: A basin is the area within which all surface water- whether from rainfall, snowmelt, springs or other sources- flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains and ridges. Drainage basins are also referred to as **watersheds** or **basins**.

Drought: Drought is a period of time without substantial rainfall or snowfall from one year to the next. Drought can also be defined as the cumulative impacts of several dry years or a deficiency of precipitation over an extended period of time, which in turn results in water shortages for some activity, group, or environmental function. A hydrological drought is caused by deficiencies in surface and subsurface water supplies. A socioeconomic drought impacts the health, well-being, and quality of life or starts to have an adverse impact on a region. Drought is a normal, recurrent feature of climate and occurs almost everywhere.

Earthquake: An earthquake is defined as a sudden slip on a fault, volcanic or magmatic activity, and sudden stress changes in the earth that result in ground shaking and radiated seismic energy. Earthquakes can last from a few seconds to over 5 minutes and have been known to occur as a series of tremors over a period of several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties may result from falling objects and debris as shocks shake, damage, or demolish buildings and other structures.

Enhanced Fujita Scale: The Enhanced Fujita Scale or EF Scale, which became operational on February 1, 2007, is used to assign a tornado a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DIs) and Degrees of Damage (DoD) which help estimate better the range of wind speeds the tornado likely produced. From that, a rating (from EF0 to EF5) is assigned.

The EF Scale was revised from the original Fujita Scale to reflect better examinations of tornado damage surveys so as to align wind speeds more closely with associated storm damage. The new scale has to do with how most structures are designed.

Exposure: Exposure is defined as the number and dollar value of assets considered to be at risk during the occurrence of a specific hazard.

Extent: The extent is the size of an area affected by a hazard.

Firewise Communities Program: A program of the National Fire Protection Association that encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of Fire Adapted Communities – a collaborative approach that connects all those who play a role in wildfire education, planning and action with comprehensive resources to help reduce risk. The program is co-sponsored by the USDA Forest Service, the US Department of the Interior, and the National Association of State Foresters.

Flash Flood: A flash flood occurs with little or no warning when water levels rise at an extremely fast rate.

Flood Insurance Rate Map (FIRM): FIRMs are the official maps on which the Federal Emergency Management Agency (FEMA) has delineated the Special Flood Hazard Area (SFHA).

Flood Insurance Study: A report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance rate Map. The study contains background data such as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

Floodplain: Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community's floodplain as the Special Flood Hazard Area (SFHA).

Floodway: Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation by more than 1 foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwater.

Floodway Fringe: Floodway fringe areas are located in the floodplain but outside of the floodway. Some development is generally allowed in these areas, with a variety of restrictions. On maps that have identified and delineated a floodway, this would be the area beyond the floodway boundary that can be subject to different regulations.

Fog: Fog refers to a cloud (or condensed water droplets) near the ground. Fog forms when air close to the ground can no longer hold all the moisture it contains. Fog occurs either when air is cooled to its dew point or the amount of moisture in the air increases. Heavy fog is particularly hazardous because it can restrict surface visibility. Severe fog incidents can close roads, cause vehicle accidents, cause airport delays, and impair the effectiveness of emergency response. Financial losses associated with transportation delays caused by fog have not been calculated in the United States but are known to be substantial.

Freeboard: Freeboard is the margin of safety added to the base flood elevation.

Frequency: For the purposes of this plan, frequency refers to how often a hazard of specific magnitude, duration, and/or extent is expected to occur on average. Statistically, a hazard with a 100-year frequency is expected to occur about once every 100 years on average and has a 1 percent chance of occurring any given year. Frequency reliability varies depending on the type of hazard considered.

Goal: A goal is a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of a hazard mitigation plan is measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

Geographic Information System (GIS): GIS is a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

Hazard: A hazard is a source of potential danger or adverse condition that could harm people and/or cause property damage.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

Hazards U.S. Multi-Hazard (HAZUS**-MH) Loss Estimation Program**: HAZUS-MH is a GIS-based program used to support the development of risk assessments as required under the DMA. The HAZUS-MH software program assesses risk in a quantitative manner to estimate damage and losses associated with natural hazards. HAZUS-MH is FEMA's nationally applicable, standardized methodology and software program and contains modules for estimating potential losses from earthquakes, floods, and wind hazards. HAZUS-MH has also been used to assess vulnerability (exposure) for other hazards.

Hydraulics: Hydraulics is the branch of science or engineering that addresses fluids (especially water) in motion in rivers or canals, works and machinery for conducting or raising water, the use of water as a prime mover, and other fluid-related areas.

Hydrology: Hydrology is the analysis of the waters of the earth. For example, a flood discharge estimate is developed by conducting a hydrologic study.

Intensity: For the purposes of this plan, intensity refers to the measure of the effects of a hazard.

Inventory: The assets identified in a study region comprise an inventory. Inventories include assets that could be lost when a disaster occurs, and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

Landspout: Tornado occurring with a parent cloud in its growth stage and with its vorticity originating in the boundary layer. The parent cloud does not contain a preexisting midlevel mesocyclone. The landspout was so named because it looks like a weak Florida Keys waterspout over land.

Lightning: Lightning is an electrical discharge resulting from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt," usually within or between clouds and the ground. A bolt of lightning instantaneously reaches temperatures approaching 50,000ºF. The rapid heating and cooling of air near lightning causes thunder. Lightning is a major threat during thunderstorms. In the United States, 75 to 100 Americans are struck and killed by lightning each year (see http://www.fema.gov/hazard/thunderstorms/thunder.shtm).

Liquefaction: Liquefaction is the complete failure of soils, occurring when soils lose shear strength and flow horizontally. It is most likely to occur in fine grain sands and silts, which behave like viscous fluids when liquefaction occurs. This situation is extremely hazardous to development on the soils that liquefy, and generally results in extreme property damage and threats to life and safety.

Local Government: Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

Magnitude: Magnitude is the measure of the strength of an earthquake and is typically measured by the Richter scale. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Mitigation: A preventive action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.

Mitigation Actions: Mitigation actions are specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

Objective: For the purposes of this plan, an objective is defined as a short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

Peak Ground Acceleration: Peak Ground Acceleration (PGA) is a measure of the highest amplitude of ground shaking that accompanies an earthquake, based on a percentage of the force of gravity.

Preparedness: Preparedness refers to actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Presidential Disaster Declaration: These declarations are typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. Generally, no specific dollar loss threshold has been established for such declarations. A Presidential Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses, and public entities.

Probability of Occurrence: The probability of occurrence is a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

Repetitive Loss Property: Any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced:

- Four or more paid flood losses in excess of $1000.00; or
- Two paid flood losses in excess of $1000.00 within any 10-year period since 1978 or
- Three or more paid losses that equal or exceed the current value of the insured property.

Return Period (or Mean Return Period): This term refers to the average period of time in years between occurrences of a particular hazard (equal to the inverse of the annual frequency of occurrence).

Riverine: Of or produced by a river. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

Risk: Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: Risk assessment is the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards and focuses on (1) hazard identification; (2) impacts of hazards on physical, social, and economic assets; (3) vulnerability identification; and (4) estimates of the cost of damage or costs that could be avoided through mitigation.

Robert T. Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107, was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

Sinkhole: A collapse depression in the ground with no visible outlet. Its drainage is subterranean. It is commonly vertical-sided or funnel-shaped.

Special Flood Hazard Area: The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems.

Stakeholder: Business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

StormReady Program: A program of the National Weather Service that helps arm America's communities with the communication and safety skills needed to save lives and property--before and during a storm event. StormReady helps community leaders and emergency managers strengthen local safety programs. StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness.

Stream Bank Erosion: Stream bank erosion is common along rivers, streams and drains where banks have been eroded, sloughed or undercut. However, it is important to remember that a stream is a dynamic and constantly changing system. It is natural for a stream to want to meander, so not all eroding banks are "bad" and in need of repair. Generally, stream bank erosion becomes a problem where development has limited the meandering nature of streams, where streams have been channelized, or where stream bank structures (like bridges, culverts, etc.) are located in places where they can actually cause damage to downstream areas. Stabilizing these areas can help protect watercourses from continued sedimentation, damage to adjacent land uses, control unwanted meander, and improvement of habitat for fish and wildlife.

Steep Slope: Different communities and agencies define it differently, depending on what it is being applied to, but generally a steep slope is a slope in which the percent slope equals or exceeds 25%. For this study, steep slopes are defined as slopes greater than 33%.

Sustainable Hazard Mitigation: This concept includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards, and mitigation must be understood in the largest possible social and economic context.

Thunderstorm: A thunderstorm is a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rains, and sometimes hail. Thunderstorms are usually short in duration (seldom more than 2 hours). Heavy rains associated with thunderstorms can lead to flash flooding during the wet or dry seasons.

Tornado: A tornado is a violently rotating column of air extending between and in contact with a cloud and the surface of the earth. Tornadoes are often (but not always) visible as funnel clouds. On a local scale, tornadoes are the most intense of all atmospheric circulations, and winds can reach destructive speeds of more than 300 mph. A tornado's vortex is typically a few hundred meters in diameter, and damage paths can be up to 1 mile wide and 50 miles long.

Vulnerability: Vulnerability describes how exposed or susceptible an asset is to damage. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damage, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. Flooding of an electric substation would affect not only the substation itself but businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Watershed: A watershed is an area that drains downgradient from areas of higher land to areas of lower land to the lowest point, a common drainage basin.

Windstorm: Windstorms are generally short-duration events involving straight-line winds or gusts exceeding 50 mph. These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in areas with significant tree stands, exposed property, poorly constructed buildings, mobile homes (manufactured housing units), major infrastructure, and aboveground utility lines. A windstorm can topple trees and power lines; cause damage to residential, commercial, critical facilities; and leave tons of debris in its wake.

Zoning Ordinance: The zoning ordinance designates allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

Appendix B Plan Process and Development

This section details plan participation validation for local jurisdictions. In accordance with best practices as outlined in CPG 101, Cook County EMRS and its partners embraced the whole community approach throughout the 2024 MJ-HMP Update process, involving civic leaders, community representatives and organizations, and the general public. Understanding that critical infrastructure and key resources (CIKR), as well as public opinion and hazard likeliness, can dramatically change in a five-year period, the EMRS and its partners leveraged in-person, on-site outreach opportunities to educate stakeholders and collect and validate the information. To support the 2024 MJ-HMP Update process, the following were facilitated for jurisdiction leaders and Point of Contacts (POC):

- Local Government Meetings
- Webinars
- Hazard Mitigation Planning Workshops

Further information about plan participation validation is included below.

2020 HMP Annual Report and Update

The annual update for 2020 was not required for any municipality due to COVID-19.

2021 HMP Annual Report and Update

Annual updates were conducted to maintain up-to-date data and vital information for participating jurisdiction, increase the number of participating jurisdictions in the overall HMP and increase Cook County's resilience. Regardless of previous participation in the 2019 HMP, **all** municipalities opted to participate in the 2021 HMP Annual Report and Update.

2022 HMP Annual Report and Update

During the 2022 HMP Annual Report and Update, a few jurisdictions did not complete the process. The following jurisdictions in the southern region of the County did not submit a 2022 annual report:

1. Dolton
2. Lynwood

2023 HMP Annual Report and Update

All municipalities participated in the 2023 HMP Annual Report and Update. This was partly due to aligning the annual report with the 2024 MJ-HMP plan update.

2024 Letter of Intent

A Letter of Intent (LOI) is a legally binding agreement that outlines and confirms a jurisdiction's participation in the 2024 MJ-HMP Update with the County. For 2024, 121 were received by Cook County EMRS. In the case of bordering jurisdictions, EMRS personnel and their partners formally reached out to each of the bordering jurisdictions' POC. Out of the fourteen (14) border jurisdictions, two (2) (Buffalo Grove, Elgin) joined the 2024 MJ-HMP Update.

Cook County Hazard Mitigation Webinar Series

Description

The webinar provides an overview of the steps involved in mitigation planning and the actions required by a jurisdiction to meet the planning requirements.

Webinar 1:

- **Date:** 04/10/2024
- **Scheduled Time:** 14:00 – 15:30 Hours CDT
- **Registrants:33**
- **Actual Time:** 1 Hour 35 Minutes
- **Attendees:** 35

Webinar 2:

- **Date:** 04/12/2024
- **Time:** 0900 - 1030 Hours CDT
- **Registrants:** 44
- **Actual Time:** 1 Hour 36 Minutes
- **Attendees:** 38

Webinar 3:

- **Date:** 04/15/2024
- **Time:** 0900 - 1030 Hours CDT
- **Registrants:** 39
- **Actual Time:** 1 Hour 35 Minutes
- **Attendees:** 38

Webinar 4:

- **Date:** 04/15/2024
- **Time:** 1800-1930 Hours CDT
- **Registrants:** 13
- **Actual Time:** 1 Hours 35 Minutes
- **Attendees:** 10

Webinar 5:

- **Date:** 04/16/2024
- **Time:** 0900 - 1030 Hours CDT

- **Registrants:** 43
- **Actual Time:** 1 Hour 36 Minutes
- **Attendees:** 33

Webinar 6:

- **Date:** 04/17/2024
- **Time:** 0900 - 1030 Hours CDT
- **Registrants:** 67
- **Actual Time:** 1 Hour 36 Minutes
- **Attendees:** 59

Webinar 7:

- **Date:** 04/25/2024
- **Time:** 0900 - 1030 Hours CDT
- **Actual Time:** 1 Hour 36 Minutes
- **Attendees:** 37

Webinar Series Statistics:

- **Days:** 6
  Number of Webinars: 7
- **Registrants:** 206
- **Attendees:** 215

Webinar Participation List

Name	Municipality / Organization	Title
David Roberts	Arlington Heights / Arlington Heights Fire Department	Division Chief
Michael Pagones	Arlington Heights / Village of Arlington Heights	Village Engineer
Mike Casper	Barrington / Barrington Fire Department	Fire Chief / EM Coordinator
John Christian	Barrington / Village of Barrington	Assistant Director of Public Works
Thomas Hansen	Bedford Park / Bedford Park PD	Chief of Police
Pete Lettiere	Bedford Park / Bedford Park Police Department	Deputy Police Chief
Timothy Wheeler	Bellwood / Bellwood Homeland Security	Lieutenant
Michael Sabel	Bellwood / DHS	Chief
Scott Waszak	Berwyn / Berwyn Fire Dept	Division Chief
Michael Schroeder	Blue Island / City of Blue Island	Assistant Public Works Director
Mark Kraft	Bridgeview / Bridgeview EMA	Director

Name	Municipality / Organization	Title
Derek Bryan	Broadview / Broadview Fire Department	Fire Chief
Vincent Smith	Brookfield / Village of Brookfield	Director of Public Works
Cari Sheehan	Brookfield / Village of Brookfield	Administrative Assistant
Kate Portillo	Brookfield / Village of Brookfield	Village Planner
Vincent Smith	Brookfield / Village of Brookfield	Public Works Director
Andrea Larson	Buffalo Grove / Public Works Department	Civil Engineer
Martin Kreil	Burbank / Burbank Fire Department	Fire Chief
Steven Powers	Burnham / Village of Burnham	Administrative Assistant
Pete Bendinelli	Calumet City / Calumet City Fire Department	Deputy Fire Chief
Jonathan Shaw	Calumet Park / Village of Calumet Park	Grants and Community Development Coordinator
David Olsen	CCEMRS	Regional Coordinator
Wendell Thomas	Chicago Heights / Chicago Heights Fire Department	Assistant Fire Chief / EMA Coordinator
Andrew Smith	Chicago Heights / City of Chicago Heights	City Engineer
Karen Zerante	Chicago Heights / City of Chicago Heights	Chief of Staff
Kevin Schoenhofen	Chicago Ridge / Chicago Ridge EM	Commander / Director
TJ Santoro	Cicero / Cicero Fire Department	Assistant Chief
Matt Doughtie	City of Chicago / Chicago OEMC	Manager of EM Services
Afif Marouf	City of Chicago / Chicago OEMC	Senior Emergency Management Coordinator
Kyra Woods	City of Chicago / Dept. of Environment	Project Manager
Anne Wright	City of Chicago / MWRD	Public Affairs Specialist
Kim Nowicki	Cook County EMRS	Regional Planner
Griffin Byers	Cook County EMRS	Chief
John Daniel	Cook County EMRS	Regional Coordinator
Jerry Townsend	Country Club Hills / City of Country Club Hills	Project Manager
Michelle Hullinger	Country Club Hills / Country Club Hills Fire Department	Fire Chief
Gail Paul	Countryside / City of Countryside	City Administrator
Kevin Wagner	Countryside / City of Countryside	Building Commissioner
Dave Schutter	Countryside / City of Countryside	Assistant City Administrator, Finance Director
Jesus Serna	Countryside / City of Countryside	Public Works Superintendent
Richard Trent	Countryside / City of Countryside	Planning Manager
Paul Klimek	Countryside / Countryside Police Department	Chief of Police
Jim Stern	Countryside / Countryside Police Department	Assistant Chief

Name	Municipality / Organization	Title
John Fitzgerald	Countryside and North Riverside / Novotny Engineering	Municipal Engineer
Kevin McAuliffe	Crestwood / Crestwood Fire Department	Asst. Fire Chief
Patrick Tennant	Des Plaines / Des Plaines EMA	Emergency Management Team Member
Lionel Smith	Dixmoor / Dixmoor Police Department	Chief of Police
Judnita Smith	Dixmoor / Village of Dixmoor	Trustee
Patricia Lazuka	East Hazel Crest / Village of East Hazel Crest	Village Administrator
Amanda Olsen	Elgin / City of Elgin	Engineer I
Ronald Rudd	Elgin / City of Elgin	City Engineer
Michael Oine	Elgin / City of Elgin Fire Department	Division Chief
Logan Gilbertsen	Elgin / HR Green	Regional Manager - IL Water Resources
Clint Cunz	Elk Grove Village / Elk Grove Village Fire Department	Battalion Chief
Kim Parrilli	Elmwood Park / Village of Elmwood	Assistant Village Manager
Edgar Cano	Evanston / City of Evanston	Public Works Director
Kimberly Krull	Evanston / City of Evanston Fire Department	Division Chief of Emergency Management / Logistics / PIO
Bob Murphy III	Evergreen Park / Evergreen Park Fire Department	Division Chief
Corey Hojek	Evergreen Park / Evergreen Park Fire Department	Assistant Chief
Ronald Kleinhaus	Evergreen Park / Village of Evergreen Park	Fire Chief
Tim Filkins	Flossmoor / Flossmoor Police Department	Police Commander
John Brunke	Flossmoor / Village of Flossmoor	Public Works Director
Matt Humes	Flossmoor/Tinley Park / MGP	GIS Analyst
Mark Maylath	Forest Park / Forest Park Fire Dept.	Deputy Fire Chief
Dora Murphy	Forest Park / Police Department	Assistant to the Chief of Police
Lindsey Hankus	Forest Park/ Forest Park Fire Department	Fire Lieutenant
Bianel Zarate	Forest View / Forest View Police Department	Chief
Ben Smith	Frankfort / Robinson Engineering	Senior Project Manager
Mark Steward	Franklin Park / Village of Franklin Park	Fire Chief
Sammy Hanzel	Glencoe / Village of Glencoe	Communications Manager
Benjamin Wiberg	Glencoe / Village of Glencoe	Assistant Village Manager
Monica Sarna	Glencoe / Village of Glencoe	Public Works Director
Mike Rutkowski	Glenview / Glenview Fire Department	Deputy Chief

Name	Municipality / Organization	Title
Jeff Brady	Glenview / Village of Glenview	Director of Community Development
Derek Peddycord	Glenwood / Village of Glenwood	Chief of Police
Dennis McEnerney	Golf / Golf Police Department	Chief of Police
Eric Fors	Hanover Park / Hanover Park Fire Department	Fire Chief/Emergency Management Coordinator
Thomas " TJ" Moore	Hanover Park / Village of Hanover Park	Director of Public Works
Howard Fisher	Harvey / Harvey Fire Department	Deputy Fire Chief
Rick Seput	Harvey / Harvey Public Works	Superintendent
George Assimakopoulos	Harwood Heights / Village of Harwood Heights	Project Director
Jim Shields	Hazel Crest / Hazel Crest Fire Department	Deputy Fire Chief
Susan Lehr	Hickory Hills / City of Hickory Hills	Director of Public Works
Ken Carling	Hillside / Hillside Fire Department	Fire Chief
Laith Ibrahim	Hillside / Hillside Police Dept.	Deputy Chief of Police
Dan Murphy	Hillside / Hillside Police Dept.	Chief of Police
Paul Smith	Hillside / Village of Hillside	Director of Public Works
Joe Pisano	Hillside / Village of Hillside	Village Administrator
Ken Tucker	Hodgkins / Village of Hodgkins Public Works	Deputy Superintendent of Public Works
Sarah Marcucci	Hoffman Estates / Village of Hanover Park	Emergency Management Coordinator
Mark Trlak	Hometown / City of Hometown	Director of Public Works
Mary Jo Hacker	Hometown / City of Hometown	City Clerk / Collector
Robert Grabowski	Homewood / Homewood Fire Department	Fire Chief
Gavin Morgan	Indian Head Park / Village of Indian Head Park	Village Administrator
Kyle Ingebrigtsen	Inverness / Inverness Police Department	Chief
Sam Trakas	Inverness / Village of Inverness	Village Administrator
Matthew Zarebczan	Justice / Village of Justice	Director of Economic Development
Oscar Padilla	Kenilworth / Kenilworth Police Department	Sergeant
Dan Reda	La Grange / La Grange Fire Department	Fire Chief
Karl Argast	La Grange Highlands / Pleasantview Fire	Fire Chief
Tim Donatucci	La Grange Highlands / Pleasantview Fire	Deputy Fire Chief
Dean Maggos	La Grange Park / La Grange Fire Department	Director of Fire and Emergency Management (Fire Chief)

Name	Municipality / Organization	Title
Chad Kooyenga	Lansing / Lansing Fire Department	Fire Chief
Scott Bailey	Lansing / Lansing Police Department	Deputy Chief
Thomas Ballard	Lemont / Lemont EMA	Director
Barry Liss	Lincolnwood / Village of Lincolnwood	Fire Chief
Samuel Garcia	Lynwood / Village of Lynwood	Director of Public Works
Lily Dillon	Lyons / Village of Lyons	Finance
Gordon Hardin	Matteson / Village of Matteson Public Works	Superintendent of Public Works
Kendall Silas	Maywood / Maywood homeland security and emergency mgmt	Chief
Elijah Willis	Maywood / Maywood Police Department	Chief
LaSondra Banks	Maywood / Village of Maywood	Director of Community Engagement
Greg Buchanan	Maywood / Village of Maywood	Director of Public Works
Walter Duncan	Maywood / Village of Maywood	Building and Code Director
Marvin Savage	Maywood / Village of Maywood	IT Director
Frank Torres	Maywood / Village of Maywood	Assistant Village Manager
Rachel Huedepohl	McCook / Police Department	Police Lieutenant
George Stevenson	Melrose Park / Melrose Park Departments of Homeland Security ~ Public Safety	Staff Major
Phil Schwartz	Melrose Park / Melrose Park Departments of Homeland Security ~ Public Safety	Chief
Bill Kovats	Merrionette Park / Merrionette Park Fire Dept.	Fire Chief
David Krell	Midlothian / Midlothian EMA	Director
Tye Swanson	Midlothian / Midlothian Public Works	Asst. Superintendent
Ralph Ensign	Morton Grove / Morton Grove Fire Department	Fire Chief
Mitchell Winkelmann	Mount Prospect / Mount Prospect Fire Department	Emergency Management Assistant
Charles Lindelof	Mount Prospect / Village of Mount Prospect	Project Engineer
Matthew Lawrie	Mount Prospect / Village of Mount Prospect	Village Engineer
Martin Feld	Niles / Niles Fire Department	Fire Chief
Robert Greiner	Niles / Niles Fire Department	Deputy Fire Chief
Martin Feld	Niles / Niles Fire Department	Battalion Chief
Joe Spain	Norridge / Village of Norridge Public Works	Superintendent of Public Works
Bob McDermott	North Riverside / North Riverside Fire Department	Fire Chief

Name	Municipality / Organization	Title
Vince Ranieri	North Riverside / Village of North Riverside	Director of Public Works
Kelly Hamill	Northbrook / Village of Northbrook	Director of Public Works
Matt Morrison	Northbrook / Village of Northbrook	Deputy Public Works Director
David Schweihs	Northbrook / Village of Northbrook Fire Department	Fire Chief
Thomas Burke	Northfield / Northfield Fire-Rescue Department	Asst. Fire Chief
Anthony Faciano	Northlake / City of Northlake	Superintendent of Public works
Jeffrey Sherwin	Northlake / City of Northlake	Mayor
Ken Beres	Northlake / Northlake PD	Chief of Police
Joe Pilch	Oak Forest / Oak Forest EMA	Director
Katie Meck	Oak Lawn / Village of Oak Lawn	Assistant to the Public Works Director
Coleen Barkmeier	Oak Lawn / Village of Oak Lawn	Grants Administrator
Erin Duffy	Oak Park / Village of Oak Park	Deputy Public Works Director
JT Terry	Oak Park / Village of Oak Park	Deputy Fire Chief of EMS Operations
Lee Christenson	Oak Park / Village of Oak Park	Emergency Preparedness and Response Coordinator
Rob Sproule	Oak Park / Village of Oak Park	Public Works Director
Anna Stawski	Olympia Fields / Baxter & Woodman, Inc	Senior Infrastructure Engineer
Alex Strack	Olympia Fields / Baxter & Woodman, Inc.	Project Engineer / Water resources engineer
Jesus Vargas	Olympia Fields / Olympia Fields Park District	Executive Director
Art Jones	Olympia Fields / Public Works	Acting Director
Reginald Ford	Olympia Fields / Village of Olympia Fields	Code Enforcement Officer
Kelvin Oliver	Olympia Fields / Village of Olympia Fields	Village Trustee / Public Safety
Drella Savage	Olympia Fields / Village of Olympia Fields	Village Administrator / Chief of Staff
Jennifer Beasley	Olympia Fields / Village of Olympia Fields	Trustee
Jessica Washington	Olympia Fields / Village of Olympia Fields	Deputy Village Clerk / Executive Assistant
John McDonnell	Olympia Fields / Village of Olympia Fields	Building Commissioner
Kenneth Smith	Olympia Fields / Village of Olympia Fields	Trustee
Michael Hoffman	Olympia Fields / Village of Olympia Fields	Village Planner

Name	Municipality / Organization	Title
Sandra Finley	Olympia Fields / Village of Olympia Fields	Trustee
Brian Fei	Orland Park / Village of Orland Park	Assistant Public Works Director
Joel Van Essen	Orland Park / Village of Orland Park Public Works	Public Works Director
Sarah McKillop	Palatine / Village of Palatine	EMA Coordinator
Adam Jasinski	Palos Heights / City of Palos Heights	Director of Public Works
Nicholas Oeffling	Palos Hills / City of Palos Hills	Commissioner of Public Works
Jeff Cucio	Palos Hills / Palos Hills Police Department	Chief of Police
Fernando Flores	Palos Park / Palos Park Police Department	Emergency Management Coordinator
Roderick Ysaguirre	Park Forest / Village of Park Forest	Director of Public Works
Paul Lisowski	Park Ridge / Park Ridge Fire Department	Executive Officer
Paul Lisowski	Park Ridge Fire Department	Executive Officer
Antonio Cooper	Phoenix / Village of Phoenix	Village Administrator
Kristopher Marroquin	Posen / Village of Posen	Public Works Superintendent
Kevin Szewcyk	Posen / Village of Posen Fire Department	Fire Chief
Daniel Peterson	Prospect Heights / City of Prospect Heights	Director of Building and Development
Mark Roscoe	Prospect Heights / City of Prospect Heights	Director of Public Works
Michael Wegrzyn	Richton Park / Village of Richton Park	Director of Public Works
Dave Bochenek	River Forest / River Forest Fire Department	Deputy Chief
Thomas Gaetner	River Forest / River Forest Fire Department	Fire Chief
Dave Bochenek	River Forest / River Forest Fire Department	Deputy Fire Chief
Tom Gaertner	River Forest / River Forest Fire Department	Fire Chief
Sean Flynn	River Grove / River Grove Fire Department	Fire Chief
John Brennan	Riverdale / Riverdale Fire Department	Deputy Fire Chief
Ethan Sowl	Riverside / Village of Riverside	Special Assistant to Administration and Finance
Jessica Frances	Riverside / Village of Riverside	Village Manager
Larry Hall	Robbins /Robbins Police Department	Deputy Chief of Police
Corey Baker	Robbins / Robbins Building Department	Code Enforcement Officer
Chris Bollinger	Robbins / Robbins Fire Department	Deputy Fire Chief

Name	Municipality / Organization	Title
Nic Malley Sr.	Robbins / Robbins Fire Department	Fire Chief
Emani Hollingsworth	Robbins / Village of Robbins	Water Superintendent
Gerald Stewart	Robbins / Village of Robbins	Building Department Director
Telicia Shelton	Robbins / Village of Robbins	Human Resources Director
Ryan Rivard	Rolling Meadows / City of Rolling Meadows	Utilities Supervisor
Jonathan Mishory	Rolling Meadows / City of Rolling Meadows	Management Analyst
Benjamin Dwyer	Rolling Meadows / Rolling Meadows Fire Dept. / EMA	Battalion Chief / Emergency Management Coordinator
Joe Balogh	Rosemont / Rosemont Public Safety Department	Sergeant
Stephen Barrett	Sauk Village / Sauk Village Fire Department	Fire Chief
Renee Lewis	Sauk Village / Village of Sauk Village	Director of Finance
Tracy Raimondo	Schaumburg / Village of Schaumburg	Emergency Manager
Jeffrey Leiser	Schiller Park / Schiller Park Fire Department	Lieutenant
Paul Ryan	Skokie / Engineering Dept.	Civil Engineer
Jeff Hoeflich	Skokie / Skokie Fire Department	Fire Chief
Rolando Ithier	Skokie / Skokie Fire Department	Management Analyst
Rachel Blut	Skokie / Skokie Health and Human Services	Emergency Preparedness Coordinator / Public Health Nurse
Angelique Schnur	Skokie / Village of Skokie	Building and Inspection Services Manager
Robert Palmer	South Barrington / Village of South Barrington	Administrator
Daniel Walenda	South Barrington / Village of South Barrington	Operations Associate / Evidence Custodian
Clint Wagner	South Chicago Heights / South Chicago Heights Police Dept.	Police Chief
Brian Kolosh	South Holland / Village of South Holland Fire Department	Fire Chief
Brian Kolosh	South Holland / Village of South Holland Fire Department	Fire Chief
Jason Stevenson	Steger / Steger Emergency Management	Chief
Jeffrey Boyajian	Stickney / Village of Stickney	Fire Chief
Christopher Pavini	Stone Park / Stone Park Police Department	Chief of Police
Christine Villanueva	Stone Park / Stone Park Police Department	Administrative Assistant
Michael Meyer	Streamwood / Streamwood Fire Department	Fire Chief

Name	Municipality / Organization	Title
Tom Sammons	Streamwood / Streamwood Fire Department	Fire Fighter
Joe Markowski	Streamwood / Streamwood Fire Department	Deputy Fire Chief
Stephanie Cole	Summit / Summit Fire Department	EMS Coordinator / Fire Inspector
Art Schweitzer	Thornton / Village of Thornton	Fire Chief
Lisa Kortum	Tinley Park / Tinley Park Emergency Management /911 Communications	Director EMA / 911
Emma Kraus	Village of Glencoe / Public Safety	Administrative Services Coordinator
Michael Mavrogeorge	Westchester / Westchester Fire Department	Fire Chief
Matthew Supert	Western Springs / Village of Western Springs	Director of Municipal Services
Ileen Bryer	Wheeling / Village of Wheeling	Executive Officer
Scott Salela	Wheeling / Wheeling Fire Department	Fire Chief
Michael Spolar	Willow Springs / Robinson Engineering	Senior Engineer
Melissa Neddermeyer	Willow Springs / Village of Willow Springs	Village President
James Bernahl	Winnetka / Village of Winnetka	Director of Engineering / Village Engineer
Obaid Khalid	Winnetka / Village of Winnetka	Assistant Village Engineer
Stephanie Wells	Winnetka / Winnetka Fire Department	Public Safety Analyst
John Ripka	Winnetka / Winnetka Fire Department	Fire Chief
Ed Urban	Worth / Village of Worth	Superintendent

Community Stakeholder Webinars

Community organizations were invited to participate in the Community Stakeholder Webinar series, which also contributed to the public engagement efforts. This webinar was for key community stakeholders to participate in the planning process of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan.

Organization given an opportunity to advise on the complexities of natural hazards and their impacts in Cook County and to identify possible mitigation projects needed to address these concerns.

- Wednesday, May 22, 2024, | 1 p.m. to 2:30 p.m.
- Friday, May 24, 2024, | 9 a.m. to 10:30 a.m.

74 individuals representing various community organizations attended the two webinars. Efforts were made to ensure organizations representing underserved/underrepresented groups, academia, private sector, and major nonprofits were invited to attend. In all 121 registered for the webinars.

Name	Municipality / Organization	Title
Mitzi Almaraz	SGA Youth and Family Services	Lead Case Manager
Ariadnie Alvarez	ICNA Relief	
Beata Arceo	Chicago Public Schools, District 299	International Students Services Director
Jose Balboa	Illinois Venezuelan Alliance	President
Joseph Butkovich	Society of St. Vincent de Paul, NE IL COAD	Chair, Vice Chair
Karem Daw Arias	IVA	Secretary
Roger Dart	Illinois Conference, United Church of Christ Disaster Ministry	Conference Disaster Response Coordinator
Leon Denton		Social Services Director
Dale Evans	New Generation Harvest Church	Senior Pastor
Johannes Favi	Illinois Community for Displaced Immigrants	Deputy Director
Annie Franco	Spanish Community Center	Case Manager
Daniel Gomez	Rincon Family Services	Program Manager
Noemy Guzman	Spanish Community Center	Case Manager
Scott Hagedorn	United Church of Christ Disaster Ministry	Volunteer
Erica Jackson	Rush University Medical Center	Community Health Worker
Lori Katich	Cook County Department of Public Health	Assistant Director, Emergency Preparedness and Response Unit
Lydia A Krupinski	The Anti-Cruelty Society	Anti-Cruelty Society
Elizabeth Lockhart	4941 Chicago Ave	Executive Director
Cynthia Love		
Alka Lyall	Broadway UMC	pastor
Connie Marquez	New Life Centers	Director of Warehouse Inventory
Karina Marquez	Xilin Association	CASE MANAGER
Joy McCann	Project Loose Change Nonprofit Organization	president of the board

Name	Municipality / Organization	Title
Nicole Meeuwse Tienou	Catholic Charities of the Archdiocese of Chicago	Director, Community Impact
Isis Millward	CPS	Social Worker
Jane Norton	Rincon Family Services	
Kim Nowicki	Cook County EMRS	Regional Planner
Stella Okere-Amadi	United African Organization (UAO)	Family Support Services Coordinator
Mariana Perdomo	LRII	BILINGUAL CASE MANAGER
Connie Polke	Collaborative Healthcare Urgency Group	CEO
Nellie Quintana	Pilsen Via Crucis: Living Way of the Cross	
Blanca Rivas	Latino Resource Institute of Illinois	case manager
Alisa Rodriguez	THE SALVATION ARMY	Director
Jacqueline Reed	Westside Long Term Recovery Group	Chairman
Loida Rosario	Rincon Family Services ERC	FACILITIES DIRECTOR
Brenda SCC	Spanish Community Center	Case Manager
Dr Nicole Scott	American Association of Single Parents, Inc.	Chief Executive Officer
Michael Specht	Chicago Police Department	Police Officer
Ali Tarokh	Trellus	
Emlyn Thomas	Operation BBQ Relief	Area Coordinator-Illinois
William Townsell	Chicago Police Department	Assistant Director
Andrew Wang	Lawndale Christian Health Center	
Audrey Woodley	Changing Oasis Inc	Executive Director
Kurrin Beamon		

5/24/2024

Name	Municipality / Organization	Title
Delia Barahas		Volunteer
Karen Bowen		
Lori Burns	Chesterfield Community Council	Board Member

Denise Cunill	CCH	Associate Medical Director of Ambulatory Pediatrics
Kenneth Esters	Victory Outreach Southeast Chicago Church	Pastor
Marc Fainman	Northbrook Police	Deputy Chief
Alicia Feistamel	WestCare Foundation	Project Director of Workforce Support
Laura Garcia	Carole Robertson Center for Learning	
Maya Hardy	United Way of Metra Chicago	Regional Director of Development, South-Southwest Suburbs
Ashley Hatcher	City of Chicago-Department of Aviation	Emergency Management Coordinator
Chelsey Jennings	IEMA - OHS	Individual and Community Assistance Manager
Marisol Jimenez	Erie Family Health Centers	Sr. Operations Director Facilities and Emergency Preparedness
Valishia Johnson	R'Lara Property Ventures LLC	President
Gillian Knight	Healthy Communities Foundation - Private Funder	
Deana Liss	Elderwerks	Executive Director
Barbara Maloof	Church of Jesus Christ Latter Day Saints in Hyde Park	Director of Community Outreach
Katherine Martin	Casa Central Social Services	Safety and Risk Management Coordinator
Kim Nowicki	Cook County EMRS	Regional Planner
Julius Ntow	Christ Temple Apostolic Church	Security Director
Elida Ortiz	Cicero Community Collaborative	Director
Carmen Ramirez	Central States Services	CHW
Matthew Raymond	IEMA	Volunteer Services Coordinator
Gustavo Rodriguez Sotero	Instituto Del Progreso Latino	Financial Coach
Princess Shaw	Light UP Lawndale	
Gina Strafford-Ahmed	DuPage County Department of Community Services	Administrator of Intake and Referral
Barb Sullivan Thurlby	Catholic Charities, Diocese of Joliet	Division Director of Community Services
Bryan Thomas	Chicago Department of Aviation	Emergency Management Coordinator
Darnell Thomas	CDA	Manager of Emergency Management Services
Marilu Villa	Casa Central	Director of Operations
Chris White	ASE Chicago	Organizing Director

Regional Hazard Mitigation Planning Workshops

A series of Regional Hazard Mitigation Planning Workshop Meetings were facilitated throughout the County, engaging key stakeholders throughout the North, South, and Central Regions, as well as the City of Chicago. The objective of these workshops was straightforward: educate stakeholders about mitigation and the mitigation process, collect and verify jurisdiction-specific information, and collect contact information for POCs for further outreach and follow-up activities. The following provides information and pictures documenting each of these workshops. In addition to these meetings, it is important to note that another component of the public involvement strategy included Hazard

Mitigation Planning Webinars--an important engagement and educational tool referenced earlier in the plan.

South Region Hazard Mitigation Planning Workshop

April 29, 2024; 9am-12pm

Calumet City Public Safety Training Center
24 State Street
Calumet City, IL

City of Chicago Region Hazard Mitigation Planning Workshop

May 1, 2024; 9am-10:30am

OEMC
1411 W. Madison St. Room 154
Chicago, IL

North Region Hazard Mitigation Planning Workshop

May 2, 2024; 9am-12pm

MABAS 233 West Hintz Road
Wheeling, IL

Central Region Hazard Mitigation Planning Workshop

May 3, 2019; 9am-12pm

Maywood Village Recreation/Temple Building
200 South 5th Avenue
Maywood, IL

Make Up Hazard Mitigation Planning Workshop

May 17, 2024; 9am-12pm

Cook County EMRS Emergency Operations Center
15900 S. Cicero Avenue
Oak Forest, IL

Workshop Participation List

Name	Municipality / Organization	Title
Chuck Geraci	Alsip / Department of Emergency Preparedness	DEP Director
David Roberts	Arlington Heights / Arlington Heights Fire Department	Division Chief
Mike Pagones	Arlington Heights / Public Works and Engineering Department	Village Engineer
John Christian	Barrington / Barrington Fire Department	Fire Chief / Emergency Management Coordinator
Pete Lettiere	Bedford Park / Bedford Park PD	Deputy Police Chief
Tom Hansen	Bedford Park / Bedford Park Pd	Chief of Police
Edwin Stoelinga	Bellwood / Hancock Engineering	Consultant Village Engineer
Tonita LeShore	Bellwood / Village of Bellwood	Director of Human Resources
Aric Swaney	Bellwood / Village of Bellwood	Assistant Director of Economic Development
Michael Sabel	Bellwood / Village of Bellwood	Chief OHS

Name	Municipality / Organization	Title
Timothy Larem	Berkeley / Village of Berkely Public Safety	Public Safety Director
Dan Bresnahan	Berkeley / Village of Berkely Public Safety	Deputy Chief of Police
Scott Waszak	Berwyn / Berwyn Fire Department	Division Chief
Michael Schroeder	Blue Island / City of Blue Island	Supervisor of Public Works
Travis Parry	Blue Island / City of Blue Island	City Engineer
Matthew Martin	Broadview / Broadview Fire Department	Deputy Fire Chief
Spanish Bush	Broadview / Public Works Department	Foreman
Jeff Glen	Broadview / Public Works Department	Foreman
Aaron Hannah	Broadview / Village of Broadview	Building Inspector/Code Enforcement Officer
Tom Hood	Broadview / Village of Broadview	Finance Director
Jim Adams	Brookfield / Brookfield Fire Department	Fire Chief
Kate Portillo	Brookfield / Village of Brookfield	Village Planner
Vincent Smith	Brookfield / Village of Brookfield	Director of Public Works
Jordan Isenberg	Brookfield / Village of Brookfield Building Department	Building Inspector
Andrea Larson	Buffalo Grove / Village of Buffalo Grove Public Works / Engineering	Civil Engineer
Martin Kreil	Burbank / Burbank Fire Department	Fire Chief
Steven Powers	Burnham / Village of Burnham	Administrative Assistant
Glenn Bachert	Calumet City / Calumet City FD	Fire Chief
Kenny Jones	Calumet City / city of Calumet City	Director
Antonio Magana	Calumet City / City of Calumet City	ESDA Official
Dominick Argumedo	Calumet City / Farnsworth Group	Senior Planner

Name	Municipality / Organization	Title
Wendell Thomas	Chicago Heights / Chicago Heights Fire Department	Assistant Fire Chief / EMA Coordinator
Kevin Schoenhofen	Chicago Ridge / Village of Chicago Ridge Emergency Management	Commander / Director
Matt Doughtie	City of Chicago/ OEMC	MEMS
Jason Roberts	City of Chicago / 2FM	Director of Logistics / Supply
Cam Anton	City of Chicago / CDPH	SEMC
Beth Taderse	City of Chicago / CDPH	Projects Admin
Emily Zaran	City of Chicago / CDPH	Director of Planning
Sarah Murray	City of Chicago / CDPH	MEMS
Jannita Cane	City of Chicago / CDPH	Public Health Nurse IV
Ralph Chiczewski	City of Chicago / CDWM	Asst. Commissioner
Jamar Sullivan	City of Chicago / CFD	District Chief
Bethany Hand	City of Chicago / CFD	Asst. Commissioner
Mike Torres	City of Chicago / Chicago Park District	Security / SP Projects
Caleb Rehberg	City of Chicago / Chicago Public Schools	Director of Facility Management OPS
Esther Walker	City of Chicago / CPS	Director
Rob Christlieb	City of Chicago / CPS FAC	ED - FAC OPS
Rich Schleyer	City of Chicago / CPT - Facilities	Director of Environmental Health and Safety
Robert Lopez	City of Chicago / DOA	Dept. Comm.
Ben Stammis	City of Chicago / DOB - Stormwater	Stormwater Consultant
Luis Zepeda	City of Chicago / DSS	1st Deputy Commander
Matt Quinn	City of Chicago / OEM	Man. Dep Comm.

Name	Municipality / Organization	Title
Theresa Daniel	City of Chicago / OEMC	Senior Emergency Management Coordinator
Afif Marouf	City of Chicago / OEMC	SEMC
Cindy Cambray	Cook County BUC	Relationship Manager
Shontell Hemphill	Cook County EMRS	Regional Coordinator
Jerry Townsend	Country Club Hills / Village of Country Club Hills	Project Manager
Paul Klimek	Countryside / City of Countryside Police Department	Chief of Police
Kevin Wagner	Countryside / City of Countryside	Building Commissioner
Jesse Serna	Countryside / City of Countryside	Public Works Director
Kevin McAuliffe	Crestwood / Village of Crestwood	Asst. Chief
Sam Foster	Des Plaines / City of Des Plaines	Deputy Chief
John Thompson	Dixmoor / Village of Dixmoor	Economic Development Director
Donald Rush	Dolton / Village of Dolton	Director of ESDA
Robert Mrjenovich	East Hazel Crest / East Hazel Crest Police Department	Police Sergeant
Patricia Lazuka	East Hazel Crest / Village of East Hazel Crest	Village Administrator
Grant Mills	East Hazel Crest / Village of East Hazel Crest Fire Department	Deputy Fire Chief
Amanda Olsen	Elgin / City of Elgin	Staff Engineer
Chris Kennedy	Elgin / Elgin Fire Department	Captain
Michael Oine	Elgin / Elgin Fire Department	Division Chief
Clint Cunz	Elk Grove Village / Village of Elk Grove	Battalion Chief
Kevin Flaherty	Elmwood Park / Elmwood Park Fire Department	Deputy Fire Chief
Kim Nowicki	EMRS	Senior Regional Planner

Name	Municipality / Organization	Title
Griffin Byers	EMRS	Chief
Shontell Hemphill	EMRS	Regional Coordinator
Kimberly Kull	Evanston / Evanston Fire Department	Division Chief of Emergency Management / Logistics / PIO
Corey Hosek	Evergreen Park / Evergreen Park FD	Assistant Chief
Ronald Kleinhaus	Evergreen Park / Evergreen Park Fire Department	Chief
John Brunke	Flossmoor / Village of Flossmoor	Public Works Director
Chelsea Thomas	Ford Heights / Ford Heights Emergency Shelter	Facility Coordinator
Dora Murphy	Forest Park / Forest Park Police Department	Admin Assistant
Mark Jones	Forest View / Forest View FD	Chief
Bianel Zarate	Forest View / Forest View PD	Chief of Police
Francis Fila	Forest View / Forest View PW	Director of Public Works
Mike Dropka	Forest View / Village of Forest View	Village Administrator
Mark Stewart	Franklin Park / Franklin Park Fire Department	Fire Chief
Mark Weber	Franklin Park / Smith La Salle Inc.	Asst. Village Engineer
Kenneth Paczosa	Glencoe / Glencoe Public Safety	Lieutenant
Taylor Baxter	Glencoe / Village of Glencoe	Development Services Director
James Tigue	Glencoe / Village of Glencoe	Village Engineer
Monica Sarna	Glencoe / Village of Glencoe Public Works	Public Works Director
Mark Ciesla	Glenview / Village of Glenview Police Department	Deputy Chief
Adrianna Webb	Glenview / Village of Glenview	Engineering Division Manager
Mike Rutkowski	Glenview / Village of Glenview	Deputy Fire Chief

Name	Municipality / Organization	Title
Kyle Wilbanks	Glenwood / Glenwood Police Department	Deputy Chief
Kevin Welsh	Glenwood / Village of Glenwood Fire Department	Deputy Fire Chief
Cindy Eriks	Glenwood / Village of Glenwood Fire Department	Fire Secretary
Dennis McEnerney	Golf / Golf Police Department	Police Chief
Carlos Ruiz	Harvey / University Park / Ford Heights - Antero Group	Staff Engineer
Emily Eng	Harvey / University Park / Ford Heights - Antero Group	Staff Engineer
James Shields	Hazel Crest / Village of Hazel Crest Fire Department	Deputy Fire Chief
Susan Lehr	Hickory Hills / City of Hickory Hills	Director of Public Works
Ryan Wyckoff	Hillside / Hillside Fire Department	Fire Captain
Ken Carling	Hillside / Hillside Fire Department	Fire Chief
Dan Murphy	Hillside / Hillside Police Department	Chief of Police
Laith Ibrahim	Hillside / Hillside Police Dept.	Deputy Chief of Police
Paul Smith	Hillside / Village of Hillside	Director of Public Works
Joe Pisano	Hillside / Village of Hillside	Village Administrator
Ken Tucker	Hodgkins / Village of Hodgkins Public Works	Deputy Superintendent of Public Works
Mary Jo Hacker	Hometown / City of Hometown	City Clerk
Mark Trlak	Hometown / City of Hometown	PW Director
Joshua Burman	Homewood / Village of Homewood	Assistant Director
John Schaefer	Homewood / Village of Homewood	Director of Public Works
Gavin Morgan	Indian Head Park / Village of Indian Head Park	Village Administrator
Mike Hish	Inverness / Inverness Police Department	Emergency Management Director

Name	Municipality / Organization	Title
Matthew Zarebczan	Justice / Village of Justice	Director Economic Development
Oscar Padilla	Kenilworth / Kenilworth Police Department	Sergeant
Dan Reda	La Grange / Village of La Grange Fire Department	Fire Chief
Larry Noller	La Grange Park / Village of La Grange Park	Finance Director
Maggie Jarr	La Grange Park / Village of La Grange Park	Deputy Village Manager
John Jandek	La Grange Park / Village of La Grange Park	Public Works Superintendent
Ed Hurst	La Grange Park / Village of La Grange Park	Director of Building & Inspectional Services
Dean Maggos	La Grange Park / Village of La Grange Park Fire Dept. / EMA	Director of Fire and EMA
Tim Contois	La Grange Park / Village of La Grange Park Police Department	Police Chief
Dana Tatsenhorst	Lansing / Lansing	Sergeant
Thomas Ballard	Lemont / Lemont Emergency Management Agency	Director
James Boyer	Lemont / Lemont Emergency Management Agency	Deputy Director
Barry Liss	Lincolnwood / Village of Lincolnwood	Fire Chief
Samuel Garcia	Lynwood / Village of Lynwood	Director of Public Works
Gordon Nord	Lyons / Lyons Fire Department	Fire Chief
Spencer Kimura	MABAS	Supervisor
Kevin Lyne	MABAS	Operations Section Chief
Derrick Champion	Markham / City of Markham	City Administrator
Edgar Deisch	Matteson / Village of Matteson	Assistant Superintendent
William "Bill" Peterhansen	Maywood / Hancock Engineering Co.	Village Engineer
Joseph Ducibella	Maywood / Maywood DHSEM	Deputy Chief

Name	Municipality / Organization	Title
Amy Malina	Maywood / Maywood DHSEM	PIO / Lt.
Kendal Silas	Maywood / Village of Maywood Homeland Security and Emergency Management	Chief
Brendan Meskill	McCook / McCook Fire Department	Deputy Fire Chief
Bill Kovats	Merrionette Park / Merrionette Park Fire Department	Emergency Manager
Tye Swanson	Midlothian / Village of Midlothian	Asst. Superintendent
George Carlson	Morton Grove / Morton Grove Fire Department	Lieutenant / Paramedic
Matt Lawrie	Mount Prospect / Village of Mount Prosect	Village Engineer
Mitch Winkelmann	Mount Prospect / Village of Mount Prosect	Assistant Emergency Manager
Chuck Lindelof	Mount Prospect / Village of Mount Prosect	Project Engineer
Richard Fisher	MWRD	Principal Civil Engineer
Robert Greiner	Niles / Niles Fire Department	Deputy Fire Chief
Mark Janeck	Niles / Village of Niles	Director Public Works
Joe Spain	Norridge / Village of Norridge	Director of Public Works
Peter Hughes	North Riverside / Village of North Riverside	Community Development
Sue Scarpiniti	North Riverside / Village of North Riverside	Village Administrator
Vince Raneri	North Riverside / Village of North Riverside	Public Works Director
David Schweihs	Northbrook / Northbrook Fire Department	Fire Chief
Kelly Hamill	Northbrook / Village of Northbrook Public Works	Director of Public Works
Peter Tennant	Northlake / Christopher B. Burke Engineering, Ltd.	Civil Engineer
Ken Beres	Northlake / Northlake Police Department	Chief of Police

Name	Municipality / Organization	Title
Jeff Sherwin	Northlake / Village of Northlake	Mayor
Joseph Pilch	Oak Forest / City of Oak Forest Emergency Management	Director
Michael McMillin	Oak Lawn / Oak Lawn Fire Department	Interim Fire Chief
Lee Christenson	Oak Park / Village of Oak Park	Emergency Preparedness and Response Coordinator
Rob Sproule	Oak Park / Village of Oak Park	Public Works Director
Erin Duffy	Oak Park / Village of Oak Park	Deputy Director of Public Works
Joseph Terry	Oak Park / Village of Oak Park Fire Department	Deputy Chief
Drella Savage	Olympia Fields / Village of Olympia Fields	Village Administrator / Chief of Staff
Art Jones	Olympia Fields / Village of Olympia Fields	Public Works Director
Jessica Washington	Olympia Fields / Village of Olympia Fields	Exec. Asst. / Deputy Clerk
Jacqueline Tuma	Orland Hills / Village of Orland Hills	Assistant Village Administrator
Joel VanEssen	Orland Park / Public Works	Public Works Director
Sarah McKillop	Palatine / Village of Palatine	EMA Coordinator
Katie Lapid	Palatine / Village of Palatine Public Works Department	Assistant Public Works Director
Adam Jasinski	Palos Heights / Public Works Department	Director of Public Works
Nick Oeffling	Palos Hills / City of Palos Hills	Commissioner of Public Works
Jeffrey Cucio	Palos Hills / Palos Hills Police Department	Chief of Police
Fernando Flores	Palos Park / Palos Park PD	Emergency Management Coordinator
Pat Hisel	Park Forest / Park Forest Fire Department	Shift Commander / Paramedic
Mark Contrano	Park Forest / Park Forest Fire Department	Deputy Chief
Roderick Ysaguirre	Park Forest / Village of Park Forest	Director of Public Works

Name	Municipality / Organization	Title
Jeff Sorensen	Park Ridge / Park Ridge Fire Department	Fire Chief
Paul Lisowski	Park Ridge / Park Ridge Fire Department	FD Exercise Officer
Antonio Cooper	Phoenix / Village of Phoenix	Administrator
Kris Marroquin	Posen / Village of Posen	DPW Superintendant
Frank Podbielniak	Posen / Village of Posen	Mayor
Daniel Peterson	Prospect Heights / City of Prospect Heights Building & Development Director	Director
Mark Roscoe	Prospect Heights / City of Prospect Heights	Director of Public Works
Michael Wegrzyn	Richton Park / Village of Richton Park	Director of Public Works
Thomas Gaertner	River Forest / River Forest Fire Department	Fire Chief
David Bochenek	River Forest / River Forest Fire Department	Deputy Fire Chief
John Brennan	Riverdale / Riverdale Fire Department	Deputy Fire Chief
Matt Buckley	Riverside / Riverside Public Safety	Director of Public Safety
Emani Hollingsworth	Robbins / Village of Robbins	Water Superintendent
Ryan Rivard	Rolling Meadows / City of Rolling Meadows	Utilities Supervisor
Jonathan Mishory	Rolling Meadows / Public Works Department	Public Works Management Analyst
Joe Balogh	Rosemont / Public Safety Department	Sergeant
Stephen Barrett	Sauk Village / Sauk Village Fire Department	Fire Chief
Tracy Raimondo	Schaumburg / Village of Schaumburg	Emergency Manager
Liz Zimmerman	Skokie / Public Works	Assistant to the Public Works Director
Nicholas Eschner	Skokie / Skokie Fire Department	Deputy Fire Chief

Name	Municipality / Organization	Title
Rolando Ithier	Skokie / Skokie Fire Department	Management Analyst
John Oakley	Skokie / Skokie Police Department	Deputy Chief
Paul Ryan	Skokie / Village of Skokie Engineering	Civil Engineer
Rachel Blut	Skokie / Village of Skokie Health and Human Services	Emergency Preparedness Coordinator / Public Health Nurse
Daniel Walenda	South Barrington / Village of South Barrington	Operations Associate / Evidence Custodian
Clinton Wagner	South Chicago Heights / Village of South Chicago Heights PD	Chief of Police
Brian Kolosh	South Holland / Village of South Holland Fire Department	Fire Chief
Brian Smith	South Holland / Village of South Holland Fire Department	Manager of Building Services
Mike Cramer	South Holland / Village of South Holland Fire Department	Director of Public Works
Jeffrey Boyajian	Stickney / Village of Stickney Fire Department	Fire Chief
Jose Lopez	Stickney / Village of Stickney Public Works	Director of Public Works
Christine Villanueva	Stone Park / Stone Park Police Department	Administrative Assistant
Tom Sammons	Streamwood / Streamwood Fire Department	Firefighter / Paramedic
Art Schweitzer	Thornton / Thornton Fire Department	Fire Chief
Lisa Kortum	Tinley Park / Tinley Park Emergency Management /911 Communications	Director of EMA
Kelly Mulqueeny	Tinley Park / Village of Tinley Park	Street Superintendent
Dale Mitchel	University Park / University Park Police Department	Chief of Police
Mike Mavrogeorge	Westchester / Westchester Fire Department	Fire Chief
Matt Supert	Western Springs / Village of Western Springs	Director of Municipal Services
Brian Scott	Western Springs / Western Springs FD	Deputy Chief FD

Name	Municipality / Organization	Title
Mike Kelly	Western Springs / Western Springs FD	Fire Chief
Ileen Bryer	Wheeling / Wheeling Fire Department	Executive Officer
Melissa Neddermeyer	Willow Springs / Village of Willow Springs	Mayor
Brian Lambel	Wilmette / Wilmette Fire Department	Fire Chief
Obaid Khalid	Winnetka / Village of Winnetka Engineering Dept.	Assistant Village Engineer
John Ripka	Winnetka / Winnetka Fire Department	Fire Chief
Andy MacArthur	Winnetka / Winnetka Fire Department	Interim Deputy Fire Chief
Stephanie Wells	Winnetka / Winnetka Fire Department	Public Safety Analyst
Ed Urban	Worth / Village of Worth	Superintendent

One on One In-Person / Virtual Meetings

The Planning team met with jurisdictions that could not attend the webinars/workshops or requested additional assistance with either an on-site or a virtual meeting.

Name	Municipality / Organization	Title	Type of Meeting
Jerry Hurckes	Summit / Village of Summit	Village Administrator	On-site
Tony Anderson	Summit / Fire Department	Fire Chief/EMA Director	On-site
Thomas Burke	Northfield / Fire Department	Fire Chief	On-site
Sarah Marcucci	Hanover Park / Village of Hanover Park	Emergency Management Coordinator	Virtual
Sarah Marcucci	Hoffman Estates / Village of Hoffman Estates	Emergency Management Coordinator	Virtual
George Assimakopoulos	Harwood Heights / Village of Harwood Heights	Project Director	On-site
Jason Stevenson	Steger / Village of Steger	EMA Chief	On-site
Jeff Leiser	Schiller Park / Fire Department	Lieutenant	On-site
Mark Kraft	Bridgeview / Village of Bridgeview	Deputy Director of EMA	On-site
John Volletter	Calumet Park / Fire Department	Fire Chief	On-site

Name	Municipality / Organization	Title	Type of Meeting
Timothy Geary	Cicero / Novotny Engineering	Engineer	On-site
Jeff Penzkofer	Cicero / Fire Department	Fire Chief	On-site
T.J. Santoro	Cicero / Fire Department	Asst. Fire Chief	On-site
Tom Tomschin	Cicero / City of Cicero Dept. of Housing	Executive Director	On-site
Derek Dominick	Cicero / City of Cicero Dept. of Public Works	Superintendent	On-site
Sean Flynn	River Grove / River Grove Fire Department	Fire Chief	On-site
Phil Schwartz	Melrose Park / Village of Melrose Park	Chief of Homeland Security	On-site

Watershed Planning Council (WPC) Meetings attended by Kim Nowicki, EMRS Regional Planner):

- Upper Salt Creek and Poplar Creek WPC Meeting
- Lower Des Plaines River WPC Meeting
- Cal-Sag WPC Meeting
- Little Calumet WPC
- North Branch of the Chicago River WPC (handout presentation provided by MWRD)

Appendix C Public Participation Documentation

In accordance with best practices as outlined in CPG 101, this public-private effort engaged the whole community, reaching citizens and key stakeholders across all 135 jurisdictions. Elements of virtual public outreach included the 2024 Cook County Preparedness Survey, webinars, and social media such as Twitter and Nextdoor. The physical component of the outreach efforts focused on maximizing attendance at hazard mitigation meetings.

The remainder of this section provides an overview as well as outreach documentation for:

- 2024 Cook County Community Preparedness Survey,
- Local Government Meetings,
- Hazard Mitigation Plan Public Meetings, and
- Hazard Mitigation Plan Draft Review Meetings

2024 Cook County Community Preparedness Survey

To engage the whole community in the 2024 MJ-HMP Update process, EMRS and ISC developed the 2024 Cook County Community Preparedness Survey to engage the general public by providing information on the update process while collecting and validating information from citizens throughout all 135 jurisdictions. The 31-question web-based tool was used to gauge household preparedness for natural hazards and the public's knowledge of tools and techniques that assist in reducing risk and loss from natural hazards. The results of the survey were used by the Steering Committee to guide them in developing objectives and mitigation strategies.

2024 Cook County Community Preparedness Survey Outreach Efforts

As previously noted, the survey was disseminated across multiple platforms, including social media and press releases by EMRS as well as the participating municipalities. The following provides chronological documentation of survey outreach efforts with a brief summary of the activities categorized as Press Releases or Multimedia Outreach. It is important to note that the survey advertisements included references to the public meeting series.

Community Preparedness Survey and Public Meeting Outreach

Social media platforms such as Twitter, Facebook and Nextdoor were leveraged to increase survey participation. In addition, flyers for the Public Meeting Series provided access to the survey via Quick Response (QR) Codes - a machine-readable barcode containing data that links a user to a website. The following provides documentation of multimedia-based survey and public meeting outreach efforts.

Press Releases

Date	Jurisdiction
05/16/24	Park Ridge

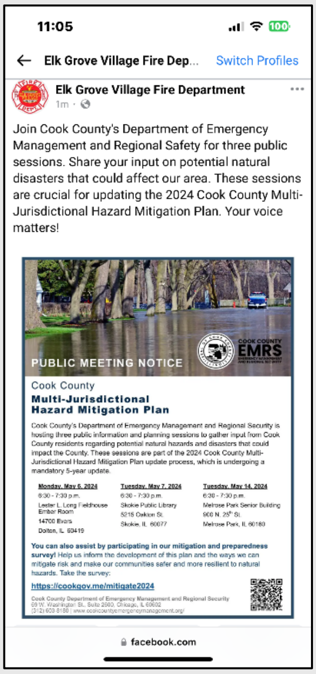
Link / Image

Social Media / Community Calendar Links / Website

Date	Jurisdiction
05/02/24	Elk Grove Village

Link / Image

Social Media Post

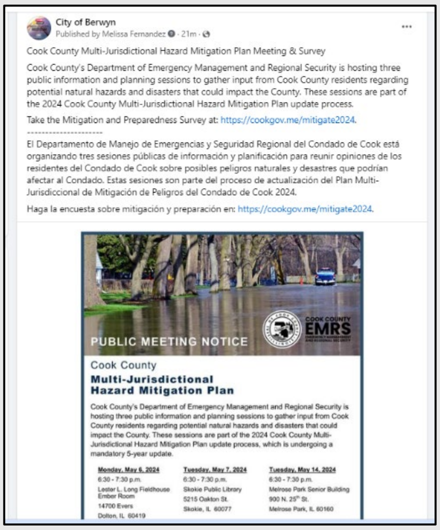


Date	Jurisdiction
05/02/24	City of Berwyn

Link / Image

Public Meeting Posted in Community Calendar - Link

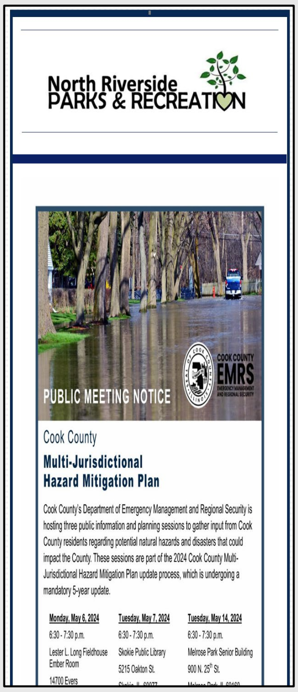
Social Media Post – FB, Instagram, Twitter



Date	Jurisdiction
05/02/24	North Riverside

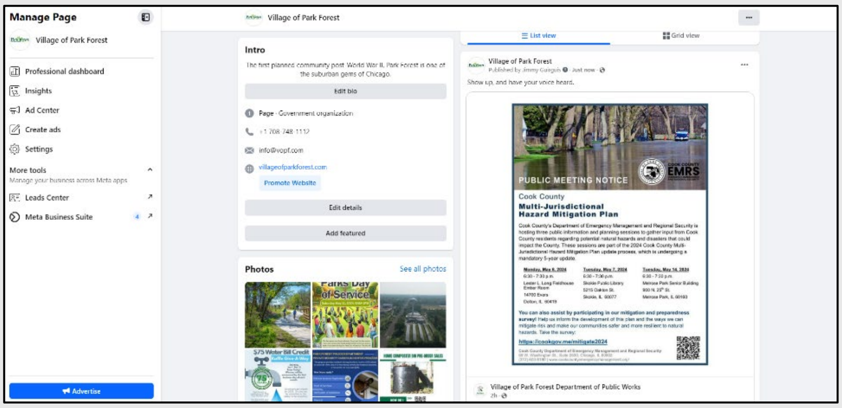
Link / Image

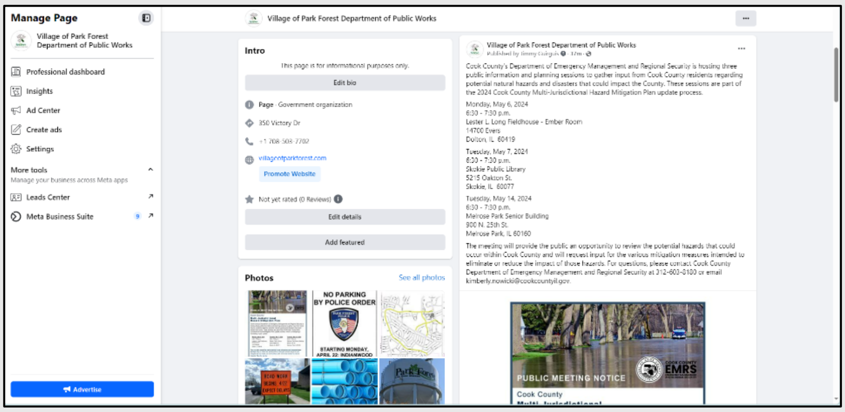
Social Media Post – FB / North Riverside Parks & Recreation (Constant Contact)



Date	Jurisdiction
05/02/24	Village of Park Forest
Link / Image	

Social Media Post – FB





Date	Jurisdiction
05/03/24	Des Plaines

Link / Image

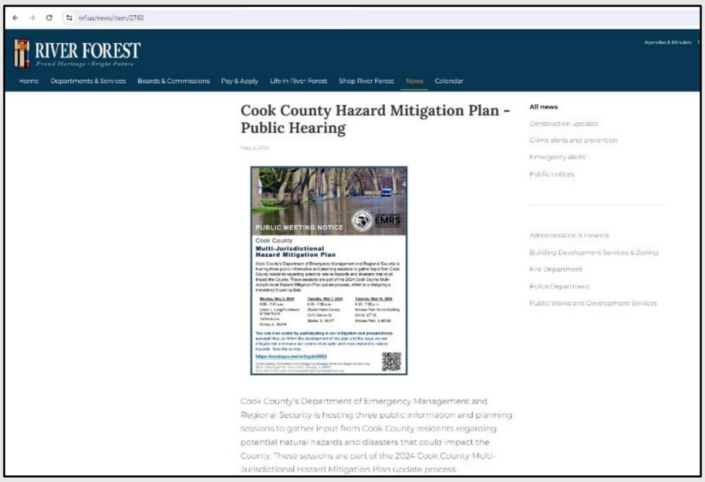
Public Meeting Outreach FB Post

The full post text is: *The Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how it can better prepare you for disasters. They're holding three public meetings to review potential hazards in our area and gather input on mitigation measures. This meeting will be on Tuesday, May 7, 2024, at the Skokie Public Library from 6:30-7:30 p.m.*

Please contact the @Cook County Department of Emergency Management and Regional Security at 312-603-8180 or email kimberly.nowicki@cookcountyil.gov with any questions.

Date	Jurisdiction
05/07/24	Village of River Forest
Link / Image	

Notice posted on Village Website – Link



Date	Jurisdiction
05/07/24	Village of Stone Park

Link / Image

Public Outreach Social Media – FB

Village of Stone Park
May 7 at 11:36 AM ·

Cook County's Department of Emergency Management and Regional Security is hosting three public information and planning sessions to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. These sessions are part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process.

Monday, May 6, 2024
6:30 - 7:30 p.m.
Lester L. Long Fieldhouse - Ember Room
14700 Evers
Dolton, IL 60419

Tuesday, May 7, 2024
6:30 - 7:30 p.m.
Skokie Public Library
5215 Oakton St.
Skokie, IL 60077

Tuesday, May 14, 2024
6:30 - 7:30 p.m.
Melrose Park Senior Building
900 N. 25th St.
Melrose Park, IL 60160

The meeting will provide the public an opportunity to review the potential hazards that could occur within Cook County and will request input for the various mitigation measures intended to eliminate or reduce the impact of those hazards. For questions, please contact Cook County Department of Emergency Management and Regional Security at (312) 603-8180 or email kimberly.nowicki@cookcountyil.gov

Cook County

Multi-Jurisdictional Hazard Mitigation Plan

Cook County's Department of Emergency Management and Regional Security is hosting three public information and planning sessions to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. These sessions are part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process, which is undergoing a mandatory 5-year update.

Monday, May 6, 2024	Tuesday, May 7, 2024	Tuesday, May 14, 2024
6:30 - 7:30 p.m.	6:30 - 7:30 p.m.	6:30 - 7:30 p.m.
Lester L. Long Fieldhouse Ember Room	Skokie Public Library	Melrose Park Senior Building
14700 Evers	5215 Oakton St.	900 N. 25th St.
Dolton, IL 60419	Skokie, IL 60077	Melrose Park, IL 60160

You can also assist by participating in our mitigation and preparedness survey! Help us inform the development of this plan and the ways we can mitigate risk and make our communities safer and more resilient to natural hazards. Take the survey:

https://cookgov.me/mitigate2024

Cook County Department of Emergency Management and Regional Security
69 W. Washington St., Suite 2600, Chicago, IL 60602
(312) 603-8180 | www.cookcountyemergencymanagement.org/

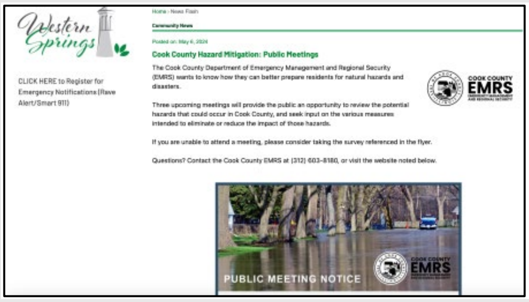
Date	Jurisdiction
05/07/24	Western Springs

Link / Image

Multiple Outreach Methods: The Village of Western Springs posted/mentioned the Cook County Department of Emergency Management and Regional Security (EMRS) Multi-jurisdictional Hazard Mitigation Plan in the following ways:

Board Meeting Announcement: Village Manager Baer announced the meetings and survey at the May 5, 2024, Board Meeting during her report near the end: https://vimeo.com/943672086?share=copy

Website News Flash w Flyer: (live until 5/31/24 with screen shot below) https://wsprings.com/CivicAlerts.aspx?AID=2645


Western Springs

CLICK HERE to Register for Emergency Notifications (Rave Alert/Smart 911)

Home › News Flash

Community News

Posted on: May 6, 2024

Cook County Hazard Mitigation: Public Meetings

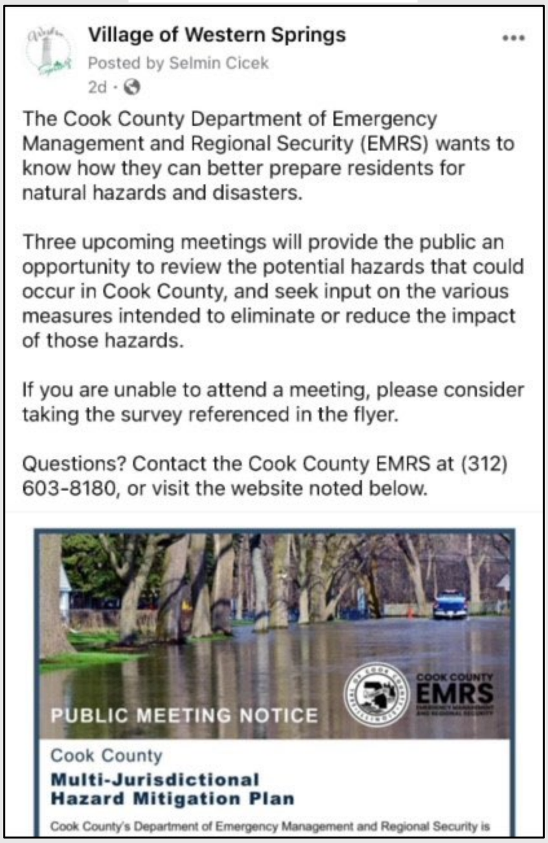
The Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how they can better prepare residents for natural hazards and disasters.

Three upcoming meetings will provide the public an opportunity to review the potential hazards that could occur in Cook County, and seek input on the various measures intended to eliminate or reduce the impact of those hazards.

If you are unable to attend a meeting, please consider taking the survey referenced in the flyer.

Questions? Contact the Cook County EMRS at (312) 603-8180, or visit the website noted below.

Facebook Post w Flyer:


Village of Western Springs

Posted by Selmin Cicek

2d

The Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how they can better prepare residents for natural hazards and disasters.

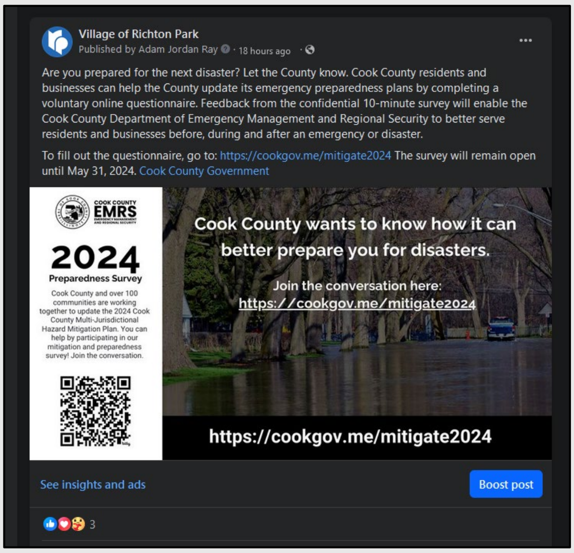
Three upcoming meetings will provide the public an opportunity to review the potential hazards that could occur in Cook County, and seek input on the various measures intended to eliminate or reduce the impact of those hazards.

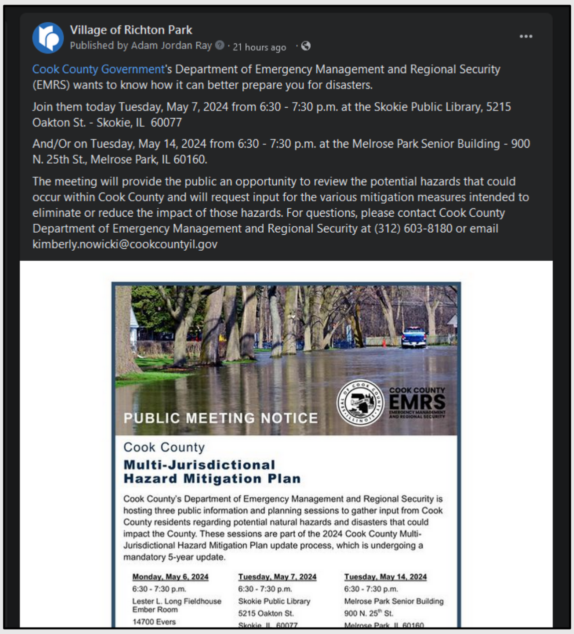
If you are unable to attend a meeting, please consider taking the survey referenced in the flyer.

Questions? Contact the Cook County EMRS at (312) 603-8180, or visit the website noted below.

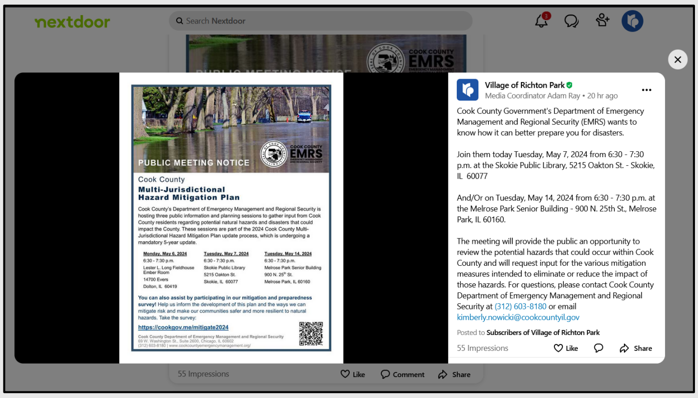
Date	Jurisdiction
05/08/24	Richton Park
Link / Image	

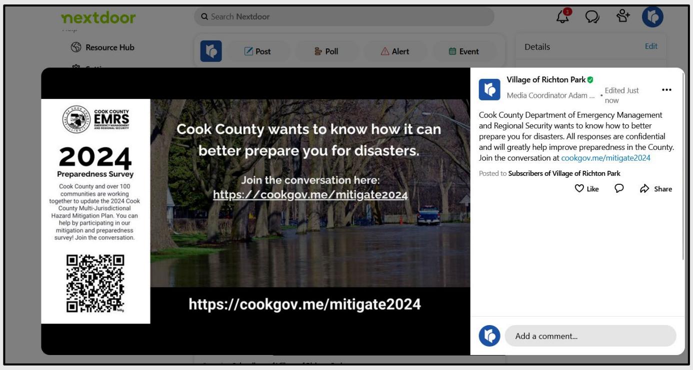
Public Meeting/Survey Outreach – FB





Next Door Outreach

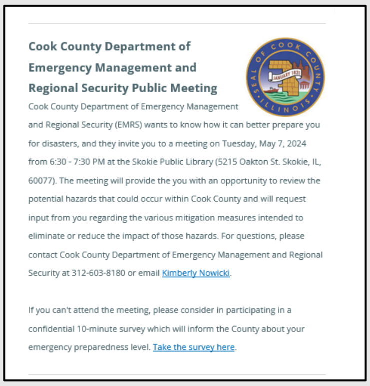




Date	Jurisdiction
05/08/24	Winnetka

Link / Image

Winnetka Newsletter (send date 5/3) / Posted Flyers (5/6/24)



Cook County Department of Emergency Management and Regional Security Public Meeting

Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how it can better prepare you for disasters, and they invite you to a meeting on Tuesday, May 7, 2024 from 6:30 - 7:30 PM at the Skokie Public Library (5215 Oakton St. Skokie, IL, 60077). The meeting will provide the you with an opportunity to review the potential hazards that could occur within Cook County and will request input from you regarding the various mitigation measures intended to eliminate or reduce the impact of those hazards. For questions, please contact Cook County Department of Emergency Management and Regional Security at 312-603-8180 or email Kimberly Nowicki.

If you can't attend the meeting, please consider in participating in a confidential 10-minute survey which will inform the County about your emergency preparedness level. Take the survey here.

Social Media Post – FB (5/6/2024)

Winnetka
Published by Winnetka Economic Development · Just now ·

Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how it can better prepare you for disasters, and they invite you to a meeting on Tuesday, May 7, from 6:30 - 7:30 PM at the Skokie Public Library (5215 Oakton St. Skokie, IL 60077). The meeting will provide the you with an opportunity to review the potential hazards that could occur within Cook County and will request input from you regarding the various mitigation measures intended to eliminate or reduce the impact of those hazards.

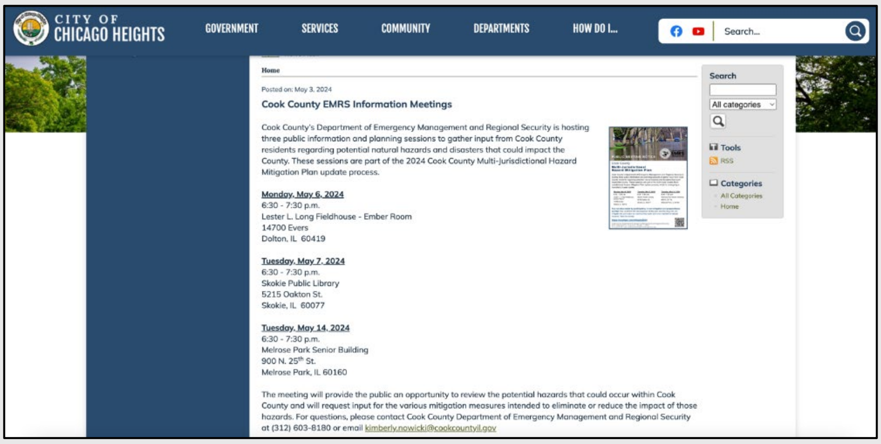
If you can't attend the meeting, please consider in participating in a confidential 10-minute survey which will inform the County about your emergency preparedness level. Take the survey here: http://cookcounty.2024-preparedness-survey.alchemer.com/s3

See insights and ads
Boost post
Like
Comment
Share
Comment as Winnetka

Date	Jurisdiction
05/09/24	Chicago Heights

Link / Image

Public Outreach – Social Media Posts


CITY OF CHICAGO HEIGHTS
GOVERNMENT SERVICES COMMUNITY DEPARTMENTS HOW DO I...
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Posted on: May 3, 2024

Cook County EMRS Information Meetings

Cook County's Department of Emergency Management and Regional Security is hosting three public information and planning sessions to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. These sessions are part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process.

Monday, May 6, 2024
6:30 - 7:30 p.m.
Lester L. Long Fieldhouse - Ember Room
14700 Evers
Dolton, IL 60419

Tuesday, May 7, 2024
6:30 - 7:30 p.m.
Skokie Public Library
5215 Oakton St.
Skokie, IL 60077

Tuesday, May 14, 2024
6:30 - 7:30 p.m.
Melrose Park Senior Building
900 N. 25th St.
Melrose Park, IL 60160

The meeting will provide the public an opportunity to review the potential hazards that could occur within Cook County and will request input for the various mitigation measures intended to eliminate or reduce the impact of those hazards. For questions, please contact Cook County Department of Emergency Management and Regional Security at (312) 603-8180 or email kimberly.nowicki@cookcountyil.gov

Search
All categories
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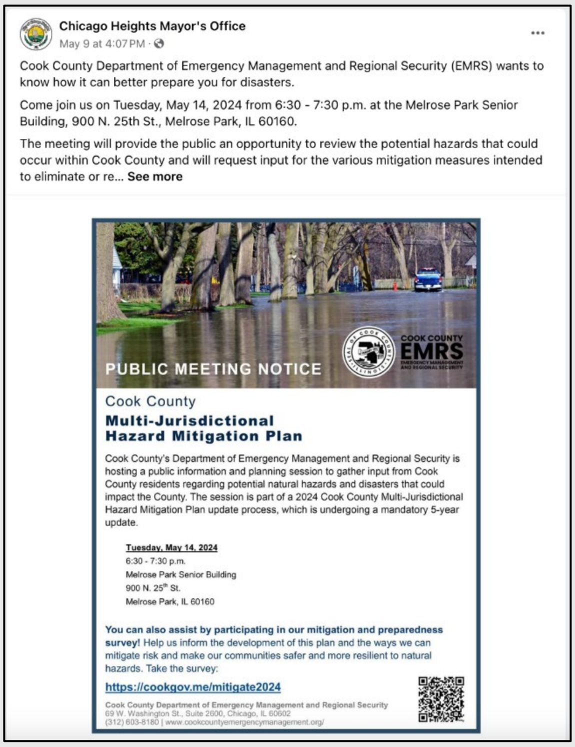
RSS
Categories
All Categories
Home


Chicago Heights Mayor's Office
May 9 at 4:07 PM

Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how it can better prepare you for disasters.

Come join us on Tuesday, May 14, 2024 from 6:30 - 7:30 p.m. at the Melrose Park Senior Building, 900 N. 25th St., Melrose Park, IL 60160.

The meeting will provide the public an opportunity to review the potential hazards that could occur within Cook County and will request input for the various mitigation measures intended to eliminate or re... See more

PUBLIC MEETING NOTICE
COOK COUNTY EMRS

Cook County
Multi-Jurisdictional Hazard Mitigation Plan

Cook County's Department of Emergency Management and Regional Security is hosting a public information and planning session to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. The session is part of a 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process, which is undergoing a mandatory 5-year update.

Tuesday, May 14, 2024
6:30 - 7:30 p.m.
Melrose Park Senior Building
900 N. 25th St.
Melrose Park, IL 60160

You can also assist by participating in our mitigation and preparedness survey! Help us inform the development of this plan and the ways we can mitigate risk and make our communities safer and more resilient to natural hazards. Take the survey:

https://cookgov.me/mitigate2024

Cook County Department of Emergency Management and Regional Security
69 W. Washington St., Suite 2600, Chicago, IL 60602
(312) 603-8180 | www.cookcountyemergencymanagement.org/


Chicago Heights Mayor's Office
May 10 at 9:00 AM

Are you prepared for the next disaster? Let the County know. Cook County residents and businesses can help the County update its emergency preparedness plans by completing a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable the Cook County Department of Emergency Management and Regional Security to better serve residents and businesses before, during and after an emergency or disaster.

To fill out the questionnaire, go to: https://co... See more

COOK COUNTY EMRS
2024
Preparedness Survey
Cook County and over 100 communities are working together to update the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. You can help by participating in our mitigation and preparedness survey! Join the conversation.

Cook County wants to know how it can better prepare you for disasters.
Join the conversation here:
https://cookgov.me/mitigate2024
https://cookgov.me/mitigate2024


Chicago Heights Mayor's Office
5 days ago
Cook County Department of Emergency Management and Regional Security wants you to take a disaster preparedness survey. Don't miss out on your opportunity to join the conversation.
https://cookgov.me/mitigate2024
Natural Disaster
COOK COUNTY EMRS
Cook County
Multi-Jurisdictional
Hazard Mitigation Plan
Cook County and over 100 communities are working together to update the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. You can help by participating in our mitigation and preparedness survey. Join the conversation. Help us inform the development of this plan and the ways we can mitigate risk and make our communities safer and more resilient to natural hazards.
Take the survey:
https://cookgov.me/mitigate2024
Cook County Department of Emergency Management and Regional Security
69 W. Washington St., Suite 2600, Chicago, IL 60602
(312) 603-8180 | www.cookcountyemergencymanagement.org/


Chicago Heights Mayor's Office
May 17 at 9:00 AM
Cook County Department of Emergency Management and Regional Security wants to know how to better prepare you for disasters. All responses are confidential and will greatly help improve preparedness in the County. Join the conversation at cookgov.me/mitigate2024
COOK COUNTY EMRS
2024
Preparedness Survey
Cook County and over 100 communities are working together to update the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. You can help by participating in our mitigation and preparedness survey! Join the conversation.
Cook County wants to know how it can better prepare you for disasters.
Join the conversation here:
https://cookgov.me/mitigate2024
https://cookgov.me/mitigate2024


Chicago Heights Mayor's Office
2 days ago
What have you done to prepare for the next disaster? How can Cook County help? Let them know by completing this 10-minute survey. https://cookgov.me/mitigate2024
COOK COUNTY EMRS
2024
Preparedness Survey
Cook County and over 100 communities are working together to update the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. You can help by participating in our mitigation and preparedness survey! Join the conversation.
Cook County wants to know how it can better prepare you for disasters.
Join the conversation here:
https://cookgov.me/mitigate2024
https://cookgov.me/mitigate2024

Date	Jurisdiction
05/06/24	MWRD
Link / Image	

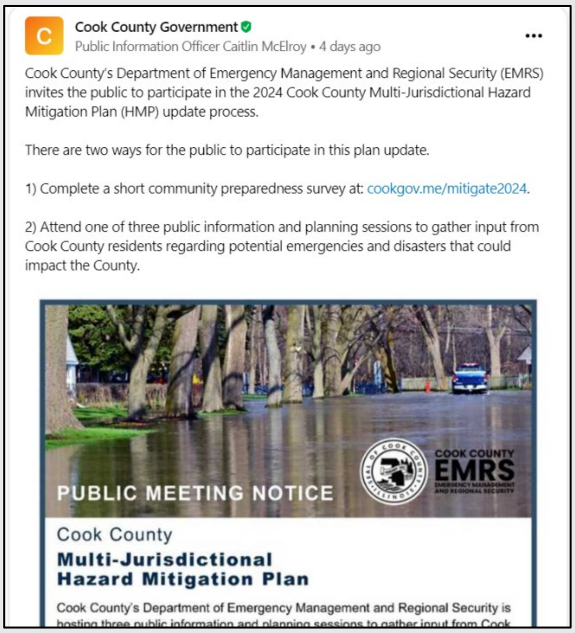
Public Outreach Social Media Post – Twitter

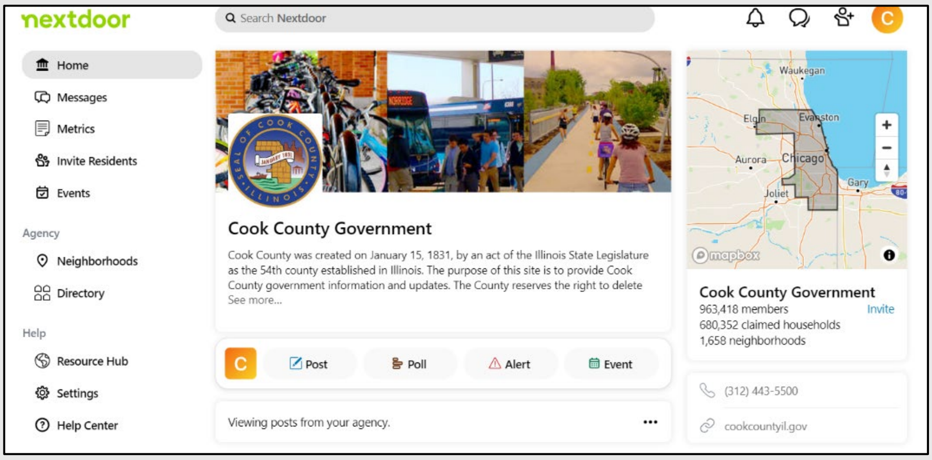
Date	Jurisdiction
05/06/24	Palatine
Link / Image	

Public Outreach Social Media Post- Twitter

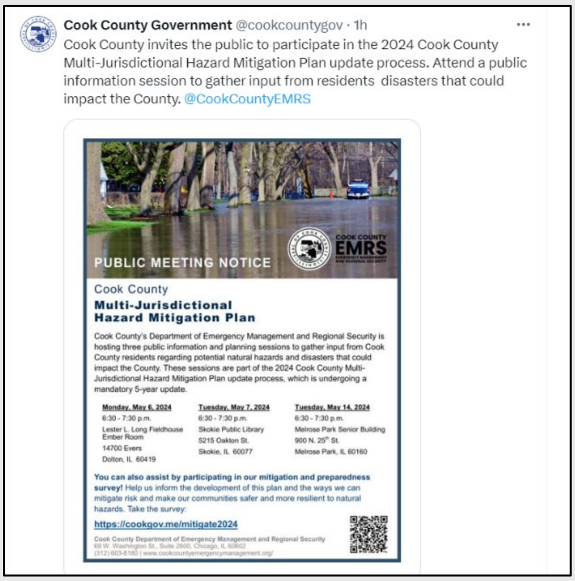
Date	Jurisdiction
05/01/24	Cook County
Link / Image	

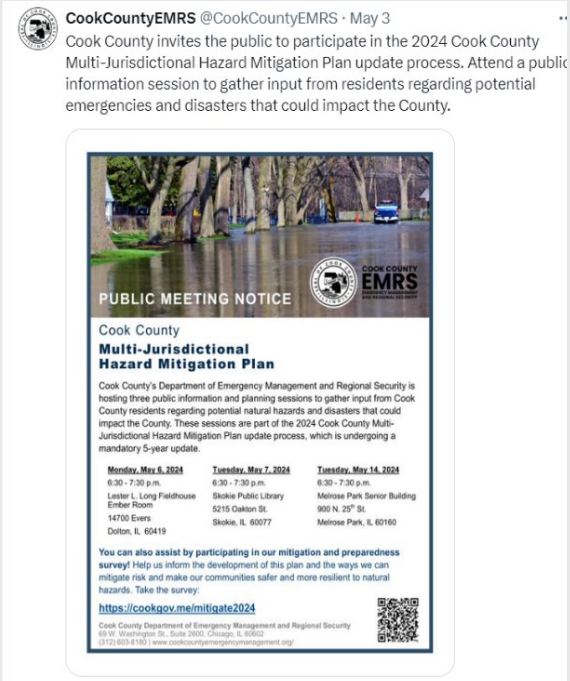
Public Outreach Social Media Post- Nextdoor





Public Outreach Social Media Post – Twitter



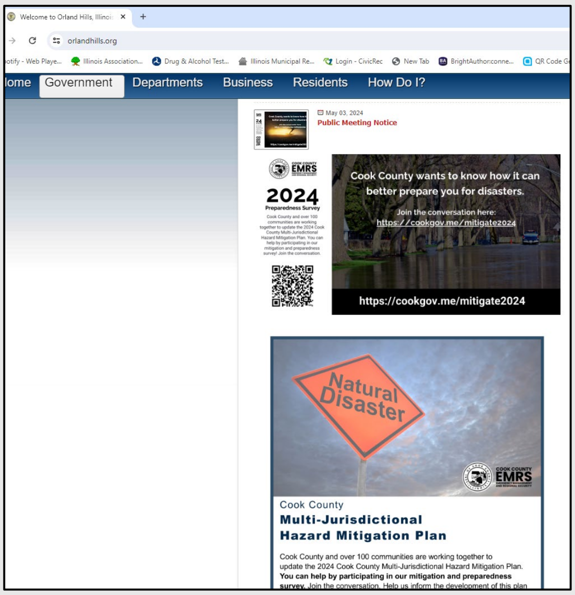


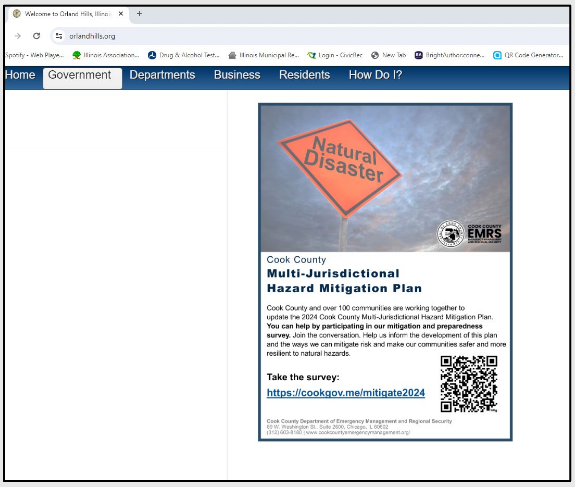
Public Outreach Social Media Post – FB / Public Outreach Social Media Post – LinkedIn

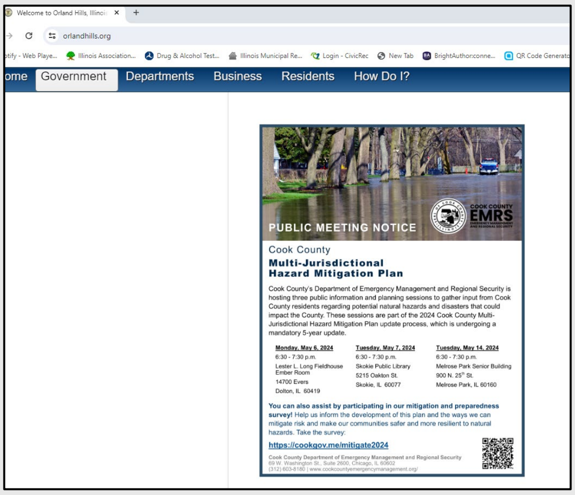
Date	Jurisdiction
05/06/24	Orland Hills

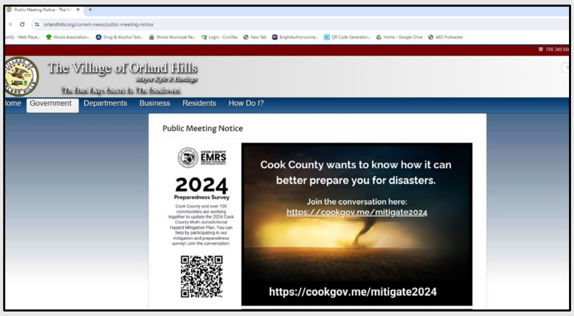
Link / Image

Website:

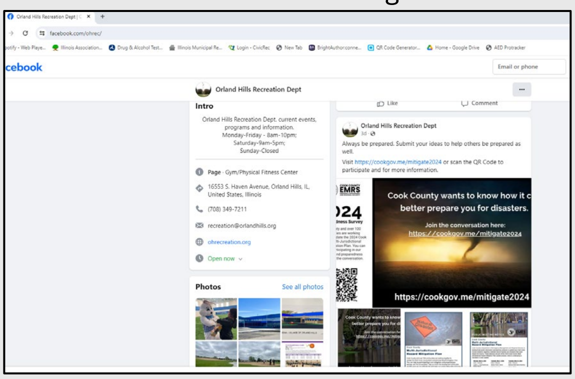








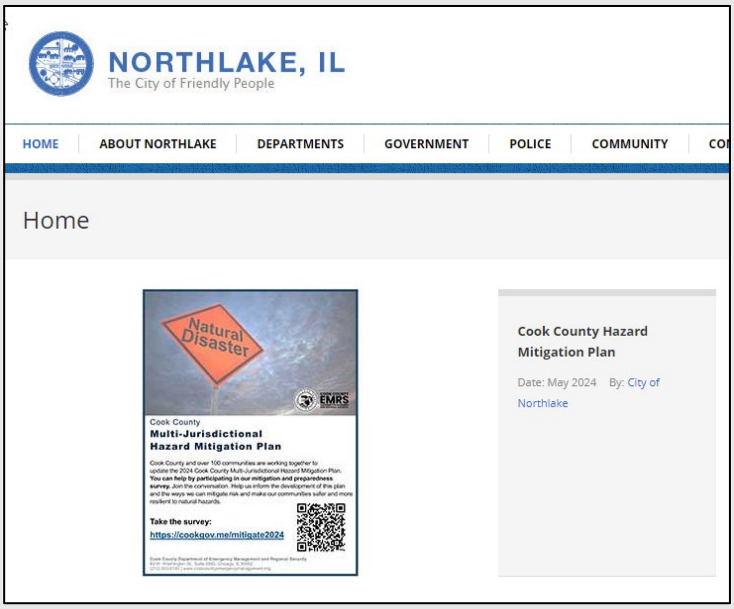
Facebook Posting



Date	Jurisdiction
05/06/24	Northlake

Link / Image

Public Outreach Website Post



Date	Jurisdiction
05/10/24	Chicago Ridge

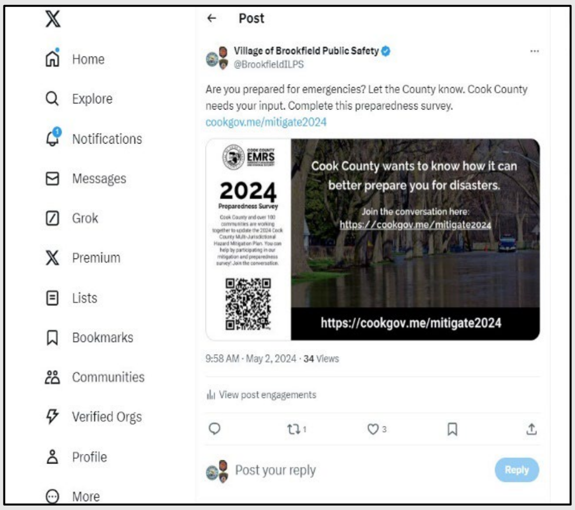
Link / Image

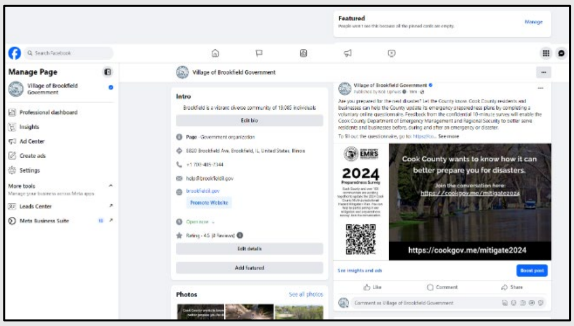
Public Outreach Social Media Post – FB

Date	Jurisdiction
(Multiple)	Brookfield

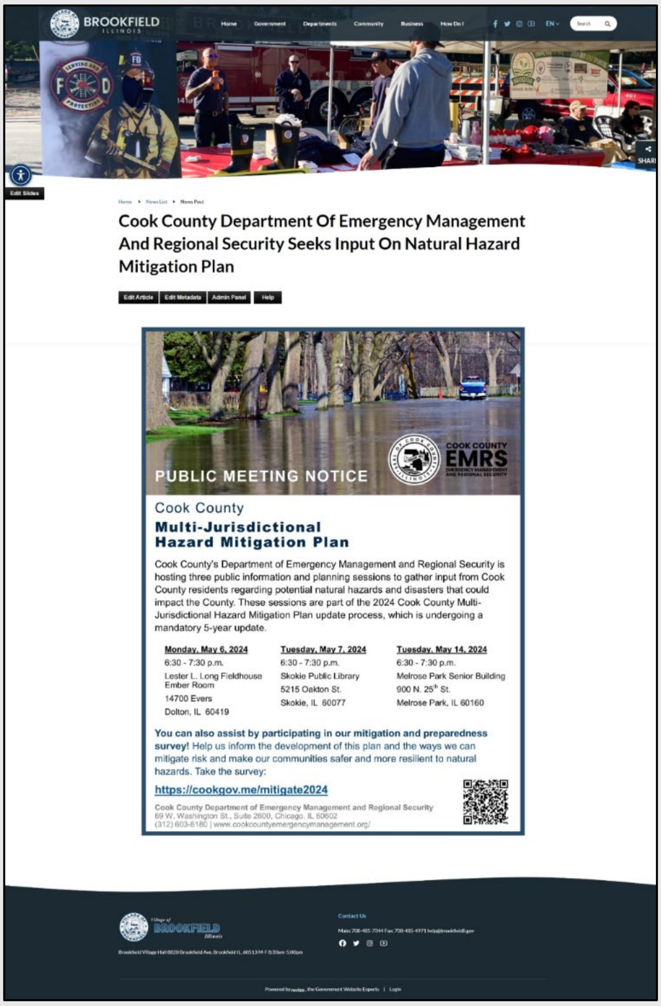
Link / Image

Social Media Posts – May 2 (Twitter / Facebook)

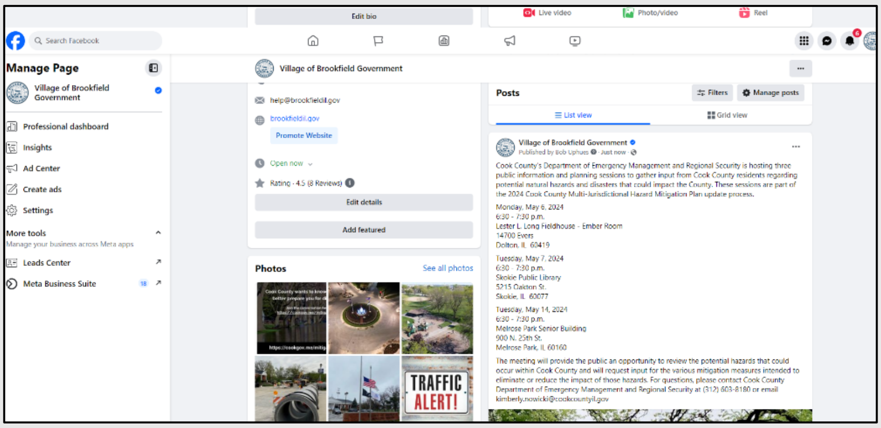




News Article on the Village of Brookfield website, May 2:



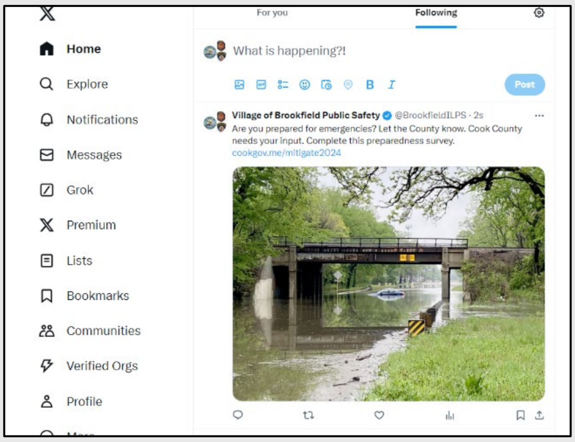
Facebook post, May 3

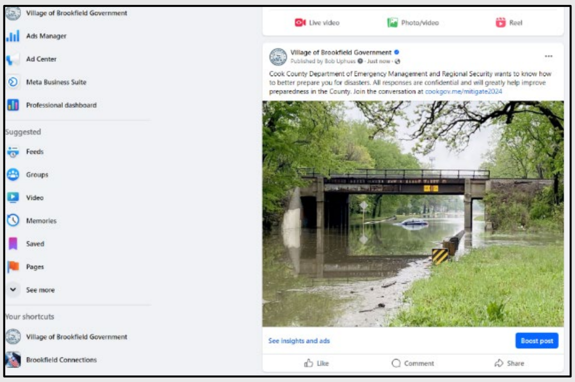


EMAIL MESSAGE: The following is the content of an email blast on May 4 sent to more than 3,000 recipients.

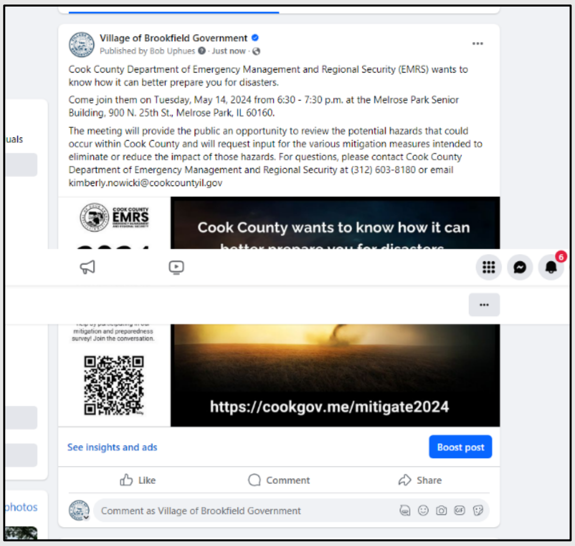
Cook County Department of Emergency Management and Regional Security Seeks Input

Social Media Posts – May 7 (Twitter / Facebook)

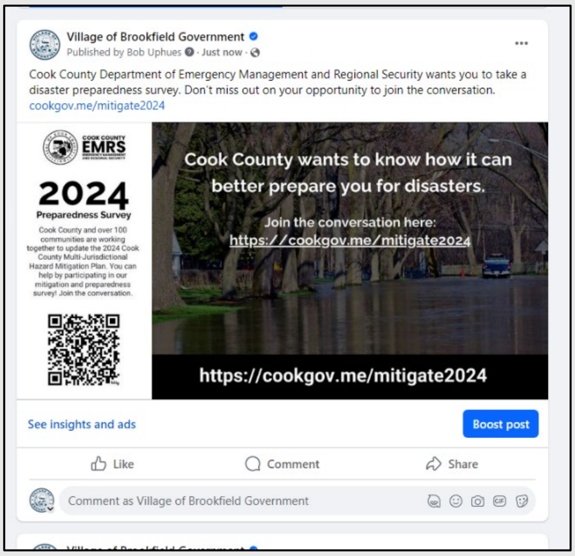


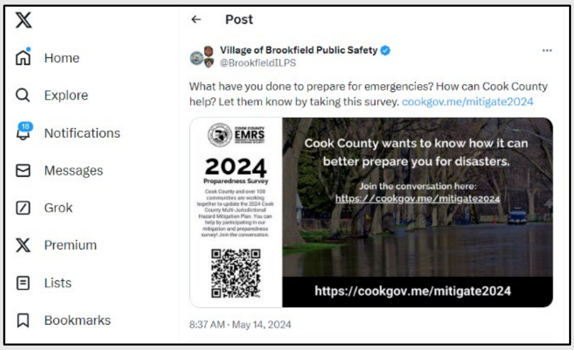


Targeted Facebook, May 10

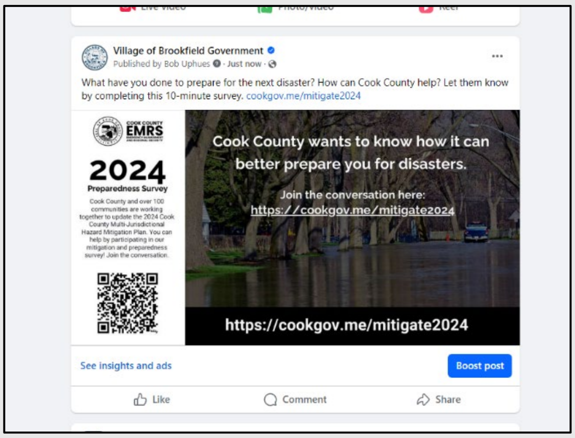


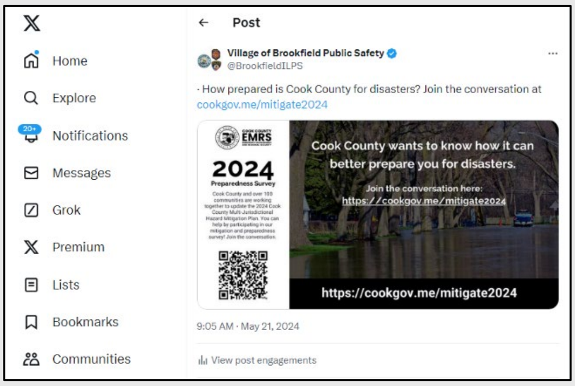
Social Media Posts – May 14 (Twitter / Facebook)



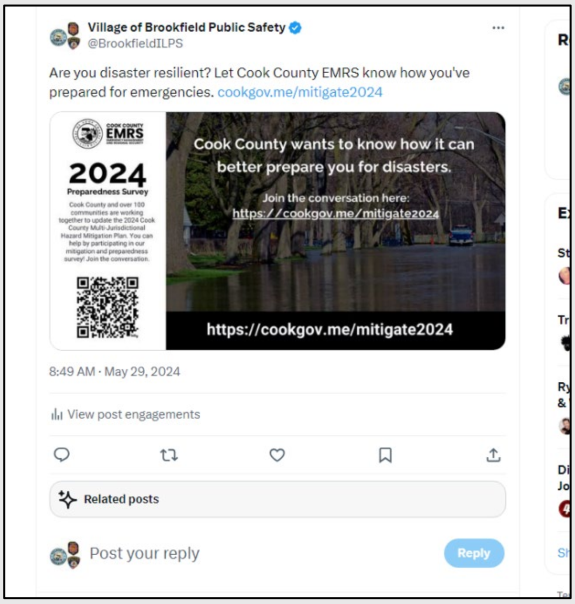


Social Media Posts – May 21 (Twitter / Facebook)





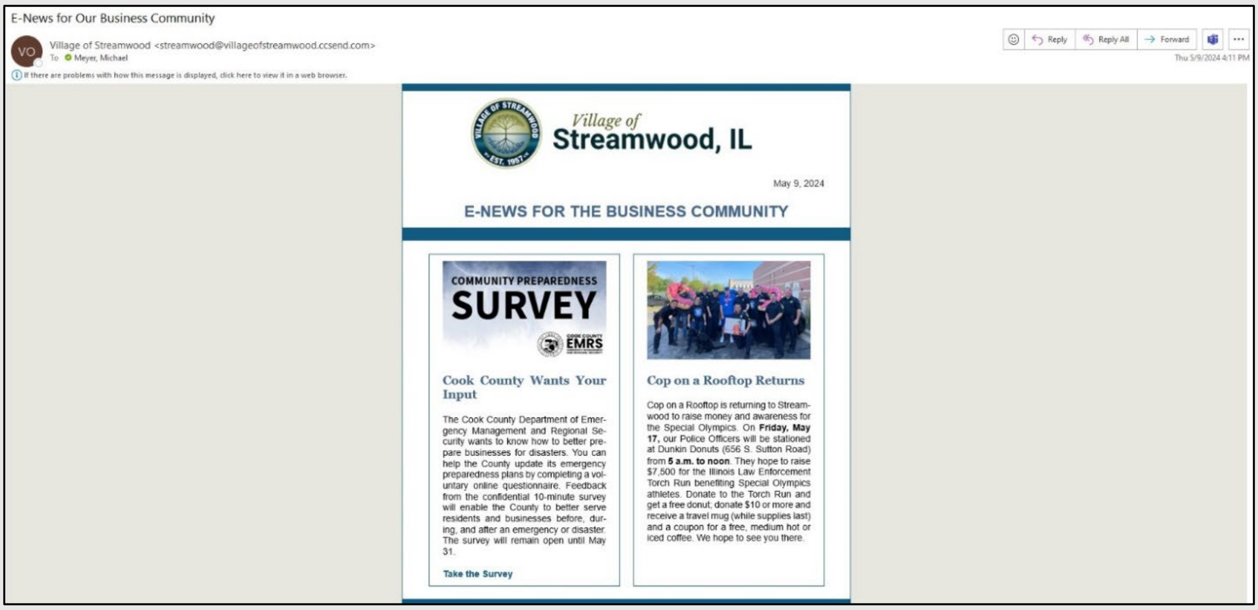
Social Media Posts – May 29 (Twitter / Facebook)



Date	Jurisdiction
05/13/24	Streamwood

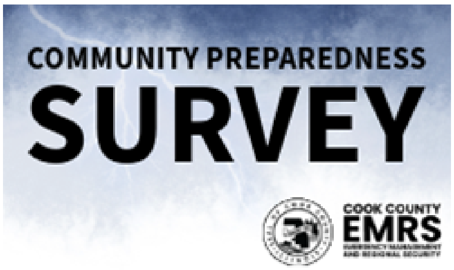
Link / Image

Business e-news sent 5/9/24 and scheduled again for 5/23/24



Resident e-news sent 5/10/24 and scheduled again for 5/17/24, 5/23/24, and 5/31/24

Zoomed in:



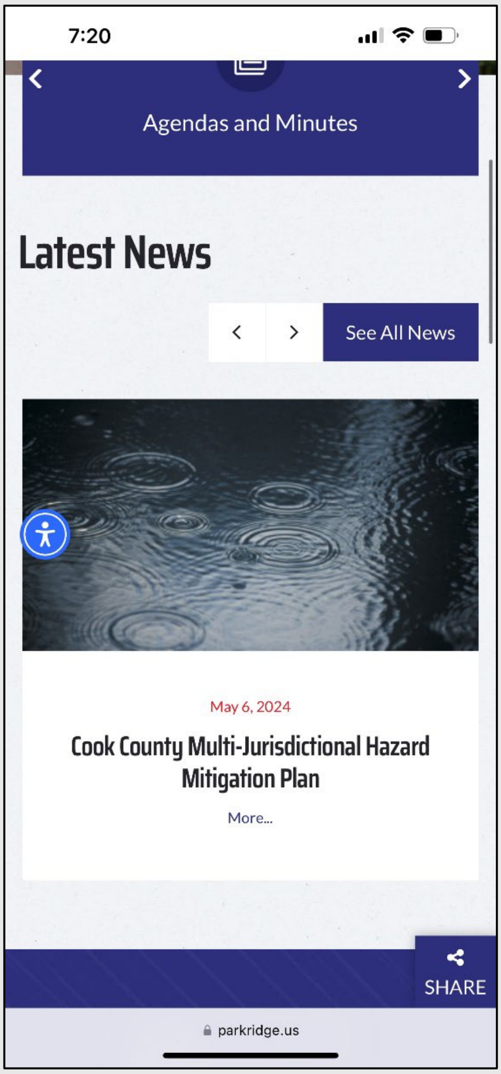
Cook County Wants Your Input

The Cook County Department of Emergency Management and Regional Security wants to know how to better prepare businesses for disasters. You can help the County update its emergency preparedness plans by completing a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable the County to better serve residents and businesses before, during, and after an emergency or disaster. The survey will remain open until May 31.

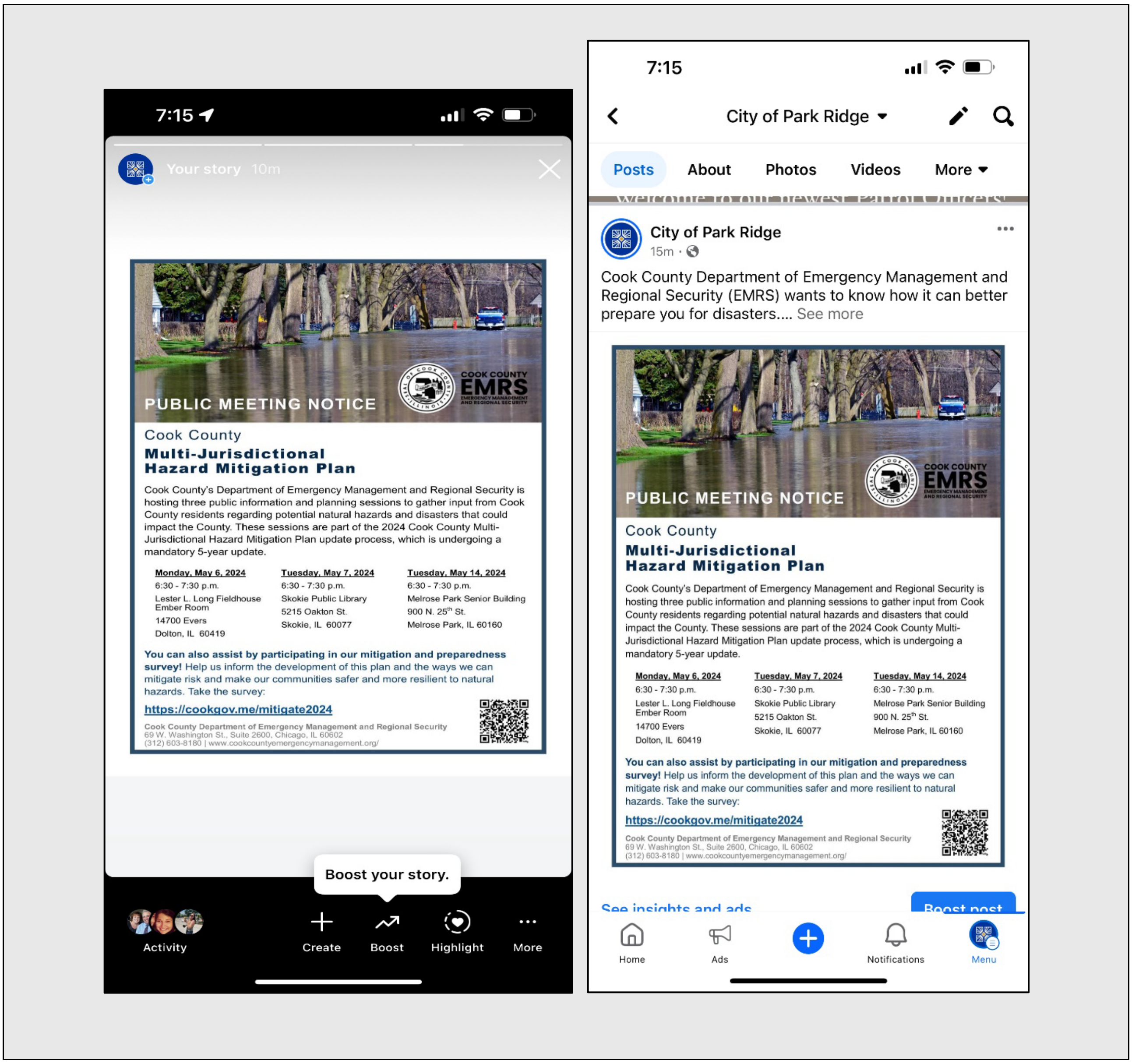
Take the Survey

Date	Jurisdiction
05/16/24	Park Ridge
Link / Image	

Public Outreach Website



Public Outreach – Social Media


7:15
Your story 10m
PUBLIC MEETING NOTICE
COOK COUNTY EMRS
Cook County
Multi-Jurisdictional Hazard Mitigation Plan
Cook County's Department of Emergency Management and Regional Security is hosting three public information and planning sessions to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. These sessions are part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process, which is undergoing a mandatory 5-year update.
Monday, May 6, 2024
6:30 - 7:30 p.m.
Lester L. Long Fieldhouse Ember Room
14700 Evers
Dolton, IL 60419
Tuesday, May 7, 2024
6:30 - 7:30 p.m.
Skokie Public Library
5215 Oakton St.
Skokie, IL 60077
Tuesday, May 14, 2024
6:30 - 7:30 p.m.
Melrose Park Senior Building
900 N. 25th St.
Melrose Park, IL 60160
You can also assist by participating in our mitigation and preparedness survey! Help us inform the development of this plan and the ways we can mitigate risk and make our communities safer and more resilient to natural hazards. Take the survey:
https://cookgov.me/mitigate2024
Cook County Department of Emergency Management and Regional Security
69 W. Washington St., Suite 2600, Chicago, IL 60602
(312) 603-8180 | www.cookcountyemergencymanagement.org/
Boost your story.
Activity
Create
Boost
Highlight
More
7:15
City of Park Ridge
Posts
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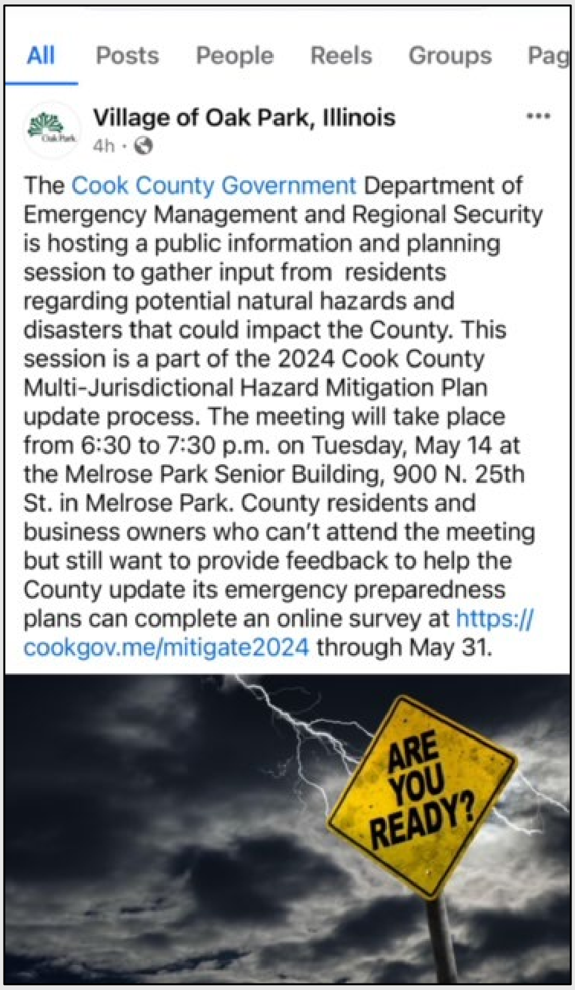
Videos
More
City of Park Ridge
15m
Cook County Department of Emergency Management and Regional Security (EMRS) wants to know how it can better prepare you for disasters.... See more
See insights and ads
Boost post
Home
Ads
Notifications
Menu

Date	Jurisdiction
05/21/24	Willow Springs
Link / Image	
Public Outreach Social Media	

Date	Jurisdiction
05/21/24	Village of Oak Park
Link / Image	

Public Outreach Oak Park Newsletter May 10, 2024

Public Outreach Social Media



All Posts People Reels Groups Pag

Village of Oak Park, Illinois

4h ·

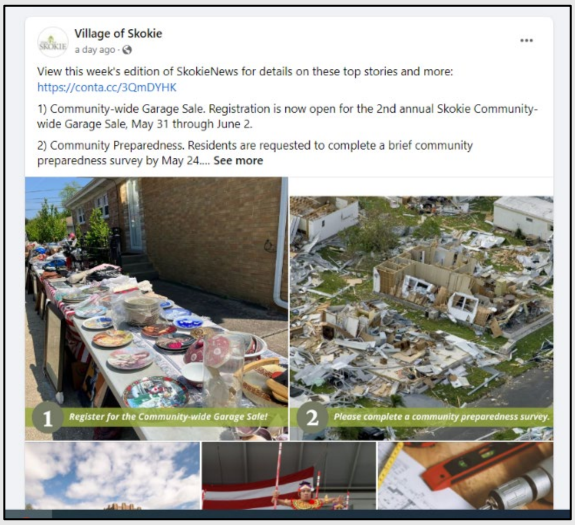
The Cook County Government Department of Emergency Management and Regional Security is hosting a public information and planning session to gather input from residents regarding potential natural hazards and disasters that could impact the County. This session is a part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process. The meeting will take place from 6:30 to 7:30 p.m. on Tuesday, May 14 at the Melrose Park Senior Building, 900 N. 25th St. in Melrose Park. County residents and business owners who can't attend the meeting but still want to provide feedback to help the County update its emergency preparedness plans can complete an online survey at https://cookgov.me/mitigate2024 through May 31.

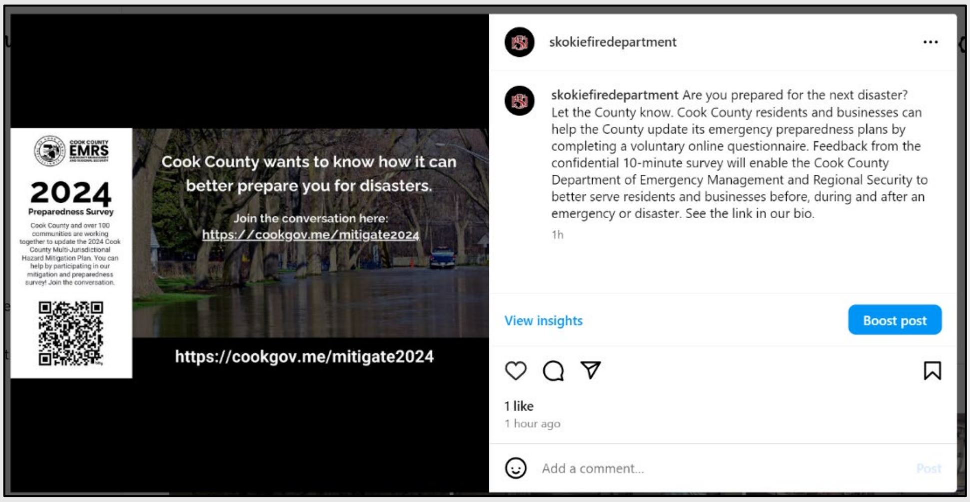
Date	Jurisdiction
5/2/2024-5/21/2024	Skokie

Link / Image

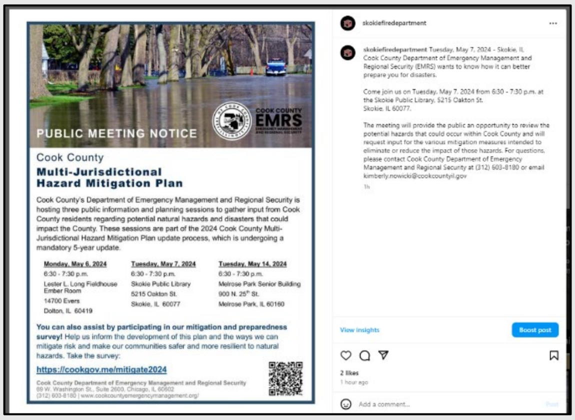
Public Outreach Social Media

May 1, 2024 / May 2, 2024

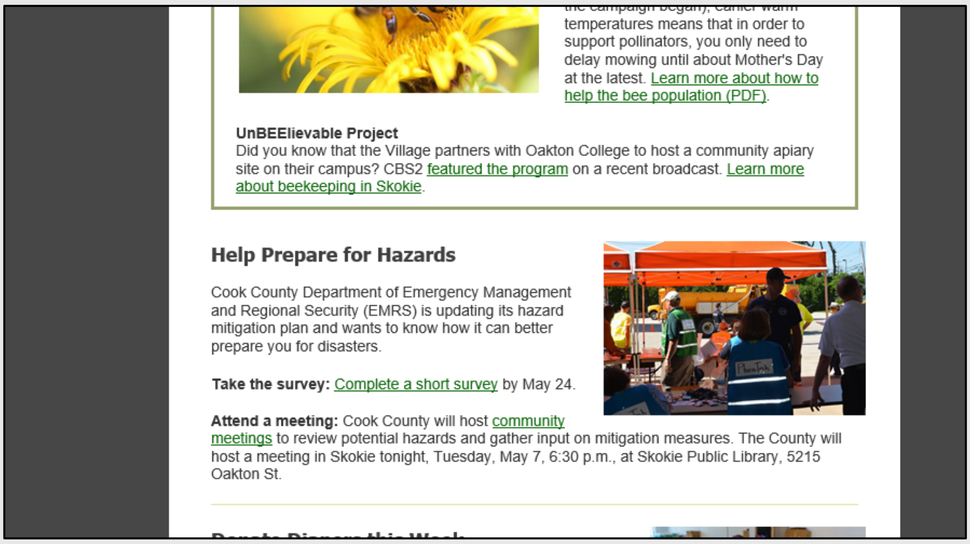




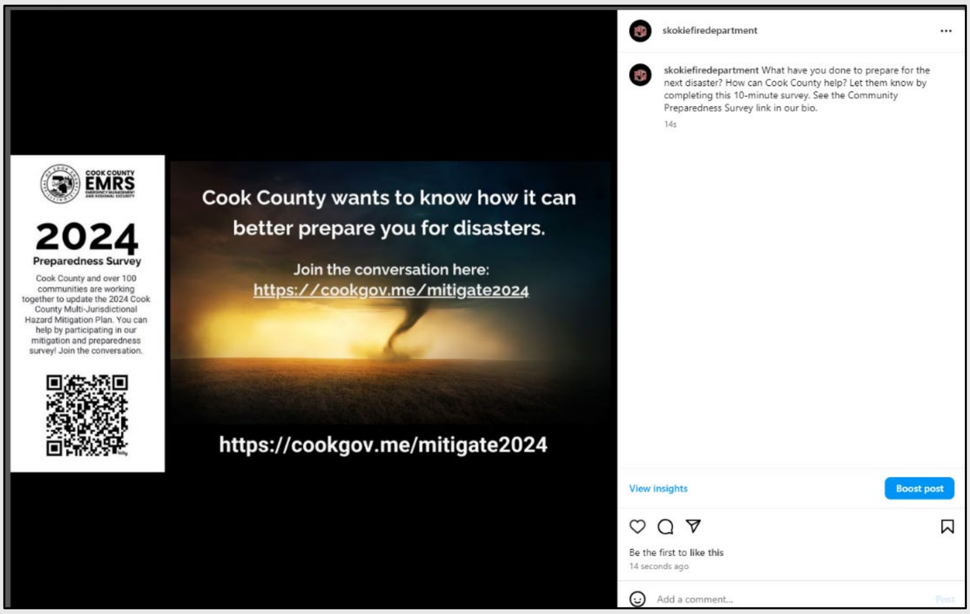
May 6, 2024



May 7, 2024

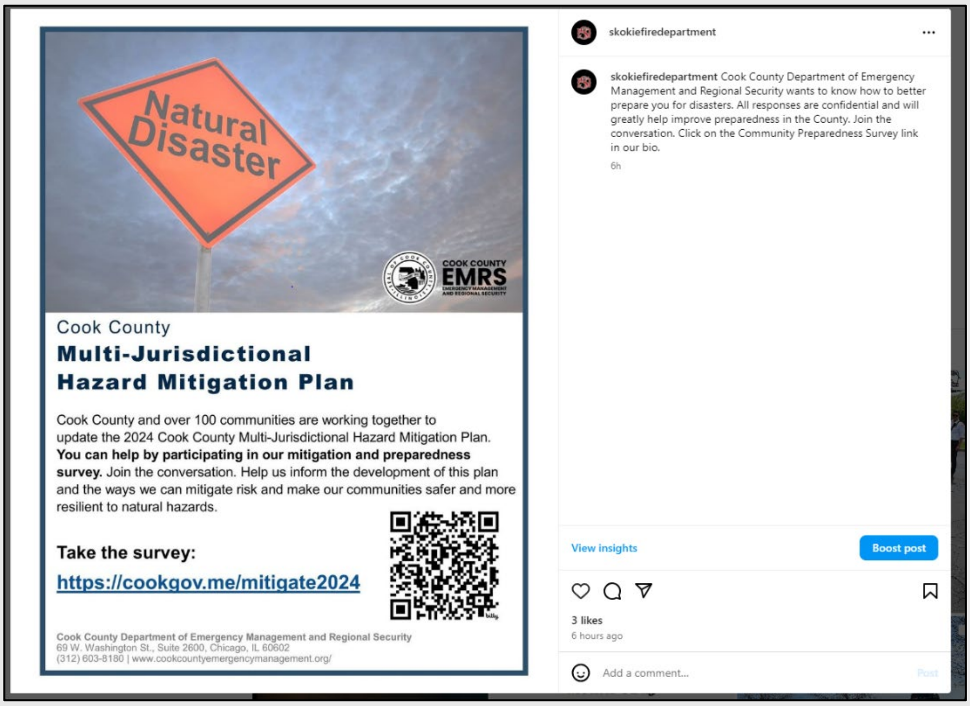


May 13, 2024


skokiefiredepartment
skokiefiredepartment What have you done to prepare for the next disaster? How can Cook County help? Let them know by completing this 10-minute survey. See the Community Preparedness Survey link in our bio.
14s
COOK COUNTY EMRS
2024
Preparedness Survey
Cook County and over 100 communities are working together to update the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan. You can help by participating in our mitigation and preparedness survey! Join the conversation.
Cook County wants to know how it can better prepare you for disasters.
Join the conversation here:
https://cookgov.me/mitigate2024
https://cookgov.me/mitigate2024
View insights
Boost post
Be the first to like this
14 seconds ago
Add a comment...


COOK COUNTY EMRS
2024
Preparedness Survey
Cook County wants to know how it can better prepare you for disasters.
Join the conversation here:
https://cookgov.me/mitigate2024
https://cookgov.me/mitigate2024

May 21, 2024


Natural Disaster
COOK COUNTY EMRS
Cook County
Multi-Jurisdictional Hazard Mitigation Plan
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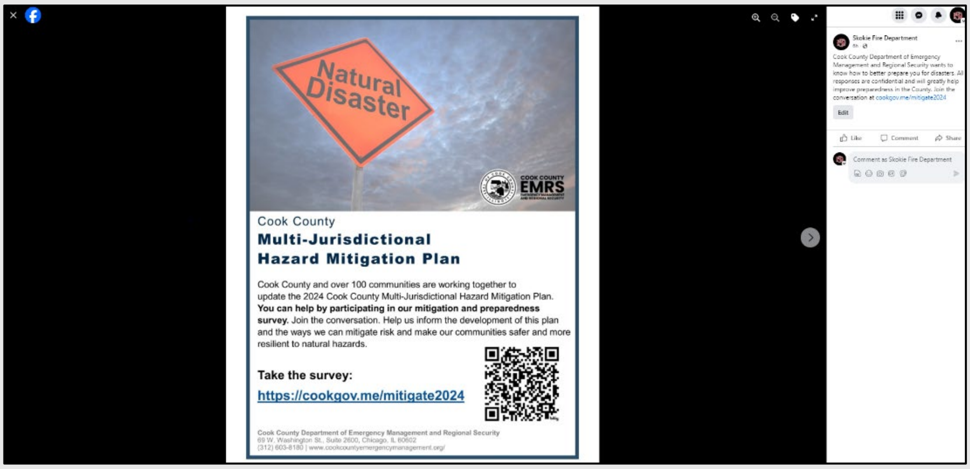
Take the survey:
https://cookgov.me/mitigate2024
Cook County Department of Emergency Management and Regional Security
69 W. Washington St., Suite 2600, Chicago, IL 60602
(312) 603-8180 | www.cookcountyemergencymanagement.org/
skokiefiredepartment
skokiefiredepartment Cook County Department of Emergency Management and Regional Security wants to know how to better prepare you for disasters. All responses are confidential and will greatly help improve preparedness in the County. Join the conversation. Click on the Community Preparedness Survey link in our bio.
6h
View insights
Boost post
3 likes
6 hours ago
Add a comment...
Post


Natural Disaster
COOK COUNTY EMRS
Cook County
Multi-Jurisdictional Hazard Mitigation Plan
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Take the survey:
https://cookgov.me/mitigate2024
Skokie Fire Department

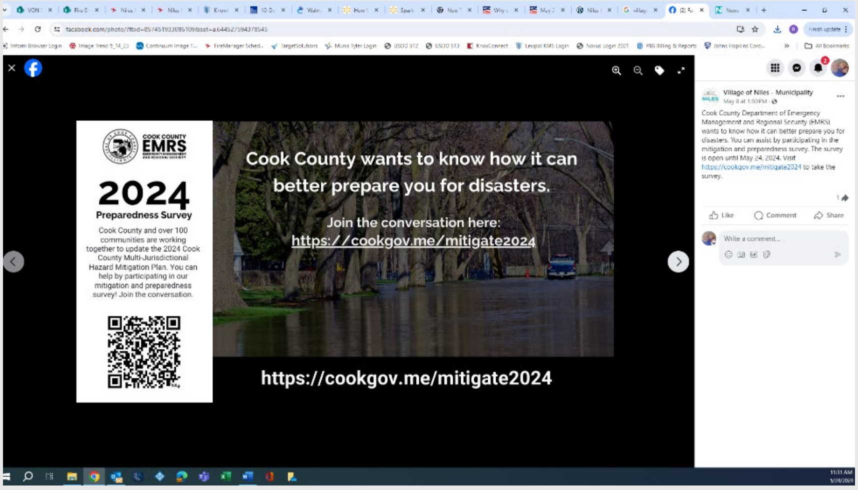
Date	Jurisdiction
5/3/2024-5/8/2024	Niles

Link / Image

Public Outreach

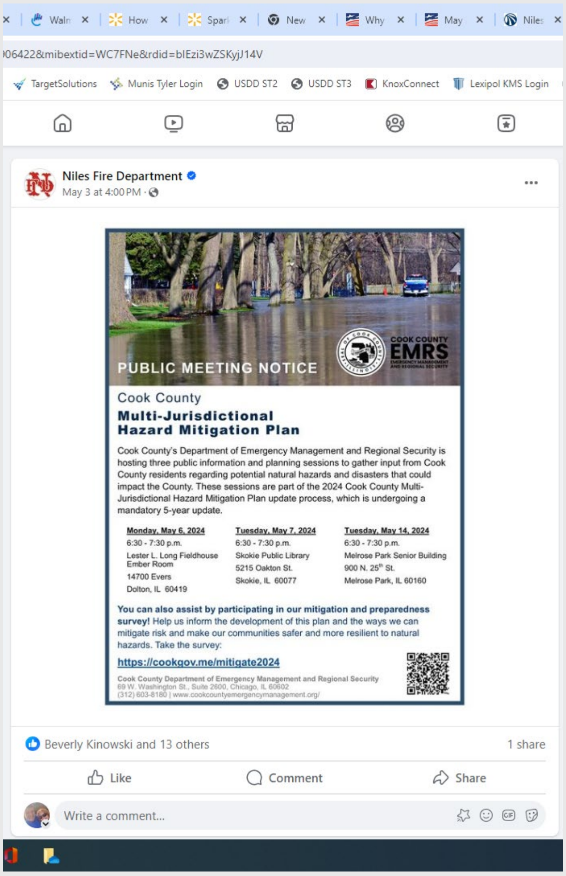
Village of Niles Facebook Page, May 8, 2024, at 1:50pm

https://www.facebook.com/photo/?fbid=857451933086109&set=a.644527594378545



Niles Fire Department Facebook Page, May 3, 2024, at 4:00pm

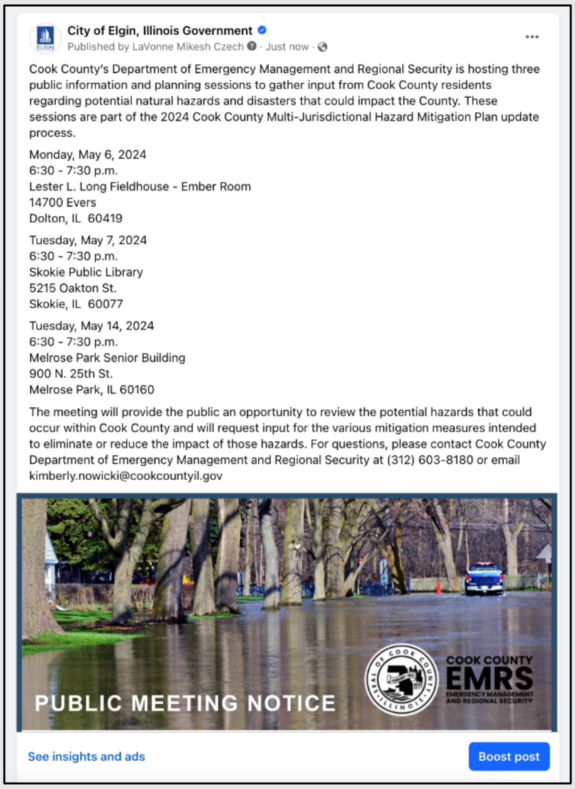
Link to Post



Date	Jurisdiction
5/6/2024-5/29/2024	Elgin

Link / Image

Public Outreach – Social Media/Websites
Screenshot from Facebook on 5/6/2024


City of Elgin, Illinois Government
Published by LaVonne Mikesh Czech · Just now

Cook County's Department of Emergency Management and Regional Security is hosting three public information and planning sessions to gather input from Cook County residents regarding potential natural hazards and disasters that could impact the County. These sessions are part of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan update process.

Monday, May 6, 2024
6:30 - 7:30 p.m.
Lester L. Long Fieldhouse - Ember Room
14700 Evers
Dolton, IL 60419

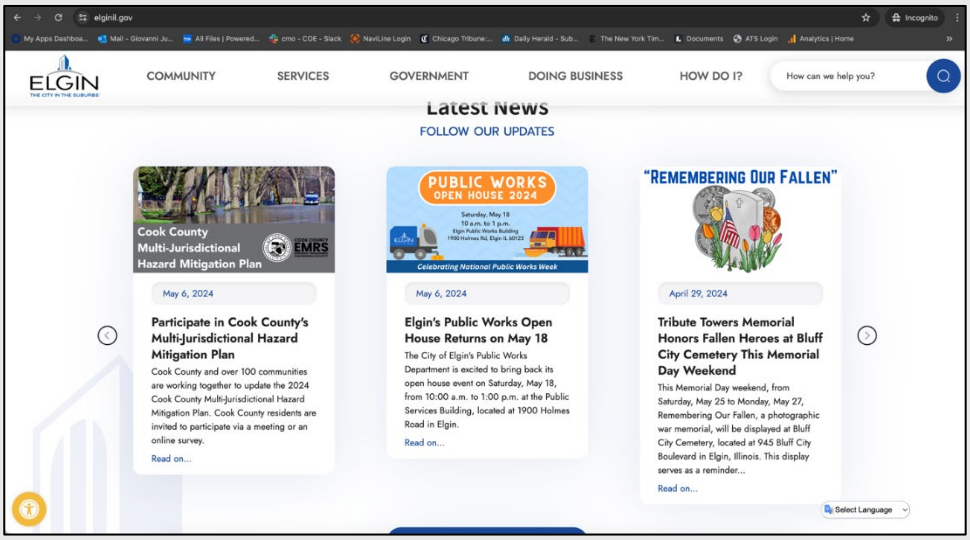
Tuesday, May 7, 2024
6:30 - 7:30 p.m.
Skokie Public Library
5215 Oakton St.
Skokie, IL 60077

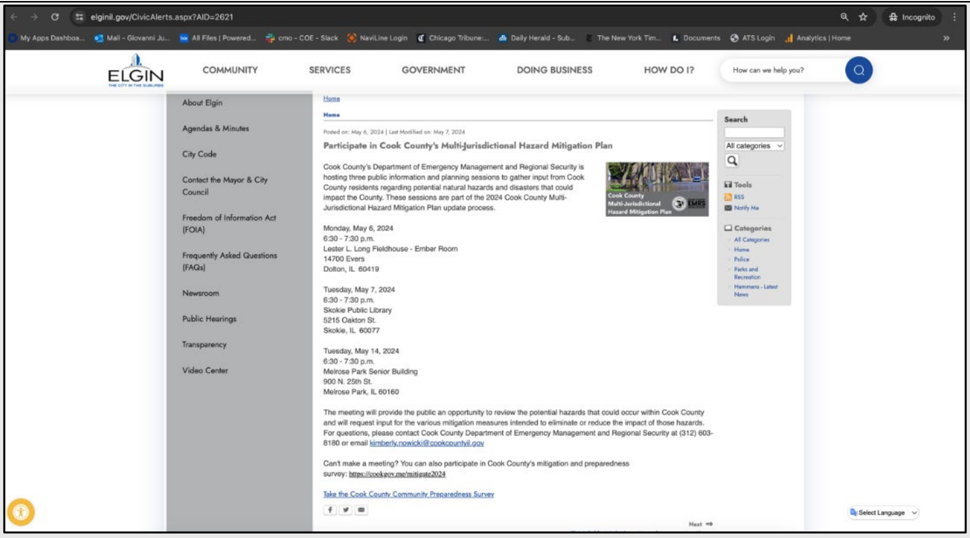
Tuesday, May 14, 2024
6:30 - 7:30 p.m.
Melrose Park Senior Building
900 N. 25th St.
Melrose Park, IL 60160

The meeting will provide the public an opportunity to review the potential hazards that could occur within Cook County and will request input for the various mitigation measures intended to eliminate or reduce the impact of those hazards. For questions, please contact Cook County Department of Emergency Management and Regional Security at (312) 603-8180 or email kimberly.nowicki@cookcountyil.gov

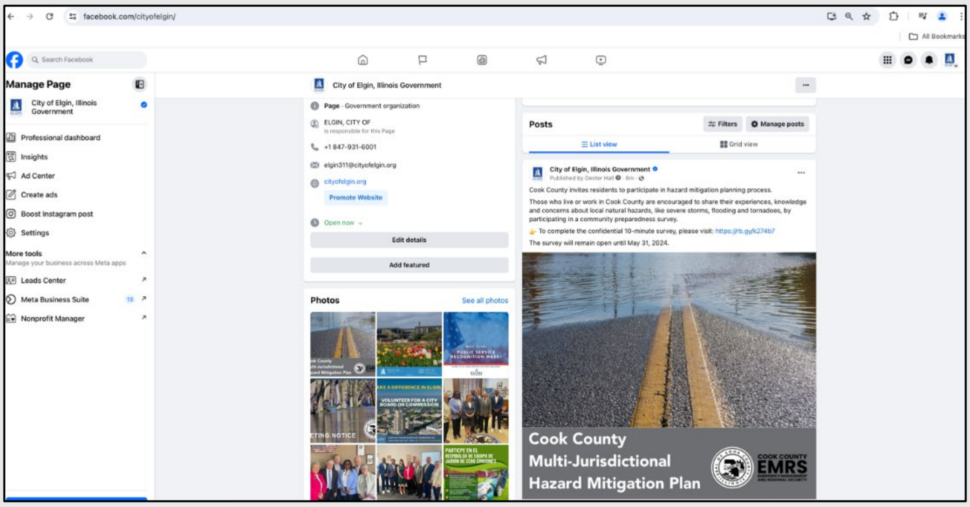
See insights and ads
Boost post

Screenshots from City of Elgin Website 5/7/2024

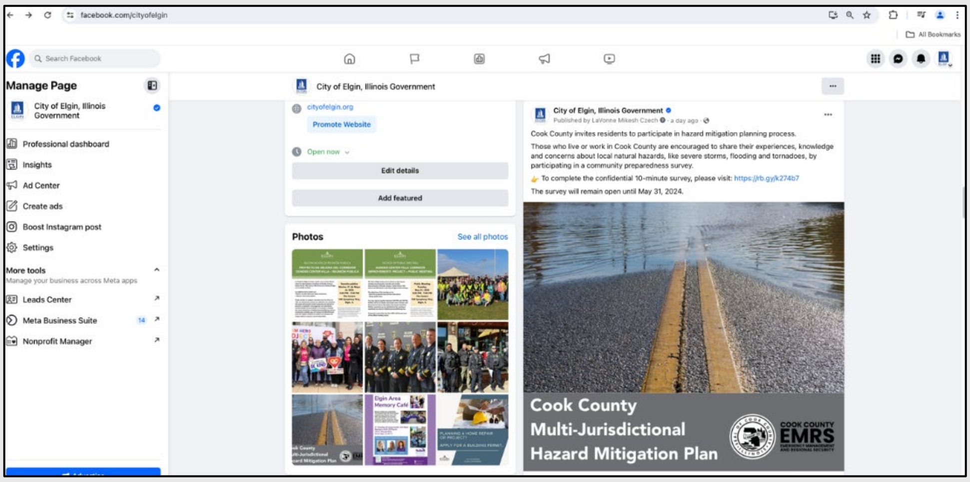




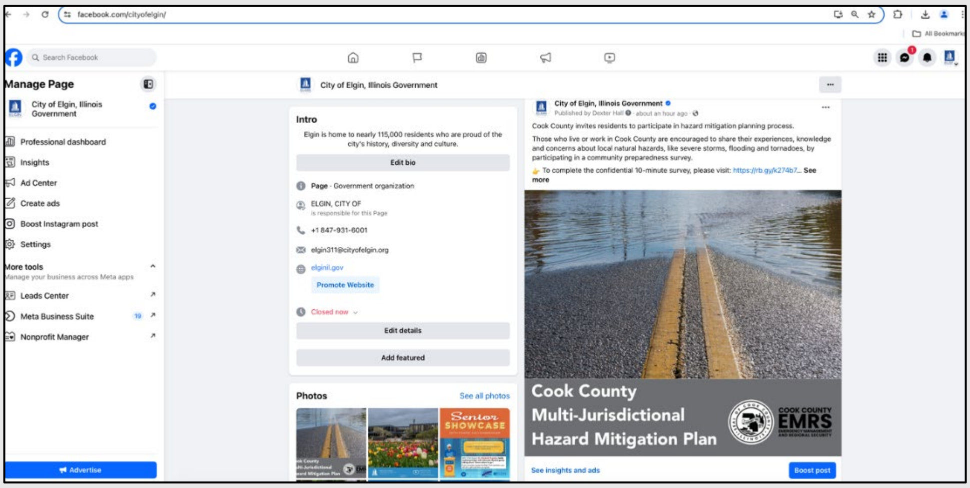
Screenshot from Facebook on 5/8/2024



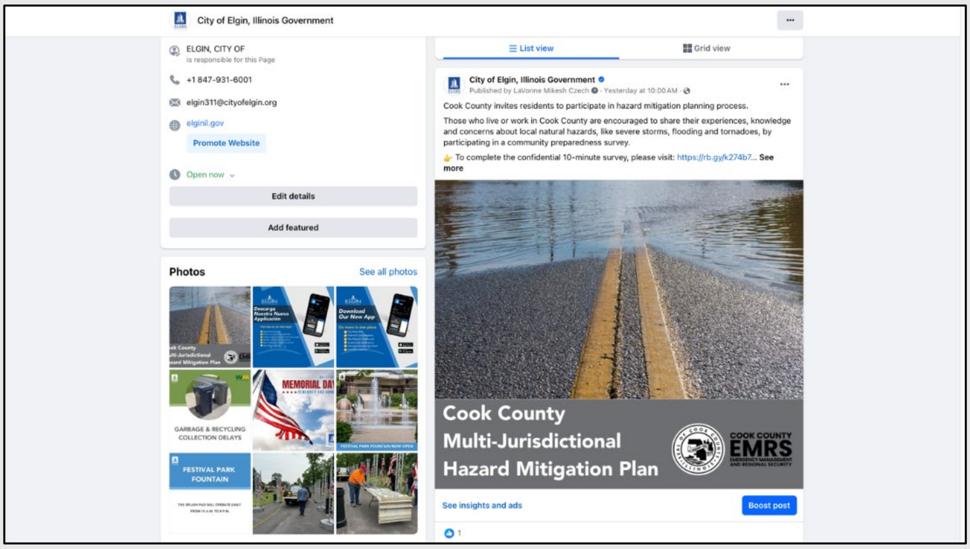
Screenshot from Facebook on 5/15/2024



Screenshot from Facebook on 5/22/2024



Screenshot from Facebook on 5/29/2024



Hazard Mitigation Plan Public Meetings

The public meetings focused on educating the public on what hazard mitigation is, what it means, and how to work together to create a more resilient community. This included formal presentations, interactive group discussions, and defining new mitigation actions within each participants' respective jurisdiction.

May 6, 2024
Lester L Long Fieldhouse Ember Room
14700 Evers
Dolton, IL 60419

May 7, 2019
Skokie Public Library
5215 Oakton Street
Skokie, IL 60077

May 14, 2019
Melrose Park Senior Building
900 N. 24th St.
Melrose Park, IL 60160

Figure: Melrose Park Senior Building

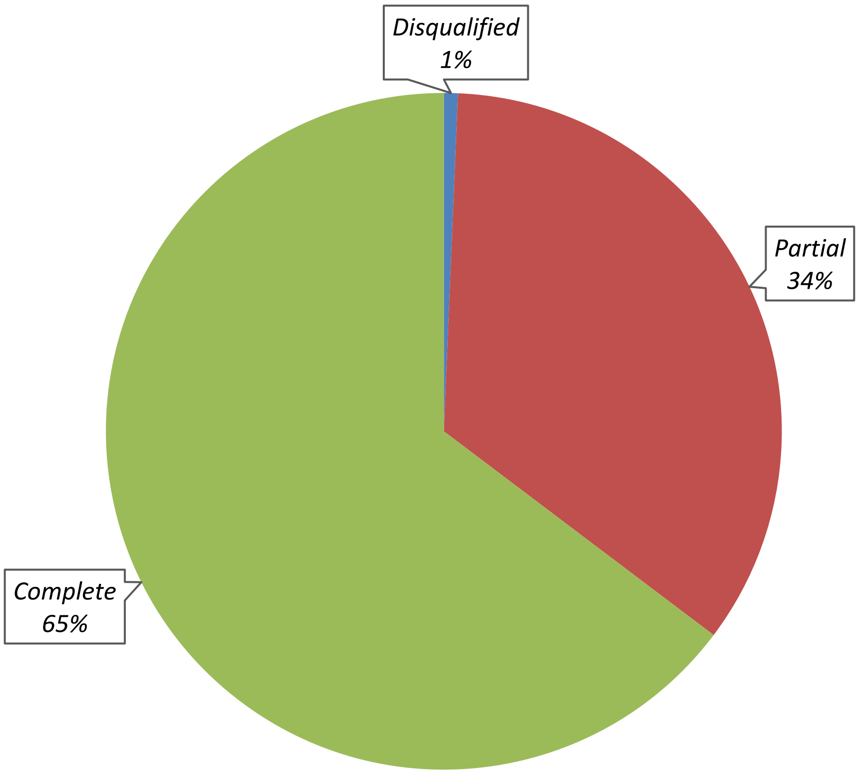
May 17, 2024
By the Hand Club for Kids
415 N. Laramie Ave
Chicago, IL

Cook County Community Preparedness Survey

The public involvement strategy was able to meet its objectives by educating the public about hazard mitigation planning while collecting input from the public to assist the Steering Committee in making informed decisions.

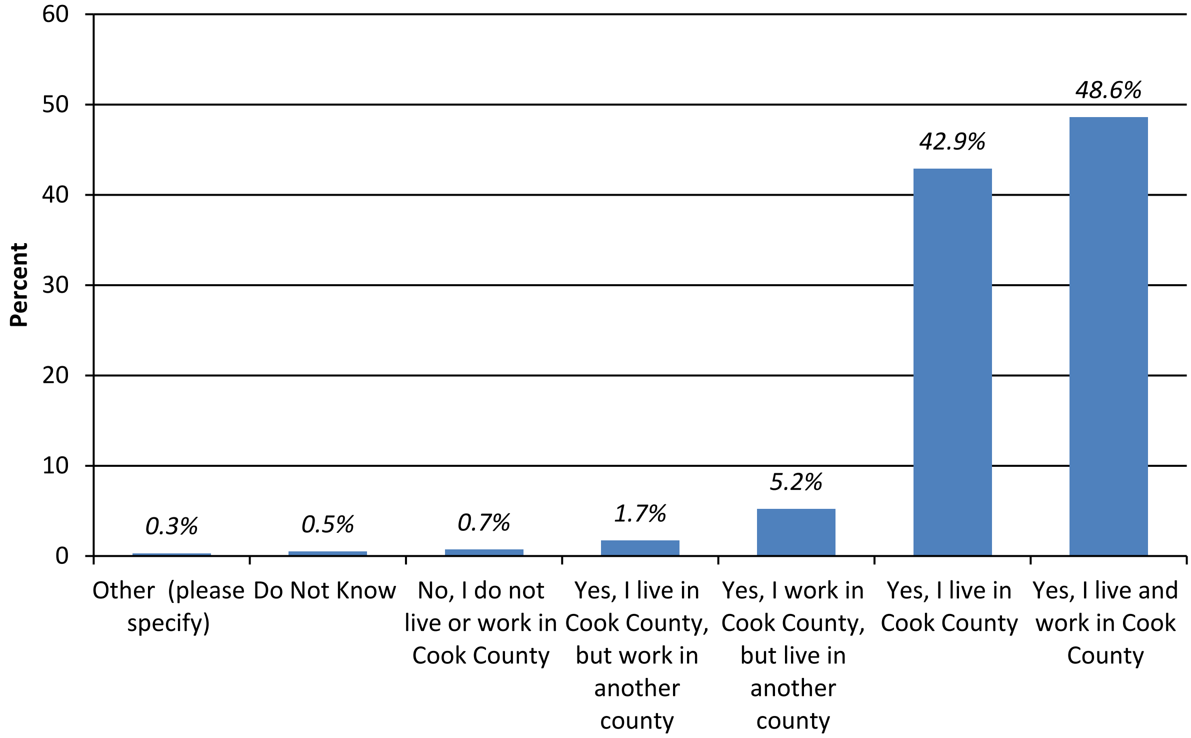
Results - 2024 Cook County Community Preparedness Survey

Response Statistics



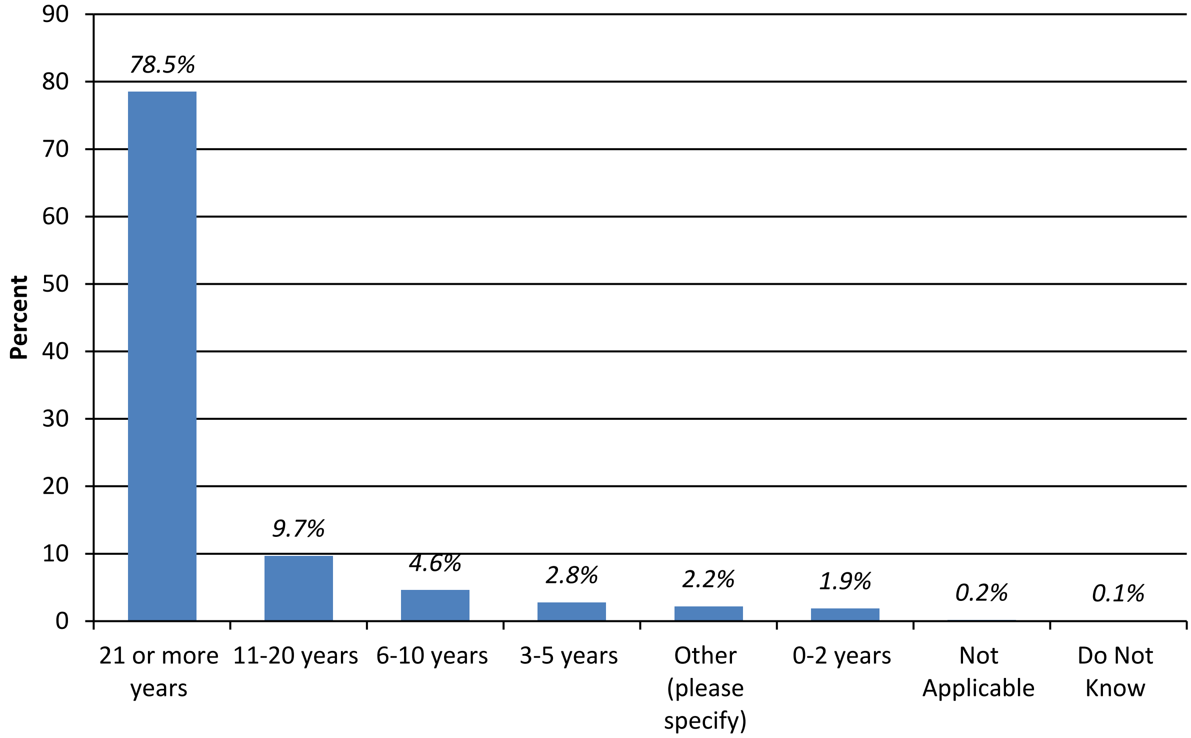
	Count	Percent
Complete	972	64.7
Partial	520	34.6
Disqualified	10	0.7
Total	1,502	

1. Do you live and/or work in Cook County? Please select the best answer that applies to your current situation.



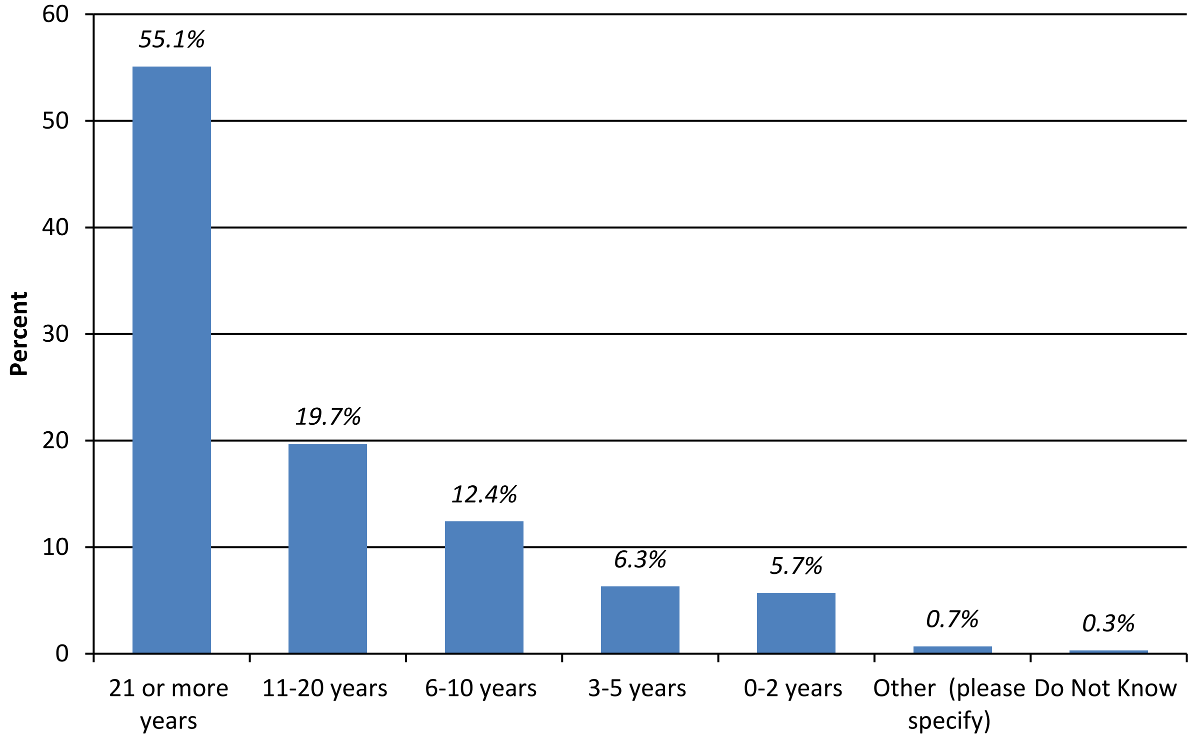
Value	Percent	Count
Yes, I live in Cook County	42.9%	617
Yes, I live and work in Cook County	48.6%	699
Yes, I live in Cook County, but work in another county	1.7%	24
Yes, I work in Cook County, but live in another county	5.2%	75
No, I do not live or work in Cook County	0.7%	10
Do Not Know	0.5%	7
Other (please specify)	0.3%	5
	Total	1,437

2. Approximately how many years have you lived in Cook County?



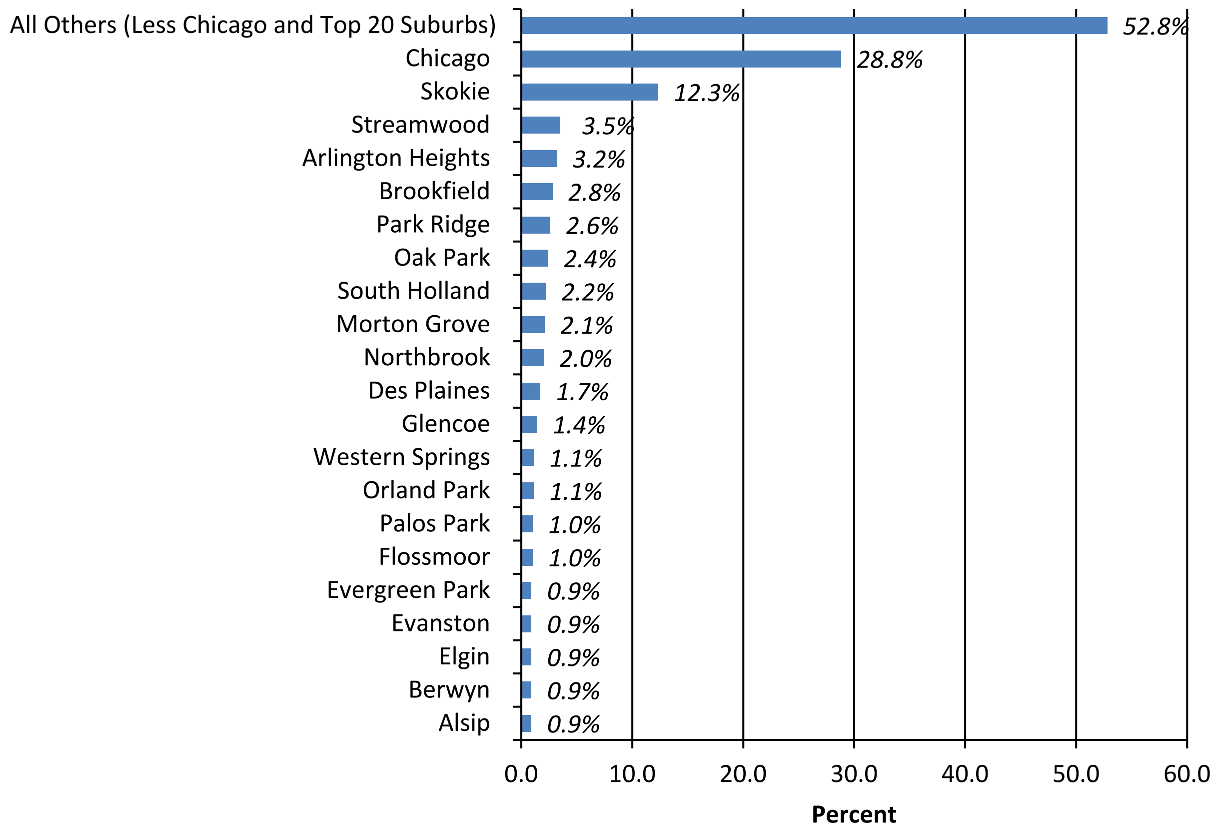
Value	Percent	Count
21 or more years	78.5%	1,021
11-20 years	9.7%	126
6-10 years	4.6%	60
3-5 years	2.8%	37
Other (please specify)	2.2%	28
0-2 years	1.9%	25
Not Applicable	0.2%	3
Do Not Know	0.1%	1
	Total	1,301

3. Approximately how many years have you worked in Cook County?



Value	Percent	Count
21 or more years	55.1%	414
11-20 years	19.7%	148
6-10 years	12.4%	93
3-5 years	6.3%	47
0-2 years	5.7%	43
Other (please specify)	0.7%	5
Do Not Know	0.3%	2
	Total	752

4. Please indicate which community in Cook County you live in.



Value	Percent	Count
Chicago	28.8%	366
Skokie	12.3%	157
Streamwood	3.5%	45
Arlington Heights	3.2%	41
Brookfield	2.8%	36
Park Ridge	2.6%	33
Oak Park	2.4%	31
South Holland	2.2%	28
Morton Grove	2.1%	27

Northbrook	2.0%	26
Des Plaines	1.7%	22
Glencoe	1.4%	18
Orland Park	1.1%	14
Western Springs	1.1%	14
Flossmoor	1.0%	13
Palos Park	1.0%	13
Alsip	0.9%	11
Berwyn	0.9%	12
Elgin	0.9%	11
Evanston	0.9%	11
Evergreen Park	0.9%	12
South Barrington	0.9%	11
Calumet City	0.8%	10
Palatine	0.8%	10
Schaumburg	0.8%	10
LaGrange	0.7%	9
Oak Forest	0.7%	9
Other	0.7%	9
Chicago Heights	0.6%	8
Elmwood Park	0.6%	7
Glenview	0.6%	7
Homewood	0.6%	8

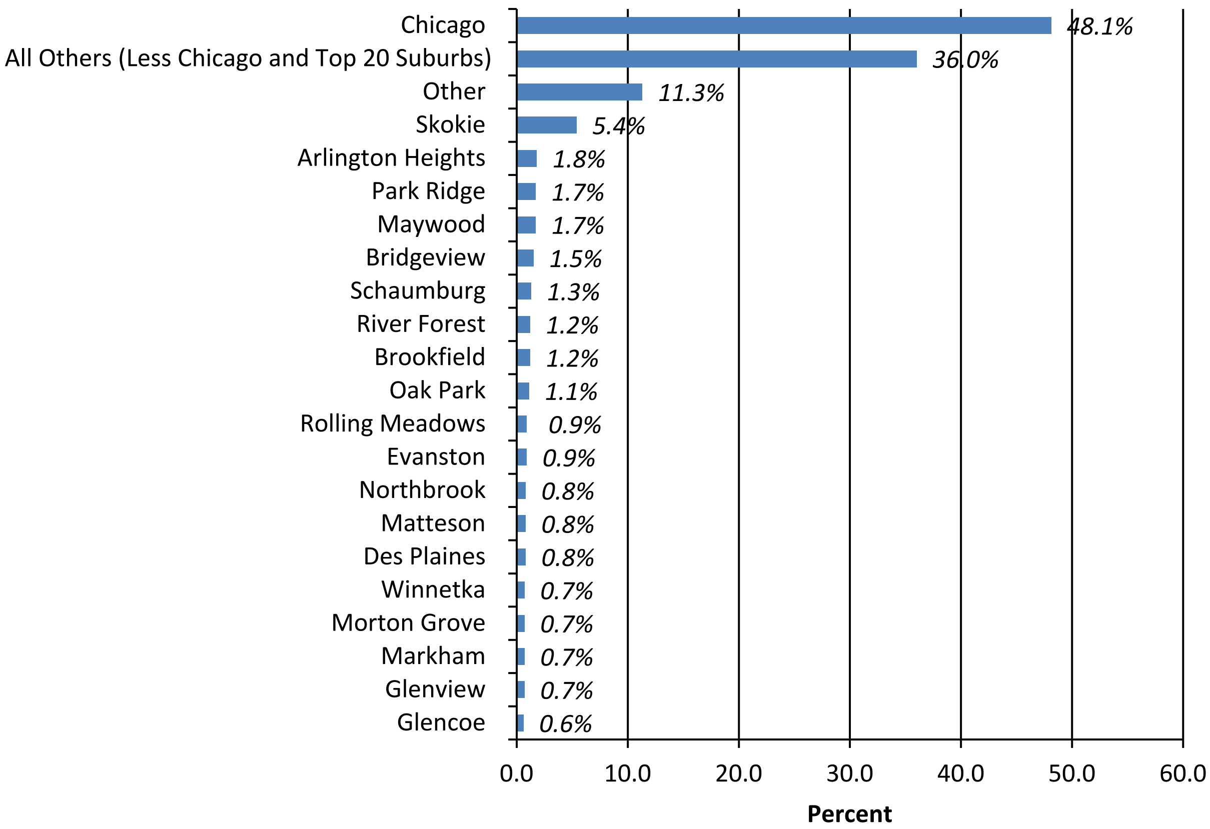
Mount Prospect	0.6%	7
Niles	0.6%	7
North Riverside	0.6%	7
Oak Lawn	0.6%	8
Orland Hills	0.6%	8
River Forest	0.6%	8
Blue Island	0.5%	6
Hoffman Estates	0.5%	6
Lemont	0.5%	6
Tinley Park	0.5%	6
Wheeling	0.5%	6
Wilmette	0.5%	6
LaGrange Park	0.4%	5
Maywood	0.4%	5
Northlake	0.4%	5
Palos Heights	0.4%	5
Park Forest	0.4%	5
Willow Springs	0.4%	5
Bellwood	0.3%	4
Burbank	0.3%	4
Crestwood	0.3%	4
Elk Grove Village	0.3%	4
Lansing	0.3%	4

Matteson	0.3%	4
Palos Hills	0.3%	4
Richton Park	0.3%	4
Rolling Meadows	0.3%	4
Westchester	0.3%	4
Winnetka	0.3%	4
Barrington	0.2%	3
Barrington Hills	0.2%	2
Buffalo Grove	0.2%	2
Burnham	0.2%	2
Calumet Park	0.2%	2
Chicago Ridge	0.2%	3
Cicero	0.2%	2
Countryside	0.2%	3
Glenwood	0.2%	2
Harvey	0.2%	3
Harwood Heights	0.2%	3
Hazel Crest	0.2%	3
Hickory Hills	0.2%	2
Hometown	0.2%	2
Indian Head Park	0.2%	3
Justice	0.2%	2
Kenilworth	0.2%	2

Lynwood	0.2%	2
Markham	0.2%	3
Melrose Park	0.2%	3
Olympia Fields	0.2%	3
River Grove	0.2%	2
Steger	0.2%	2
Unincorporated Cook	0.2%	2
Bartlett	0.1%	1
Bedford Park	0.1%	1
Broadview	0.1%	1
Country Club Hills	0.1%	1
Dolton	0.1%	1
Forest Park	0.1%	1
Lincolnwood	0.1%	1
Lyons	0.1%	1
Merrionette Park	0.1%	1
Norridge	0.1%	1
Northfield	0.1%	1
Phoenix	0.1%	1
Posen	0.1%	1
Riverside	0.1%	1
Rosemont	0.1%	1
Sauk Village	0.1%	1

Schiller Park	0.1%	1
South Chicago Heights	0.1%	1
Stickney	0.1%	1
Summit	0.1%	1
	Total	1,272

5. Please indicate which community in Cook County you work in.



Value	Percent	Count
Chicago	48.1%	541
Other	11.3%	127
Skokie	5.4%	61
Arlington Heights	1.8%	20
Maywood	1.7%	19
Park Ridge	1.7%	19
Bridgeview	1.5%	17
Schaumburg	1.3%	15
Brookfield	1.2%	14

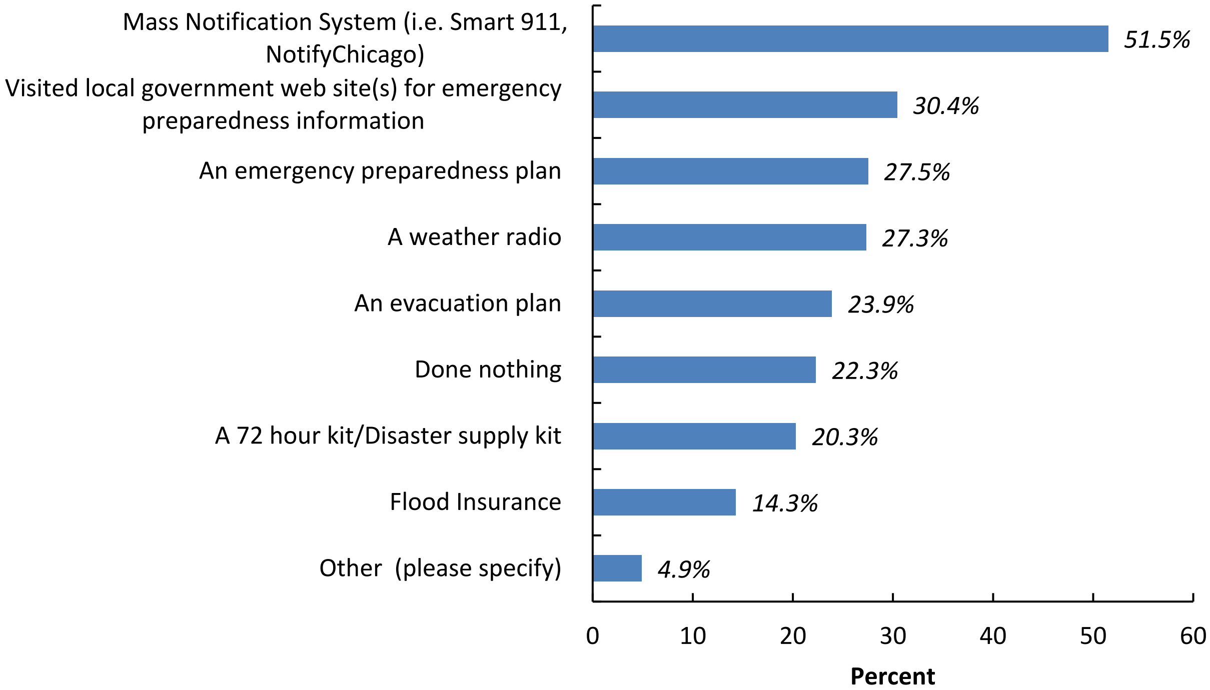
River Forest	1.2%	13
Oak Park	1.1%	12
Evanston	0.9%	10
Rolling Meadows	0.9%	10
Des Plaines	0.8%	9
Matteson	0.8%	9
Northbrook	0.8%	9
Glenview	0.7%	8
Markham	0.7%	8
Morton Grove	0.7%	8
Winnetka	0.7%	8
Glencoe	0.6%	7
South Holland	0.6%	7
Streamwood	0.6%	7
Blue Island	0.5%	6
Elk Grove Village	0.5%	6
Niles	0.5%	6
Oak Forest	0.5%	6
Western Springs	0.5%	6
Willow Springs	0.5%	6
Unincorporated Cook	0.5%	6
Barrington Hills	0.4%	5
Calumet City	0.4%	4

Chicago Heights	0.4%	4
Cicero	0.4%	4
Flossmoor	0.4%	5
Hoffman Estates	0.4%	5
Palos Hills	0.4%	4
Palos Park	0.4%	4
Wilmette	0.4%	4
Alsip	0.3%	3
Berwyn	0.3%	3
Elgin	0.3%	3
Forest Park	0.3%	3
Mount Prospect	0.3%	3
Northfield	0.3%	3
Palatine	0.3%	3
Tinley Park	0.3%	3
Bensenville	0.2%	2
Buffalo Grove	0.2%	2
Elmhurst	0.2%	2
Evergreen Park	0.2%	2
Harvey	0.2%	2
Hinsdale	0.2%	2
Kenilworth	0.2%	2
LaGrange	0.2%	2

Lansing	0.2%	2
Lyons	0.2%	2
Melrose Park	0.2%	2
Orland Hills	0.2%	2
Orland Park	0.2%	2
River Grove	0.2%	2
Robbins	0.2%	2
Barrington	0.1%	1
Bartlett	0.1%	1
Berkeley	0.1%	1
Broadview	0.1%	1
Burr Ridge	0.1%	1
Country Club Hills	0.1%	1
Deerfield	0.1%	1
Franklin Park	0.1%	1
Hanover Park	0.1%	1
Hazel Crest	0.1%	1
Indian Head Park	0.1%	1
LaGrange Park	0.1%	1
Lemont	0.1%	1
Lincolnwood	0.1%	1
Lynwood	0.1%	1
McCook	0.1%	1

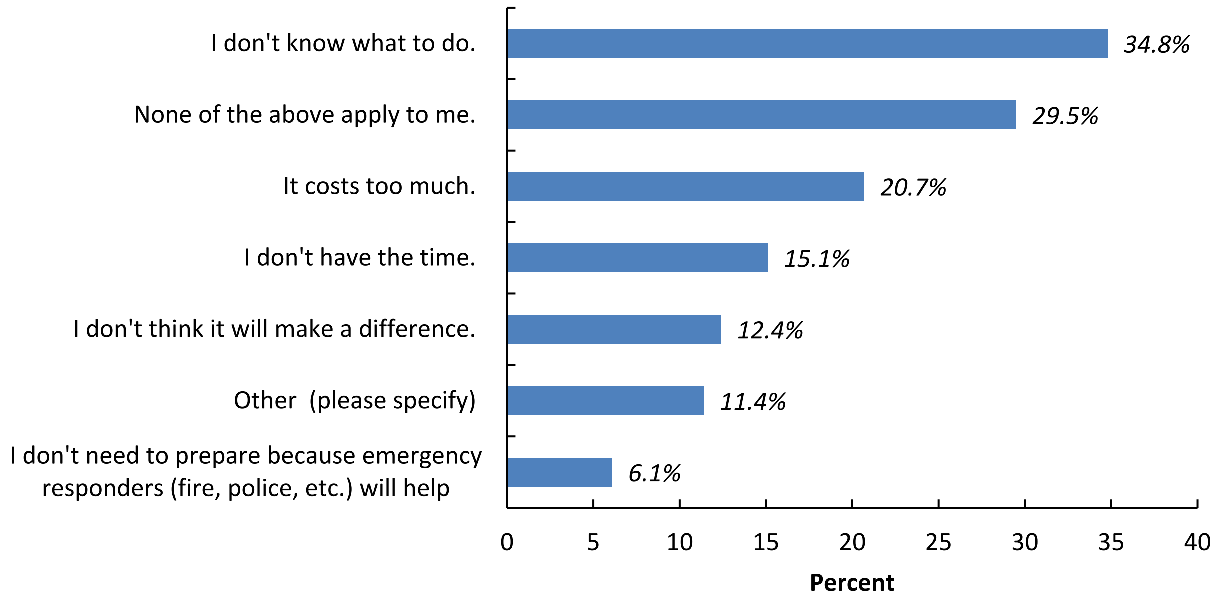
Norridge	0.1%	1
North Riverside	0.1%	1
Northlake	0.1%	1
Oak Brook	0.1%	1
Oak Lawn	0.1%	1
Palos Heights	0.1%	1
Park Forest	0.1%	1
Phoenix	0.1%	1
Riverdale	0.1%	1
Rosemont	0.1%	1
Sauk Village	0.1%	1
Schiller Park	0.1%	1
South Chicago Heights	0.1%	1
Steger	0.1%	1
Westchester	0.1%	1
Wheeling	0.1%	1
	Total	1,125

6. Please indicate those activities you have done to prepare for emergencies and disasters. Please select ALL that apply. I have…



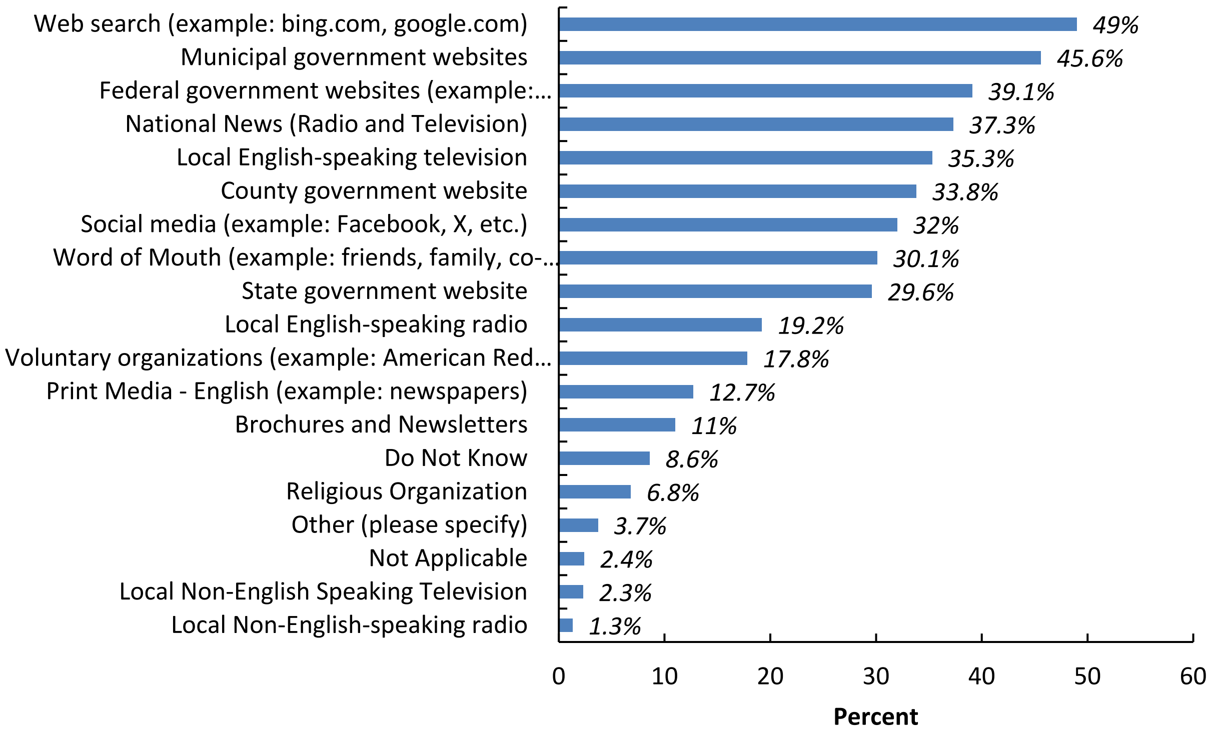
Value	Percent	Count
Mass Notification System (i.e. Smart 911, Notify Chicago)	51.5%	596
visited local government web site(s) for emergency preparedness information	30.4%	352
an emergency preparedness plan	27.5%	318
a weather radio	27.3%	316
an evacuation plan	23.9%	277
done nothing	22.3%	258
a 72-hour kit/Disaster supply kit	20.3%	235
flood Insurance	14.3%	166
Other (please specify)	4.9%	57

7. Have any of the reasons below prevented you from pursuing additional preparedness activities? Please select ALL that apply.



Value	Percent	Count
I don't know what to do.	34.8%	394
None of the above applies to me.	29.5%	334
It costs too much.	20.7%	234
I don't have the time.	15.1%	171
I don't think it will make a difference.	12.4%	141
Other (please specify)	11.4%	129
I don't need to prepare because emergency responders (fire, police, etc.) will help me during an emergency.	6.1%	69

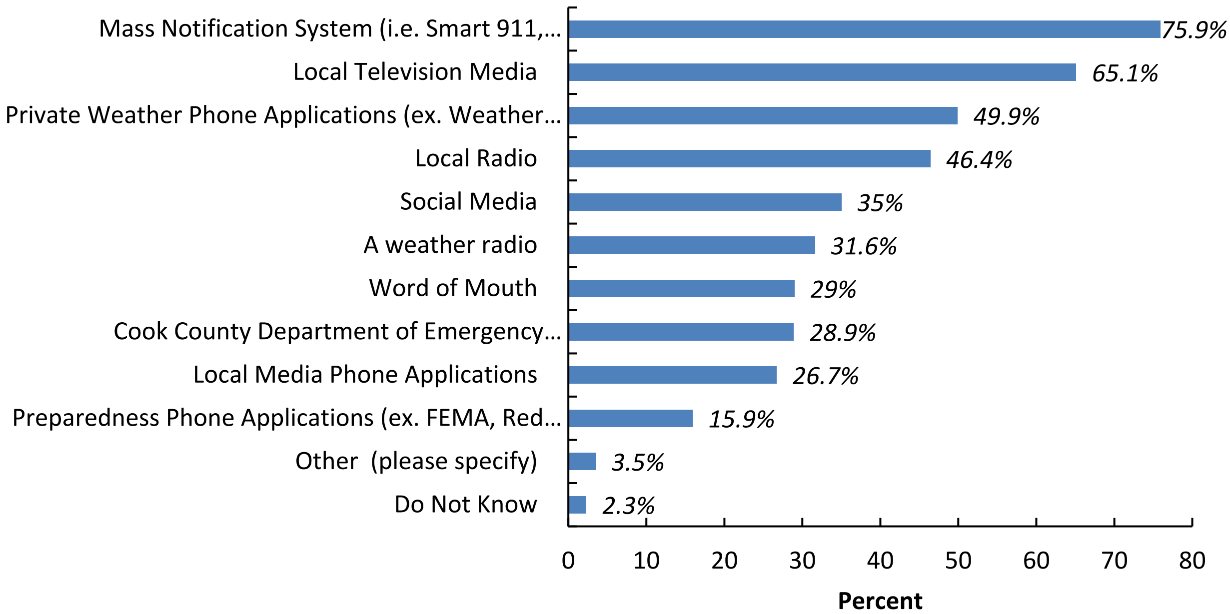
8. Please indicate where you go to obtain emergency and disaster preparedness related information? Please select ALL that apply.



Value	Percent	Count
Web search (example: bing.com, google.com)	49.0%	566
Municipal government websites	45.6%	526
Federal government websites (example: www.fema.gov)	39.1%	451
National News (Radio and Television)	37.3%	431
Local English-speaking television	35.3%	407
County government website	33.8%	390
Social media (example: Facebook, X, etc.)	32.0%	369
Word of Mouth (example: friends, family, co-workers)	30.1%	347
State government website	29.6%	342
Local English-speaking radio	19.2%	222

Voluntary organizations (example: American Red Cross, Salvation Army, etc.)	17.8%	205
Print Media - English (example: newspapers)	12.7%	146
Brochures and Newsletters	11.0%	127
Do Not Know	8.6%	99
Religious Organization	6.8%	79
Other (please specify)	3.7%	43
Not Applicable	2.4%	28
Local Non-English-Speaking Television	2.3%	26
Local non-English-speaking radio	1.3%	15

9. Please indicate how you expect to receive alerts and information during an emergency. Please select ALL that apply.



Value	Percent	Count
Mass Notification System (i.e. Smart 911, Notify Chicago)	75.9%	877
Local Television Media	65.1%	752
Private Weather Phone Applications (ex. Weather Channel, Wunderground, Weather Bug, AccuWeather, etc.)	49.9%	576
Local Radio	46.4%	536
Social Media	35.0%	404
A weather radio	31.6%	365
Word of Mouth	29.0%	335
Cook County Department of Emergency Management and Regional Security (EMRS) website	28.9%	334
Local Media Phone Applications	26.7%	308
Preparedness Phone Applications (ex. FEMA, Red Cross, etc.)	15.9%	184

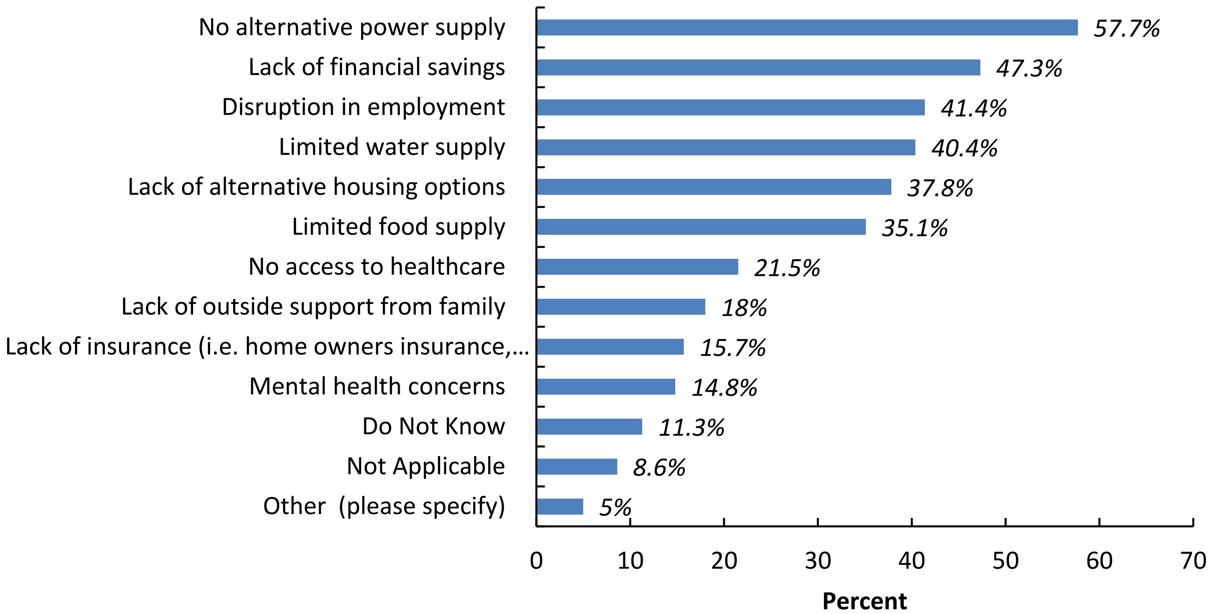
Other (please specify)	3.5%	40
Do Not Know	2.3%	26

10. Would you agree or disagree with the following statements?

	Strongly Agree		Agree		Neither Agree nor Disagree		Disagree		Strongly Disagree		Do Not Know		Responses
STATEMENT	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
My jurisdiction is providing the services necessary to prepare me for a disaster.	119	10.4%	303	26.4%	361	31.4%	117	10.2%	83	7.2%	165	14.4%	1,148
I am familiar with my jurisdiction's website and can easily obtain information about emergencies and disasters.	125	11.0%	346	30.4%	251	22.0%	208	18.3%	110	9.7%	99	8.7%	1,139
During times of emergency, information is provided in a language and format I can understand.	479	41.8%	436	38.0%	115	10.0%	25	2.2%	21	1.8%	71	6.2%	1,147
I can easily obtain emergency information in times of crisis.	197	17.3%	463	40.5%	243	21.3%	76	6.7%	49	4.3%	114	10.0%	1,142
I am familiar with the website of Cook County Department of Emergency Management and Regional Security and	84	7.4%	191	16.9%	244	21.6%	322	28.5%	197	17.4%	93	8.2%	1,131

use it to obtain information about emergencies.														

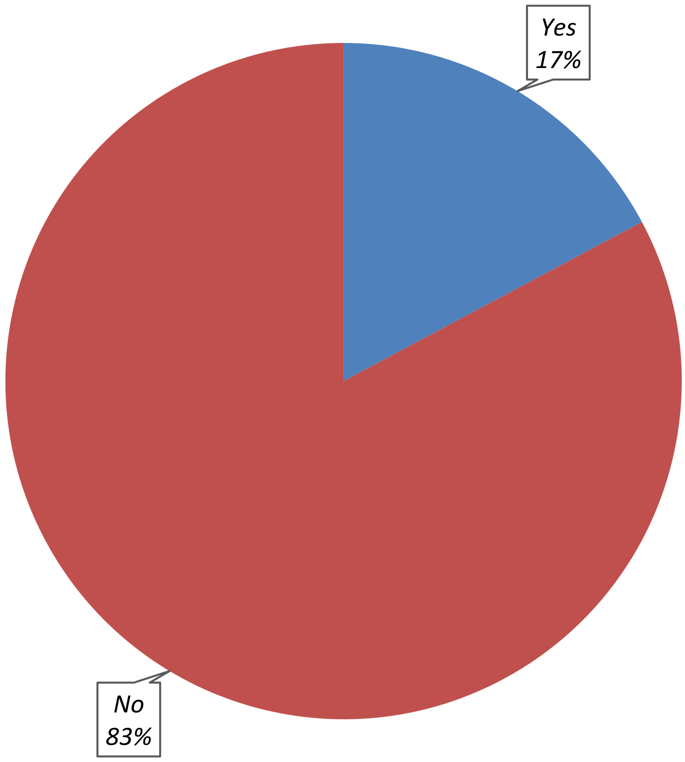
11. Which of the following may prevent you from recovering from a disaster? Please select ALL that apply.



Value	Percent	Count
No alternative power supply	57.7%	659
Lack of financial savings	47.3%	540
Disruption in employment	41.4%	473
Limited water supply	40.4%	461
Lack of alternative housing options	37.8%	432
Limited food supply	35.1%	401
No access to healthcare	21.5%	246
Lack of outside support from family	18.0%	205
Lack of insurance (i.e. homeowners insurance, renter's insurance, flood insurance, etc.)	15.7%	179
Mental health concerns	14.8%	169
Do Not Know	11.3%	129

Not Applicable	8.6%	98
Other (please specify)	5.0%	57

12. Do you or does anyone in your household have any special access or other special needs that would require early warning or specialized response during natural hazard events? (For example, a wheelchair, walker or oxygen.)



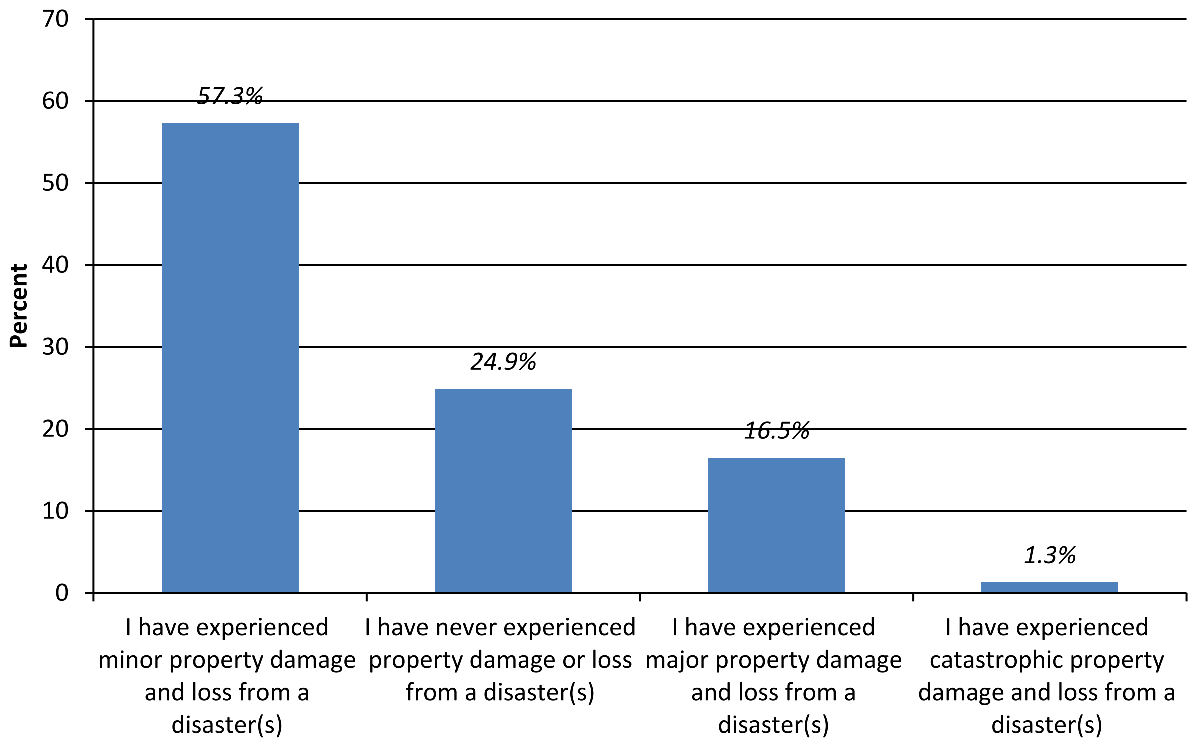
Value	Percent	Count
No	82.8%	951
Yes	17.2%	198
	Total	1,149

13. Do you believe that your household and/or place of business might ever be threatened by the following hazards? Please rate what hazards present the greatest risk. Low Risk = Low impact on threat to life and property damage Medium Risk = Medium impact on threat to life and property damage High Risk = High impact on threat to life and property damage

	Low Risk		Medium Risk		High Risk		Not Applicable		Responses
HAZARD	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Dam/Levee Failure	568	58.7%	73	7.5%	30	3.1%	296	30.6%	967
Drought	523	53.8%	299	30.8%	68	7.0%	82	8.4%	972
Earthquake	676	69.3%	195	20.0%	45	4.6%	59	6.1%	975
Flood	230	23.4%	432	43.9%	307	31.2%	15	1.5%	984
Extreme Heat	165	16.8%	401	40.8%	405	41.2%	12	1.2%	983
Lightning	201	20.5%	445	45.3%	324	33.0%	12	1.2%	982
Hail	158	16.1%	486	49.4%	324	33.0%	15	1.5%	983
Fog	396	40.7%	351	36.1%	204	21.0%	22	2.3%	973
High Winds	92	9.3%	399	40.4%	482	48.8%	14	1.4%	987

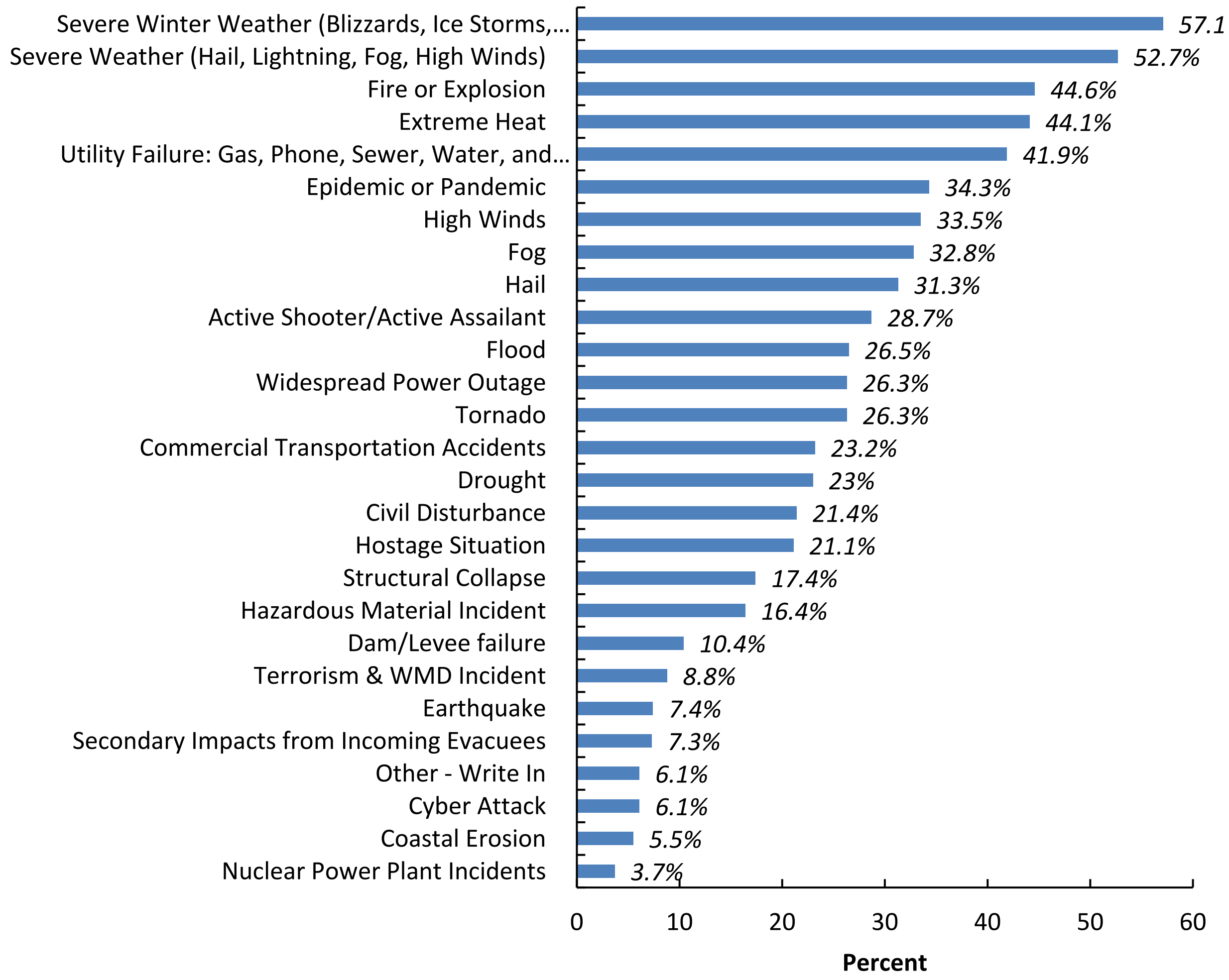
Snow	121	12.2%	359	36.3%	494	50.0%	14	1.4%	988
Extreme Cold	104	10.5%	347	35.1%	519	52.5%	18	1.8%	988
Blizzards	125	12.7%	379	38.6%	465	47.3%	14	1.4%	983
Ice Storms	141	14.3%	394	40.0%	430	43.7%	19	1.9%	984
Tornado	182	18.7%	471	48.4%	302	31.0%	19	2.0%	974

14. Please select the answer that best describes your experience.



Value	Percent	Count
I have never experienced property damage or loss from a disaster(s)	24.9%	247
I have experienced minor property damage and loss from a disaster(s)	57.3%	567
I have experienced major property damage and loss from a disaster(s)	16.5%	163
I have experienced catastrophic property damage and loss from a disaster(s)	1.3%	13
	Total	990

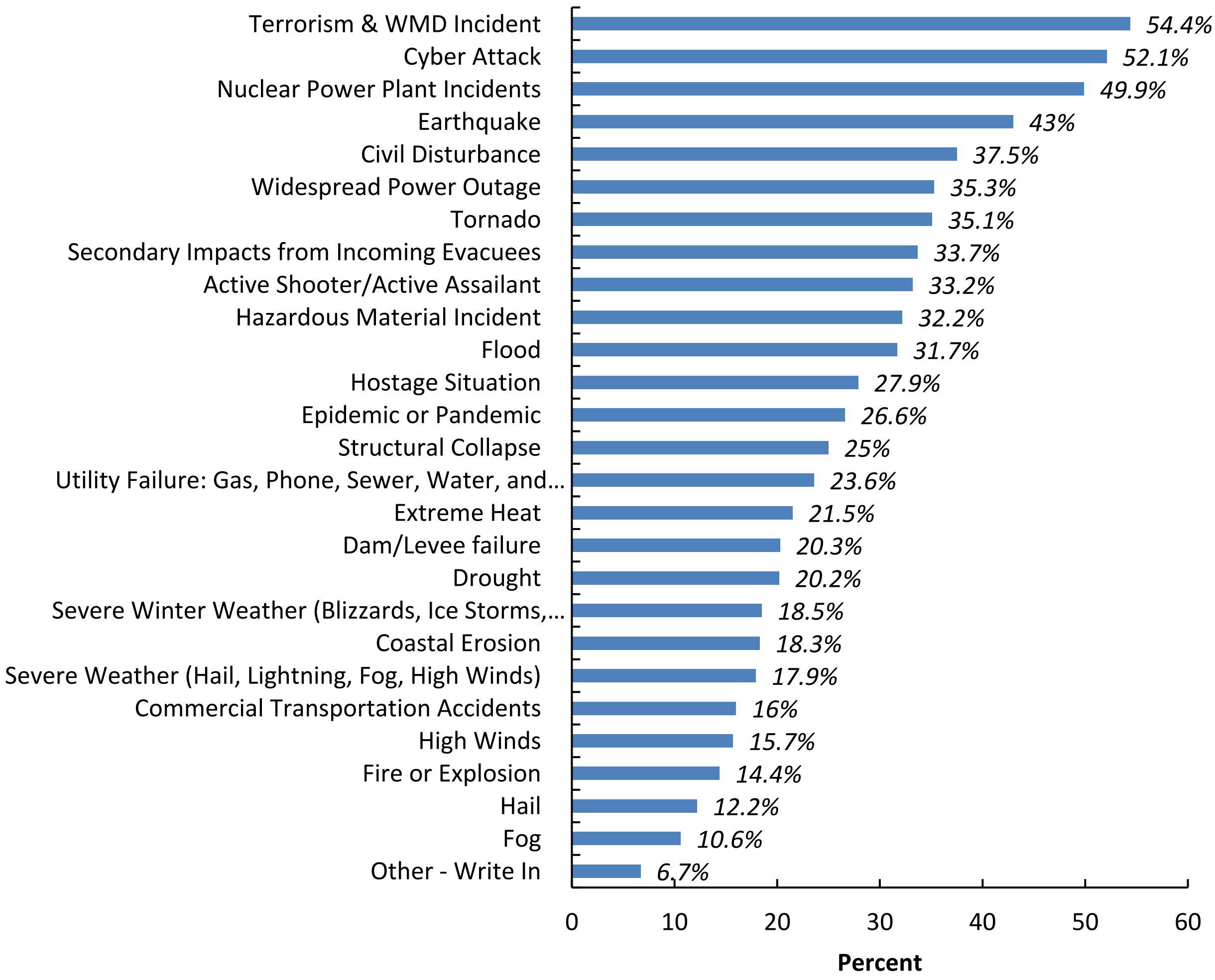
15. Which hazards are you most confident that your jurisdiction can successfully manage during an emergency? Please select all that apply.



Value	Percent	Count
Severe Winter Weather (Blizzards, Ice Storms, Extreme Cold)	57.1%	532
Severe Weather (Hail, Lightning, Fog, High Winds)	52.7%	491
Fire or Explosion	44.6%	415
Extreme Heat	44.1%	411
Utility Failure: Gas, Phone, Sewer, Water, and Pipeline	41.9%	390
Epidemic or Pandemic	34.3%	319
High Winds	33.5%	312

Fog	32.8%	305
Hail	31.3%	291
Active Shooter/Active Assailant	28.7%	267
Flood	26.5%	247
Tornado	26.3%	245
Widespread Power Outage	26.3%	245
Commercial Transportation Accidents	23.2%	216
Drought	23.0%	214
Civil Disturbance	21.4%	199
Hostage Situation	21.1%	196
Structural Collapse	17.4%	162
Hazardous Material Incident	16.4%	153
Dam/Levee failure	10.4%	97
Terrorism & WMD Incident	8.8%	82
Earthquake	7.4%	69
Secondary Impacts from Incoming Evacuees	7.3%	68
Cyber Attack	6.1%	57
Other - Write In	6.1%	57
Coastal Erosion	5.5%	51
Nuclear Power Plant Incidents	3.7%	34

16. Which hazards are you least confident that your jurisdiction can successfully manage during an emergency? Please select all that apply.



Value	Percent	Count
Terrorism & WMD Incident	54.4%	506
Cyber Attack	52.1%	485
Nuclear Power Plant Incidents	49.9%	465
Earthquake	43.0%	400
Civil Disturbance	37.5%	349
Widespread Power Outage	35.3%	329
Tornado	35.1%	327

Secondary Impacts from Incoming Evacuees	33.7%	314
Active Shooter/Active Assailant	33.2%	309
Hazardous Material Incident	32.2%	300
Flood	31.7%	295
Hostage Situation	27.9%	260
Epidemic or Pandemic	26.6%	248
Structural Collapse	25.0%	233
Utility Failure: Gas, Phone, Sewer, Water, and Pipeline	23.6%	220
Extreme Heat	21.5%	200
Dam/Levee failure	20.3%	189
Drought	20.2%	188
Severe Winter Weather (Blizzards, Ice Storms, Extreme Cold)	18.5%	172
Coastal Erosion	18.3%	170
Severe Weather (Hail, Lightning, Fog, High Winds)	17.9%	167
Commercial Transportation Accidents	16.0%	149
High Winds	15.7%	146
Fire or Explosion	14.4%	134
Hail	12.2%	114
Fog	10.6%	99
Other - Write In	6.7%	62

17. Based on YOUR PERCEPTION, to what degree of emphasis would you expect your jurisdiction to mitigate the following hazards? Mitigation definition: The purpose of mitigation planning is to identify policies and actions that can be implemented over the long term to reduce risk and future losses. Mitigation forms the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. No Mitigation Needed = No mitigation on this hazard is expected or needed Low Priority = This hazard should be mitigated, but is not a high priority compared to other hazards Medium Priority = It is important to mitigate this hazard High Priority = It is a high priority to emphasize mitigation for this hazard

	No Mitigation Needed		Low Priority		Medium Priority		High Priority		Responses
HAZARD	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Dam/levee failure	434	46.8%	274	29.5%	109	11.7%	111	12.0%	928
Drought	167	18.0%	432	46.6%	237	25.5%	92	9.9%	928
Earthquake	160	17.1%	480	51.4%	161	17.2%	133	14.2%	934
Flood	26	2.8%	131	13.9%	335	35.6%	450	47.8%	942
Extreme Heat	37	4.0%	165	17.6%	347	37.1%	387	41.3%	936
Lightning	104	11.2%	363	39.0%	301	32.3%	163	17.5%	931
Hail	116	12.5%	389	42.1%	293	31.7%	127	13.7%	925

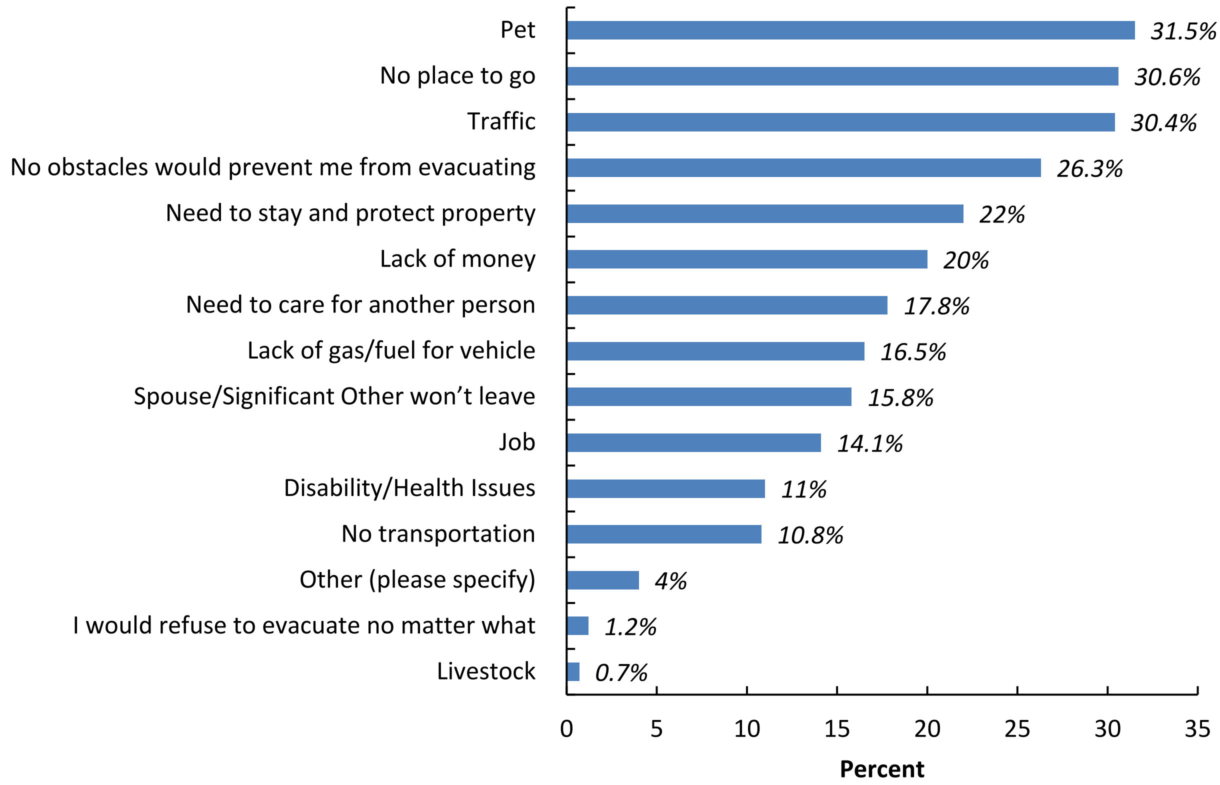
Fog	248	26.7%	416	44.8%	195	21.0%	69	7.4%	928
High Winds	75	8.0%	261	27.9%	352	37.6%	247	26.4%	935
Snow	35	3.8%	158	17.0%	353	38.0%	383	41.2%	929
Blizzards	26	2.8%	131	14.0%	328	35.2%	448	48.0%	933
Extreme Cold	31	3.3%	145	15.6%	296	31.8%	458	49.2%	930
Ice Storms	36	3.9%	182	19.7%	347	37.5%	360	38.9%	925
Tornado	37	4.0%	174	18.7%	324	34.9%	394	42.4%	929

18. If an evacuation was ordered for your area, please indicate how likely you would be to do the following.

	Very Likely		Somewhat Likely		Not Very Likely		Not Likely at All		Do Not Know		Not Applicable		Responses
ACTION	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Immediately evacuate as instructed.	517	53.8%	302	31.4%	60	6.2%	28	2.9%	48	5.0%	6	0.6%	961
I would first consult with family and friends outside my household	310	33.5%	304	32.8%	119	12.9%	152	16.4%	23	2.5%	18	1.9%	926

before making a decision to evacuate.													
Wait and see how bad the situation is going to be before deciding to evacuate.	122	13.2%	301	32.7%	245	26.6%	214	23.2%	29	3.1%	10	1.1%	921
Refuse to evacuate no matter what.	22	2.4%	30	3.3%	146	15.9%	629	68.3%	59	6.4%	35	3.8%	921

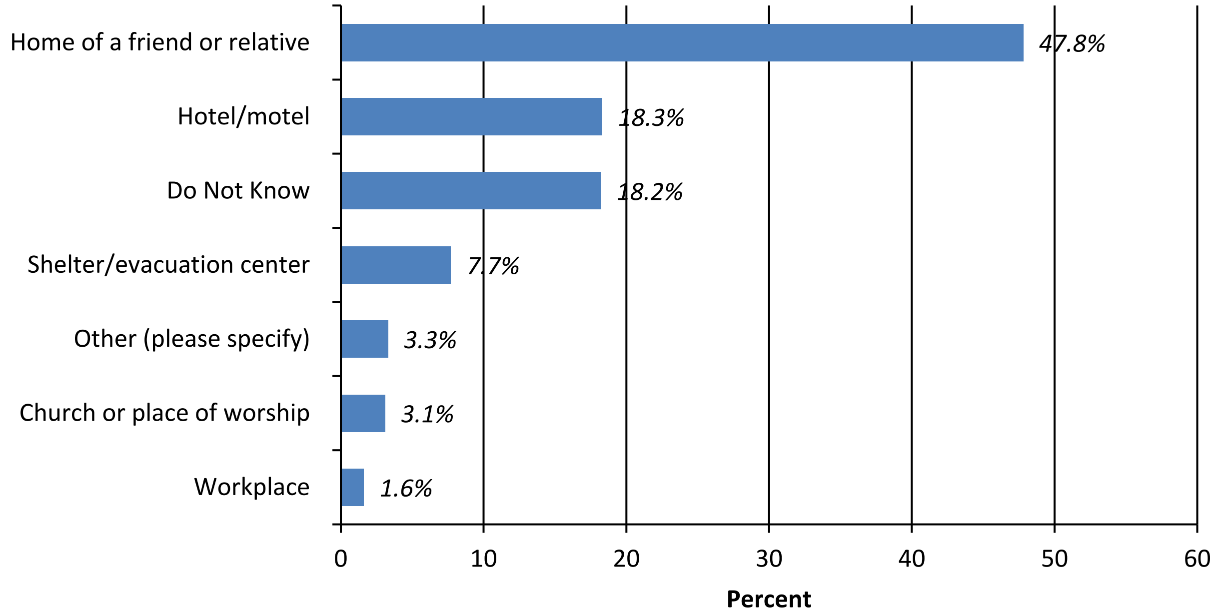
19. What might prevent you from leaving your place of residence if there was an evacuation order? Please select ALL that apply.



Value	Percent	Count
Pet	31.5%	301
No place to go	30.6%	293
Traffic	30.4%	291
No obstacles would prevent me from evacuating	26.3%	251
Need to stay and protect property	22.0%	210
Lack of money	20.0%	191
Need to care for another person	17.8%	170
Lack of gas/fuel for vehicle	16.5%	158
Spouse/Significant Other won't leave	15.8%	151

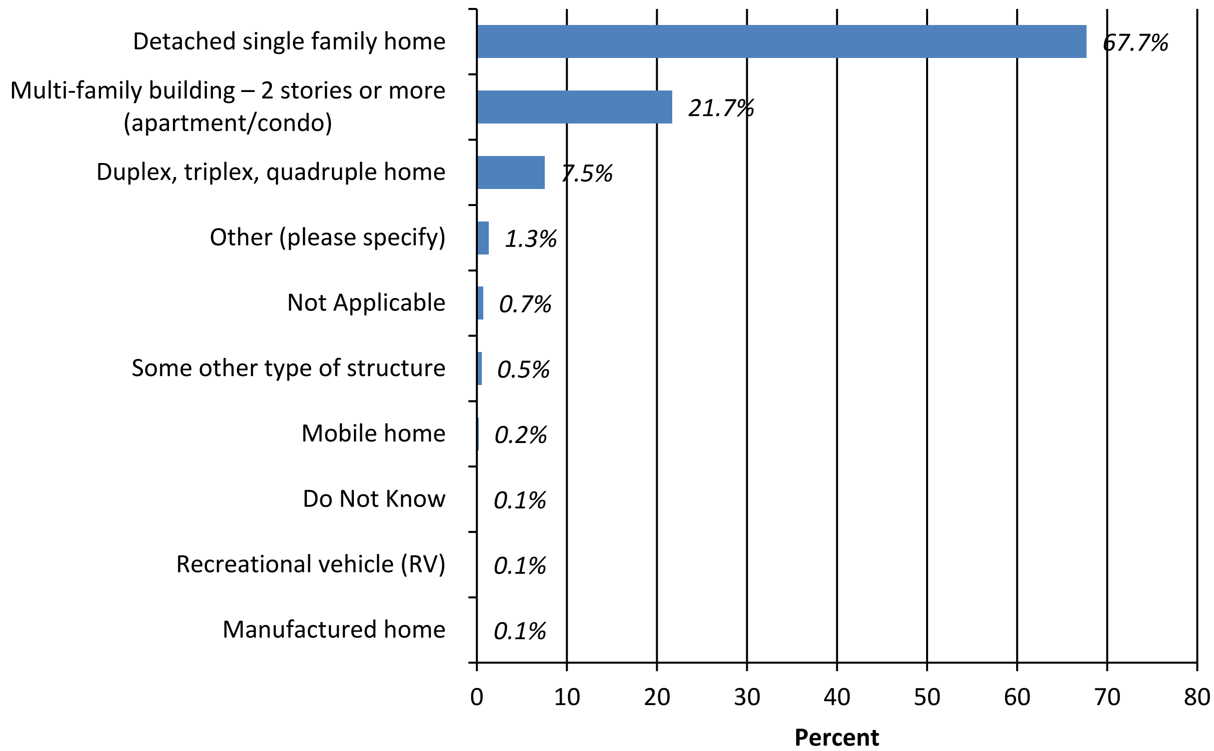
Job	14.1%	135
Disability/Health Issues	11.0%	105
No transportation	10.8%	103
Other (please specify)	4.0%	38
Livestock	0.7%	7
I would refuse to evacuate no matter what	1.2%	11

20.If you were to evacuate, where would you most likely stay? Please select the best answer.



Value	Percent	Count
Home of a friend or relative	47.8%	465
Hotel/motel	18.3%	178
Do Not Know	18.2%	177
Shelter/evacuation center	7.7%	75
Other (please specify)	3.3%	32
Church or place of worship	3.1%	30
Workplace	1.6%	16
	Total	973

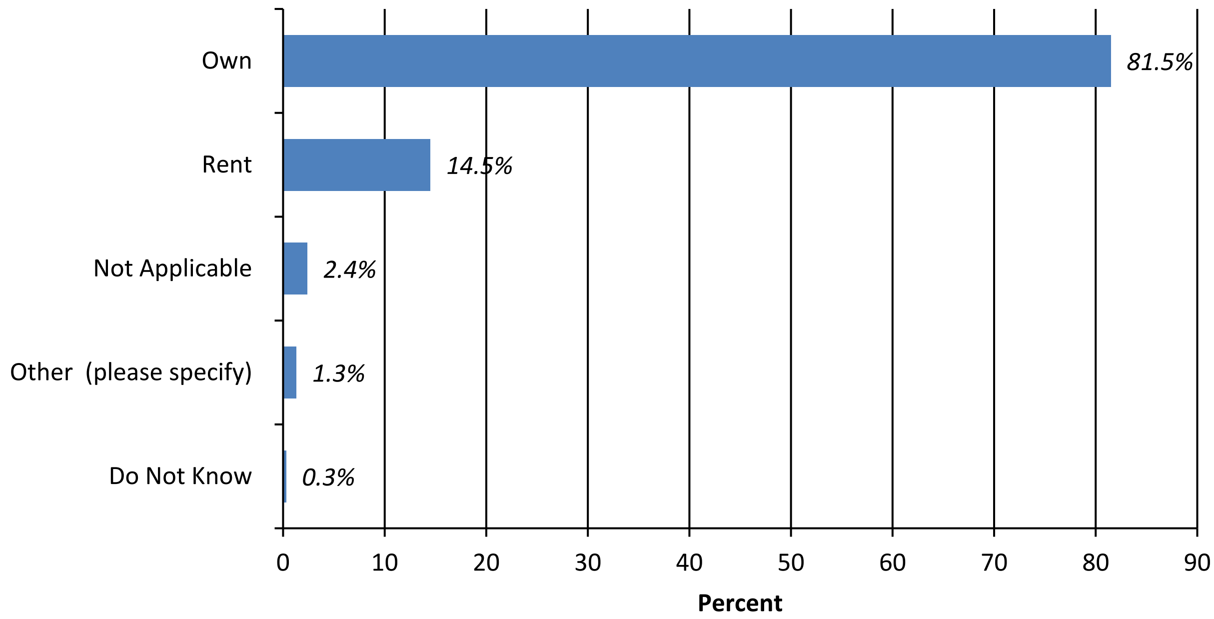
21. What type of structure do you live in?



Value	Percent	Count
Detached single family home	67.7%	653
Multi-family building – 2 stories or more (apartment/condo)	21.7%	209
Duplex, triplex, quadruple home	7.5%	72
Other (please specify)	1.3%	13
Not Applicable	0.7%	7
Some other type of structure	0.5%	5
Mobile home	0.2%	2
Manufactured home	0.1%	1
Recreational vehicle (RV)	0.1%	1
Do Not Know	0.1%	1

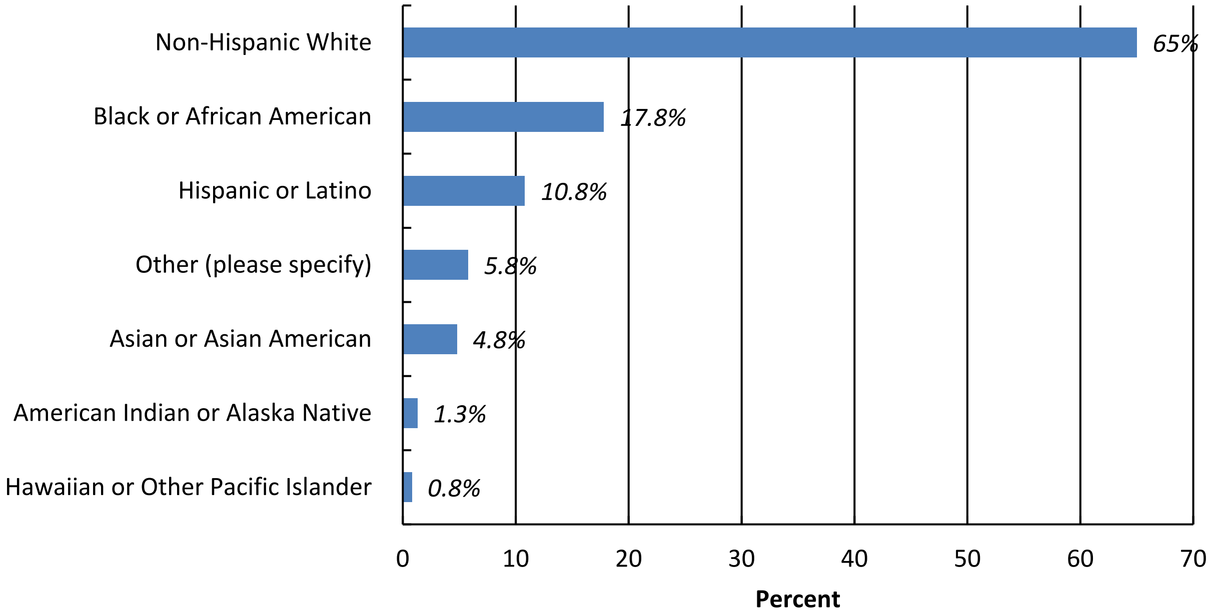
	Total	964

22. Do you own or rent your home/place of residence?



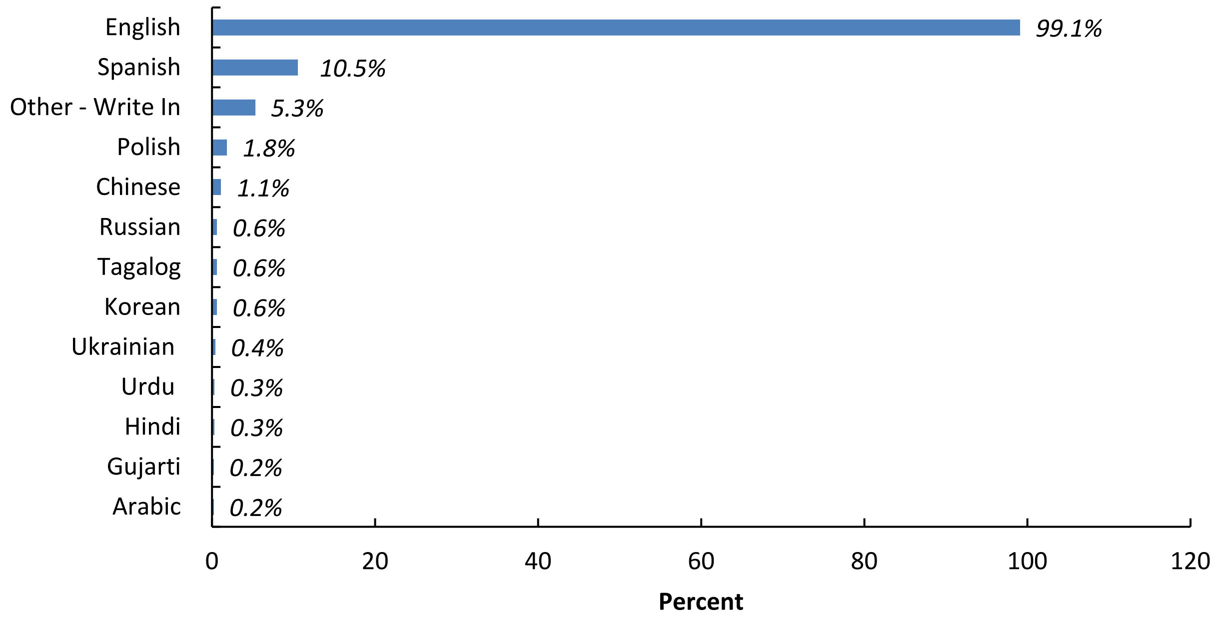
Value	Percent	Count
Own	81.5%	786
Rent	14.5%	140
Not Applicable	2.4%	23
Other (please specify)	1.3%	13
Do Not Know	0.3%	3
	Total	965

23. Which of the following best describes your race/ethnicity? Please select ALL that apply.



Value	Percent	Count
Non-Hispanic White	65.0%	618
Black or African American	17.8%	169
Hispanic or Latino	10.8%	103
Other (please specify)	5.8%	55
Asian or Asian American	4.8%	46
American Indian or Alaska Native	1.3%	12
Hawaiian or Other Pacific Islander	0.8%	8

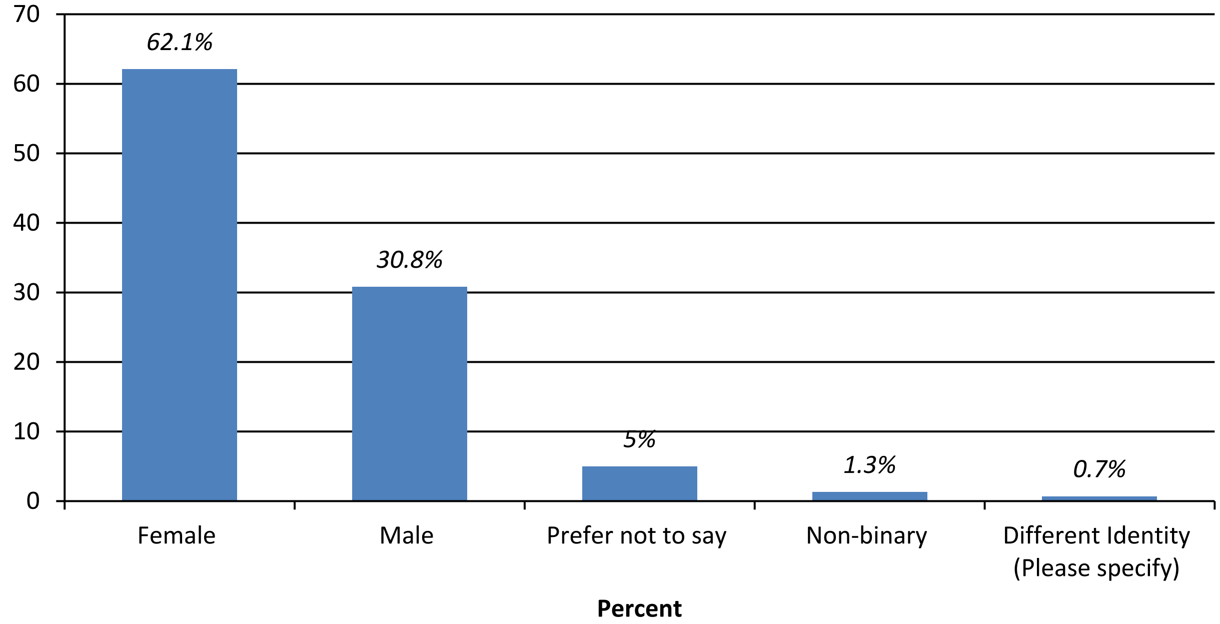
24. Please indicate the language(s) spoken in your household. Please select ALL that apply.



Value	Percent	Count
English	99.1%	957
Spanish	10.5%	101
Other - Write In	5.3%	51
Polish	1.8%	17
Chinese	1.1%	11
Korean	0.6%	6
Tagalog	0.6%	6
Russian	0.6%	6
Ukrainian	0.4%	4
Hindi	0.3%	3
Urdu	0.3%	3

Arabic	0.2%	2
Gujarti	0.2%	2

25. Please indicate your gender identity



Value	Percent	Count
Female	62.1%	599
Male	30.8%	297
Prefer not to say	5.0%	48
Non-binary	1.3%	13

Different Identity (Please specify)	0.7%	7
	Total	964

Appendix D Concepts, Methods and Data Sources Used for Hazard Mapping

Information and methodologies used to develop the hazard maps included in the Cook County Multi-Jurisdictional Hazard Mitigation Plan were taken from a range of sources as summarized in this appendix.

EARTHQUAKE MAPPING

Probabilistic Peak Ground Acceleration

Probabilistic peak ground acceleration data was generated by HAZUS-MH 2.1. In the model's probabilistic analysis procedure, the ground shaking demand is characterized by spectral contour maps developed by the United States Geological Survey as part of a 2008 update of the National Seismic Hazard Maps. USGS probabilistic seismic hazard maps are revised about every six years to reflect newly published or thoroughly reviewed earthquake science and to keep pace with regular updates of the building code. HAZUS includes maps for eight probabilistic hazard levels: ranging from ground shaking with a 39-percent probability of being exceeded in 50 years (100-year return period) to the ground shaking with a 2-percent probability of being exceeded in 50 years (2,500-year return period). Probabilistic peak ground acceleration maps were developed for the following earthquakes:

- 100-year return period
- 500-year return period.

Event-Based

1909 Historical Earthquake Scenario

An epicenter map was derived from a database of historical earthquakes developed from three sources (Composite Earthquake Catalog, 2002, Earthquake Data Base, 2002, and Earthquake Seismicity Catalog, 1996). The database was sorted to remove historical earthquakes with magnitudes less than 5.0. The epicenter map is based on the following historical earthquake epicenter, selected from the database:

- Event Date: May 26, 1909
- Event ID from HAZUS: 3991
- Magnitude: The original magnitude in the database was 5.0, but modeling of this magnitude showed no damage; the magnitude was increased to 6.0 to generate damage results for the earthquake risk assessment
- Depth: 10 km
- Epicenter: Approximately 7 miles southwest of the Village of Lemont, IL
- (41.6N 88.1W)

Wabash M 7.1

A shake map portrays the extent and variation of ground shaking throughout an affected region immediately following significant earthquakes. Ground motion and intensity maps are derived from peak ground motion amplitudes recorded on seismic sensors (accelerometers), with interpolation based on both estimated amplitudes where data are lacking and site amplification corrections. Color-coded instrumental intensity maps are derived from empirical relations between peak ground motions and Modified Mercalli intensity. A shake map was developed for the following earthquake:

- Magnitude: 7.1
- The epicenter along the Wabash Valley Fault System centered on the Lower Wabash River Valley in southeastern Illinois.

Liquefaction

Liquefaction is a phenomenon in which strong earthquake shaking causes soil to rapidly lose its strength and behave like quicksand. Liquefaction typically occurs in artificial fills and in areas of loose sandy soils that are saturated with water, such as low-lying coastal areas, lakeshores, and river valleys. When soil strength is lost during liquefaction, the consequences can be catastrophic. Movement of liquefied soils can rupture pipelines, move bridge abutments and road and railway alignments, and pull apart the foundations and walls of buildings.

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately, as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Liquefaction data was provided by the Illinois State Geological Survey, based on methods from “Mapping Liquefaction-Induced Ground Failure Potential” (Youd, T.L., and Perkins, D.M., 1978. Journal of the Geotechnical Engineering Division, p. 443-446).

NEHRP Soils

Soil classification data was provided by the Illinois State Geological Society. State geologists of the Central U.S. Earthquake Consortium produced a regional Soil Site Class map for the eight states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase II work. The base map for this work was the 2003 USGS Geologic Investigation Series I-2789 “Map of Surficial Deposits and Materials in the Eastern and Central United States” (east of 102 degrees west longitude) by David S. Fullerton, Charles A. Bush and Jean N. Pennell.

Procedures outlined in the 2004 NEHRP provisions by the Building Seismic Safety Council and the 2003 International Building Codes were followed to produce the soil site class maps. The state geologists used the entire column of soil material down to bedrock and did not include any bedrock in the calculation of the average shear wave velocity for the column, since it is the soil column and the difference in shear wave velocity of the soils in comparison to the bedrock which influences much of the amplification.

FLOOD MAPPING

FEMA Flood Hazard Areas

FEMA flood hazard area mapping was taken from Digital Flood Insurance Rate Maps.

Repetitive Loss Areas

Repetitive loss data was originally obtained from Illinois Department of Natural Resources and further verified using the state's most up-to-date hazard mitigation plan and is considered sensitive information.

Appendix E Annual Progress Report Template and Process

Reporting Period: *(Insert reporting period)*

Background: Cook County and participating municipalities in the county developed a hazard mitigation plan to reduce risk from all hazards by identifying resources, information, and strategies for risk reduction. The federal Disaster Mitigation Act of 2000 requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. To prepare the plan, the participating partners organized resources, assessed risks from natural hazards within the county, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address probable impacts from natural hazards. By completing this process, these jurisdictions-maintained compliance with the Disaster Mitigation Act, achieving eligibility for mitigation grant funding opportunities afforded under the Robert T. Stafford Act. The plan can be viewed online at:

Summary Overview of the Plan's Progress: The performance period for the Hazard Mitigation Plan became effective on, ___2024, with the final approval of the plan by FEMA. The initial performance period for this plan will be 5 years, with an anticipated update to the plan to occur before, ___2029. As of this reporting period, the performance period for this plan is considered to be ___% complete. The Hazard Mitigation Plan has targeted ___ hazard mitigation actions to be pursued during the five-year performance period. As of the reporting period, the following overall progress can be reported:

- out of___actions (%) reported ongoing action toward completion.
- out of___actions (%) were reported as being complete.
- out of___actions (%) reported no action taken.

Purpose: The purpose of this report is to provide an annual update on the implementation of the action plan identified in the Cook County Multi-Jurisdictional Hazard Mitigation Plan. The objective is to ensure that there is a continuing and responsive planning process that will keep the Hazard Mitigation Plan dynamic and responsive to the needs and capabilities of the partner jurisdiction. This report discusses the following:

- Natural hazard events that have occurred within the last year
- Changes in risk exposure within the planning area (all of Cook County)
- Mitigation success stories
- Review of the action plan
- Changes in capabilities that could impact plan implementation
- Recommendations for changes/enhancement

The Hazard Mitigation Plan Steering Committee: The Hazard Mitigation Plan Steering Committee, made up of planning partners and stakeholders within the planning area, reviewed and approved this progress report at its annual meeting held on ___, 201_. It was determined through the plan's development process that a steering committee would remain in service to oversee maintenance of the plan. At a minimum, the Steering Committee will provide technical review and oversight on the development of the annual progress report. It is anticipated that there will be turnover in the membership annually, which will be documented in the progress reports. For this reporting period, the Steering Committee membership is as indicated in Table 1.

Natural Hazard Events within the Planning Area: During the reporting period, there were natural hazard events in the planning area that had a measurable impact on people or property. A summary of these events is as follows:

- ___
- ___

Changes in Risk Exposure in the Planning Area: *(Insert brief overview of any natural hazard event in the planning area that changed the probability of occurrence or ranking of risk for the hazards addressed in the hazard mitigation plan)*

Mitigation Success Stories: *(Insert brief overview of mitigation accomplishments during the reporting period)*

Review of the Action Plan: Table 2 reviews the action plan, reporting the status of each action. Reviewers of this report should refer to the Hazard Mitigation Plan for more detailed descriptions of each action and the prioritization process.

Address the following in the "status" column of the following table:

- *Was any element of the action carried out during the reporting period?*
- *If no action was completed, why?*
- *Is the timeline for implementation for the action still appropriate?*
- *If the action was completed, does it need to be changed or removed from the action plan?*

Annual Report Status Update **Completion status legend:** **N = New I = In Progress Toward Completion O = Ongoing Indefinitely** **C = Project Completed R = Want Removed from Annex X = No Action Taken/Delayed**		
Annual Report Year	**Status:**	**Comments/Description of Progress Made**
2025		
2026		
2027		
2028		
2029		

Changes That May Impact Implementation of the Plan: *(Insert brief overview of any significant changes in the planning area that would have a profound impact on the implementation of the plan.*

Specify any changes in technical, regulatory and financial capabilities identified during the plan's development)

Recommendations for Changes or Enhancements: Based on the review of this report by the Hazard Mitigation Plan Steering Committee, the following recommendations will be noted for future updates or revisions to the plan:

- ___
- ___
- ___
- ___
- ___
- ___

Public review notice: *The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Copies of the report have been provided to the governing boards of all planning partners and to local media outlets and the report is posted on the Cook County hazard mitigation website. Any questions or comments regarding the contents of this report should be directed to:*

Insert Contact Info Here

Appendix F Jurisdictional Linkage Strategy

PROCEDURES FOR LINKING TO THIS PLAN FOR MUNICIPALITIES NOT CURRENTLY INCLUDED

Not all eligible local governments in Cook County are included in the Cook County Multi-Jurisdictional Hazard Mitigation Plan (MJ-HMP). It is assumed that some or all of these non-participating local governments may choose to "link" to the Plan at some point to gain eligibility for programs under the DMA 2000. In addition, some of the current partnerships may not continue to meet eligibility requirements due to a lack of participation as prescribed by the Plan. The following "linkage" procedures define the requirements established by the Plan's Steering Committee and all Planning Partners for dealing with an increase or decrease in the number of Planning Partners linked to this Plan. It should be noted that a currently non-participating jurisdiction within the defined planning area is not obligated to link to the Plan. These jurisdictions can choose to do their own "complete" plan that addresses all required elements of Section 201.6 of Chapter 44, the Code of Federal Regulations (44 CFR).

INCREASING THE PARTNERSHIP THROUGH LINKAGE

The time period for the linkage process will be during **each annual update timeframe**. Eligible linking jurisdictions are instructed to complete all of the following procedures during this time frame:

- The eligible jurisdiction requests a "Linkage Package" by contacting the Point of Contact (POC) for the Plan:

DESIGNATED POINT OF CONTACT (POC) **Name**: Kim Nowicki **Title**: Senior Regional Planner **Address**: 69 W. Washington, Suite 2600 Chicago, IL 60602 **Phone**: 312-639-9683 **E-mail**: Kimberly.Nowicki@cookcountyil.gov

The POC will provide a linkage package that includes:

- Copy of Volume 1 and 2 of the MJ-HMP
- Planning Partner Expectations Package
- A sample letter of intent to link to the MJ-HMP
- A jurisdictional template and instructions
- Catalog of hazard mitigation alternatives
- A request for technical assistance form
- The most current Local Mitigation Plan Review Tool

The new jurisdiction will be required to review both volumes of the MJ-HMP, which includes the following key components for the planning area:

- The planning area risk assessment
- Goals and objectives
- Plan implementation and maintenance procedures
- A comprehensive review of mitigation alternatives/strategies
- Countywide actions

Once this review is complete, the jurisdiction will complete its specific annex using the template and instructions provided by the POC. Technical Assistance can be provided upon request by completing the request for technical assistance (TA) form provided in the linkage package. This TA may be provided by the POC or any other resource within the Planning Partnership, such as a member of the Steering Committee or a currently participating municipality partner. The POC will determine who will provide the TA and the possible level of TA based on resources available at the time of the request.

Public Participation Requirement: The new jurisdiction will be required to **develop a public involvement strategy that ensures the public's ability to participate in the plan development process. At a minimum, the new jurisdiction must make an attempt to solicit public opinion on hazard mitigation at the onset of this linkage process** and a minimum of one public meeting to present their **draft** jurisdiction-specific annex for comment, prior to adoption by the governing body. The planning partnership will have resources available to aid in the public involvement strategy, such as the plan website and sample survey. However, it will be the new jurisdiction's responsibility to implement and document this strategy for incorporation into its annex. It should be noted that the jurisdictional annex templates do not include a section for the description of the public process. This is because the original partnership was covered under a uniform public involvement strategy that covered the planning area described in Volume 1 of the plan. Since new partners were not addressed by that strategy, they will have to initiate a new strategy, and **add a description of that strategy to their annex**. For consistency, new partners are encouraged to follow the public involvement format used by the initial planning effort as described in Volume 1 of the Plan.

> The new jurisdiction will be **required to develop a public involvement strategy that ensures the public's ability to participate in the plan development process**.

- Once their public involvement strategy is completed and they have completed their template, the new jurisdiction will submit the completed package to the POC for a pre-adoption review to ensure conformance with the regional format.

- The POC will review for the following [Note: the text in green represents key compliance metrics from the Local Mitigation Plan Review Tool]:

    - **Documentation of public involvement strategy**
        - *[A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))]*
    - **Conformance of template entries with guidelines outlined in the instructions**. The template has been designed to ensure compliance with the Local Mitigation Plan Review Tool.

- Chosen **mitigation actions** are consistent with goals and objectives defined in the MJ-HMP.
- A designated **point of contact**
- A **ranking of risk** specific to the jurisdiction
    - *[B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))]*
- A narrative and analysis describing **hazard risks and previous occurrences and vulnerabilities unique and specific to the jurisdiction.**
    - *[B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))];*
    - *[B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))]*
    - *[B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))]*
- Make the completed annex available to **neighboring communities** and local and regional agencies.
    - *[A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))]*

The POC may utilize members of the Steering Committee or other resources to complete this review. All proposed linked annexes will be submitted to the Steering Committee for review and comment prior to submittal to the Illinois Emergency Management Agency (IEMA).

- Plans approved and accepted by the Steering Committee will be forwarded to IEMA for review with a cover letter stating the forwarded plan meets locally approved plan standards and whether the plan is submitted with local adoption or for criteria met/plan not adopted review.

- IEMA will review plans for federal compliance. Non-compliant plans will be returned to the jurisdiction for correction. Compliant plans will be forwarded to FEMA for review with annotation as to the adoption status.
- FEMA will review the new jurisdiction's annex in association with the approved MJ-HMP to ensure DMA compliance. FEMA will notify the new jurisdiction of the results of its review with copies to IEMA and the planning authority.

- The new jurisdiction will correct plan shortfalls, if necessary, and resubmit the plan to IEMA through the approved plan lead agency.

- For plans with no shortfalls from the FEMA review that have not been adopted, the new jurisdiction's governing authority will adopt the plan (if not already accomplished) and forward the adoption resolution to FEMA with copies to the lead agency and IEMA.

- The FEMA will notify the new jurisdiction governing authority of plan approval.

The new jurisdiction annex will then be included with the Cook County MJ-HMP with the commitment from the new jurisdiction to participate in the ongoing plan implementation and maintenance.

RESCINDING THE PARTNERSHIP

The eligibility afforded under this process to the planning partnership can be rescinded in two ways. First, a participating planning partner can ask to be removed from the partnership. This may be done because the partner has decided to develop its own plan or has identified a different planning process for which it can gain eligibility. A partner that wishes to voluntarily leave the partnership shall inform the POC of this desire in writing. This notification can occur anytime during the calendar year. A jurisdiction wishing to pursue this avenue is advised to make sure that it is eligible under the new planning effort, to avoid any period of being out of compliance with the Disaster Mitigation Act.

After receiving this notification, the POC shall immediately notify both IEMA and FEMA in writing that the partner in question is no longer covered by the MJ-HMP, and that the eligibility afforded that partner under this plan should be rescinded based on this notification.

The second way a partner can be removed from the partnership is by failure to meet the participation requirements specified in the “Planning Partner Expectations Package” provided to each partner at the beginning of the process, or the planned maintenance and implementation procedures specified in Volume 1 of this Plan. Each partner agrees to these terms by adopting the Plan.

The eligibility status of the planning partnership will be monitored by the POC. The determination of whether a partner is meeting its participation requirements will be based on the following parameters:

- Are progress reports being submitted annually by specific time frames?
- Are partners notifying the POC of changes in designated points of contact?
- Are the partners supporting the Steering Committee by attending designated meetings or responding to needs identified by the body?
- Are the partners continuing to be supportive as specified in the “Planning Partner Expectations Package” provided to them at the beginning of the process?

Participation in the Plan does not end with plan approval and adoption. This partnership was formed on the premise that a group of Planning Partners would pool resources and work together to strive to reduce risk within the planning area. Failure to support this premise lessens the effectiveness of this effort. The following procedures will be followed to remove a partner due to the lack of participation:

- The POC will advise the Steering Committee of this pending action and provide evidence or justification for the action. Justification may include multiple failures to submit annual progress reports, failure to attend meetings determined to be mandatory by the Steering Committee, failure to act on the partner's action plan, or inability to reach designated point of contact after a minimum of five (5) attempts.
- The Steering Committee will review the information provided by the POC and determine action by a vote. The Steering Committee will invoke the voting process established in the ground rules established during the formation of this body.
- Once the Steering Committee has approved an action, the POC will notify the planning partner of the pending action in writing via certified mail. This notification will outline the grounds for the action and ask the partner if it is their desire to remain as a partner. This

notification shall also clearly identify the ramifications of removal from the partnership. The partner will be given 30 days to respond to the notification.
- Confirmation by the partner that they no longer wish to participate or failure to respond to the notification shall trigger the procedures for voluntary removal discussed above.
- Should the partner respond that they would like to continue participation in the partnership, they must clearly articulate an action plan to address the deficiencies identified by the POC. This action plan shall be reviewed by the Steering Committee to determine whether the actions are appropriate to rescind the action. Those partners that satisfy the Steering Committees review remain in the partnership, and no further action is required period.
- Automatic removal from the partnership will be implemented for partners where these actions have to be initiated more than once in a 5-year planning cycle.

Steps or Municipal Linkage to the Cook County MJ-HMP

1. Eligible jurisdiction requests "linkage package" from the POC

- Linkage Package includes:
  - Copy of Volume 1 and 2 of the Cook County MJ-HMP
  - Planning Partner Expectations package
  - A "sample" letter of intent to link to the MJ-HMP
  - A jurisdictional template and instructions
  - Catalog of mitigation alternatives and ideas
  - A "request for technical assistance" form
  - A copy of the most current Local Mitigation Plan Review Tool

2. The new jurisdiction will review both volumes of the MJ-HMP, which includes the following key components:

- The planning area risk assessment
- Goals and objectives
- Plan implementation and maintenance procedures.
- A comprehensive review of mitigation alternatives/strategies
- Countywide actions

3. Once the review is complete, the jurisdiction will complete its specific annex using the template and instructions provided by the POC.

4. The new jurisdiction will be responsible for developing a public involvement strategy that ensures the public's ability to participate in the plan development process. At a minimum, the new jurisdiction must attempt to solicit public opinion at the onset of the linkage process and a minimum of one public meeting to present their draft jurisdiction specific annex for comment, prior to adoption by governing body.

5. Once the public involvement strategy is complete and the template has been completed, the new jurisdiction will submit the package to the POC for review to ensure conformity with the Cook County MJ-HMP format.

6. The POC will review for the following [Note: the text in green represents key compliance metrics from the Local Mitigation Plan Review Tool]:

- **Documentation of public involvement strategy**
    - *[A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))]*
- **Conformance of template entries with guidelines outlined in the instructions**. The template has been designed to ensure compliance with the Local Mitigation Plan Review Tool.
- Chosen **mitigation actions** are consistent with goals and objectives defined in the MJ-HMP.
- A designated **point of contact**
- A **ranking of risk** specific to the jurisdiction
    - *[B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))]*
- A narrative and analysis describing **hazard risks and previous occurrences and vulnerabilities unique and specific to the jurisdiction.**
    - *[B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))].*
    - *[B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))]*
    - *[B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))]*
- Make the completed annex available to **neighboring communities** and local and regional agencies.
    - *[A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))]*

7. Annexes approved and accepted by the Steering Committee will be forwarded to IEMA for review with a cover letter stating the annex meets locally approved plan standards and whether the annex is submitted with local adoption or for criteria met/plan not adopted review.

8. IEMA will review annexes for federal compliance. Non-compliant annexes will be returned for corrections. Compliant annexes will be submitted to FEMA for review with annotation as to the adoption status.

9. FEMA will review the new jurisdiction's annex in association with the approved MJ-HMP to ensure DMA compliance. FEMA will notify the new jurisdiction of the results of its review with copies to IEMA and the planning authority.

10. Without shortfalls from FEMA, the new governing authority will adopt the annex and forward adoption resolution to FEMA and copies to lead agency and IEMA.

11. FEMA will notify new jurisdiction of approval

Public Participation Requirement and Rationale

Local jurisdictions seeking to link to the Cook County MJ-HMP must be fully and/or partially within the boundaries of Cook County. "The public" of these jurisdictions are Cook County residents as well as residents of these local jurisdictions. Thereby, these residents have already been given the opportunity to participate in the planning process and provide feedback during the development of the Cook County MJ-HMP, prior to the comment period and prior to the plan approval/ adoption, as required by FEMA and defined in the Local Mitigation Plan Review Guide. The linkage of these residents' local jurisdictions simply allows mitigation funding to more directly benefit their communities.

- However, to ensure that the contents of the new jurisdictional annex is also consistent with Federal requirements, the linking jurisdiction will be required to develop a public involvement strategy that gives the public an opportunity to be involved in the annex development. This participation must occur during the drafting stage, which is prior to annex approval/ jurisdictional adoption of the plan. At a minimum, the new jurisdiction must make an attempt to solicit public opinion on hazard mitigation at the onset of this linkage process and a minimum of one public meeting to present their draft jurisdiction-specific annex for comment, prior to adoption by the governing body. It should be noted that this is the same process required of jurisdictions participating in the original Cook County MJ-HMP. The planning partnership will have resources available to aid in the public involvement strategy, such as surveys and other outreach materials. However, it will be the new jurisdiction's responsibility to implement and document this strategy for incorporation into its annex.
- It should be noted that the jurisdictional annex templates do not include a section for the description of the public process. This is because the original partnership was covered under a uniform public involvement strategy that covered the planning area described in Volume 1 of the Cook County MJ-HMP. Since new partners were not addressed by that strategy, they will have to initiate a new strategy, and add a description of that strategy to their annex. For consistency, new partners are encouraged to follow the public involvement format used by the initial planning effort as described in Volume 1 of the Cook County MJ-HMP.

Appendix G Plan Adoption Resolution from Planning Partners

This section will include the plan adoption resolutions for each jurisdiction. Adoption resolutions will be included upon receiving FEMA's "approval pending adoption" notification.