ILLINOIS STATE UNIVERSITY MULTI-HAZARD MITIGATION PLAN 2025

FEMA

IEMA
ILLINOIS EMERGENCY MANAGEMENT AGENCY

SIU
Southern Illinois University
CARBONDALE

ILLINOIS STATE UNIVERSITY

Illinois' first public university

Office of the President

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Campus Box 1000
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Illinois State University Multi-Hazard Mitigation Plan

Adoption Letter

Illinois State University

ADOPTING THE ILLINOIS STATE UNIVERSITY MULTI-HAZARD MITIGATION PLAN

Illinois State University recognizes the threat that both natural and human-caused hazards pose to people and property, and the threats to public health and safety. Undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars. Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) recommends public entities develop and submit for approval to the President of the United States a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities.

I acknowledge the recommendation of Section 322 of DMA 2000 that an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects and the University's Emergency Management department participated in planning process with university stakeholders and local community partners to prepare a Multi-Hazard Mitigation Plan.

The resulting Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-caused hazards that affect the University and its students, faculty, staff, and the public. I hereby approve and adopt the Multi-Hazard Mitigation Plan as an official plan of the University.

Illinois State University's Emergency Management department will submit on behalf of the University and local community partners the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS 12th day of June, 2025.

Dr. Aondover Tarhule
President
Illinois State University

An equal opportunity/affirmative action university encouraging diversity

Multi-Hazard Mitigation Plan Illinois State University

Adoption Date: June 12, 2025, 2025

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Acknowledgement

The Illinois State University Multi-Hazard Mitigation Plan would not have been possible without the feedback and input provided by university constituents and community partners. Your time and input are critical to ensuring a more resilient University. Illinois State University gratefully acknowledges the following people for the time, energy, and resources given to create the first Illinois State University Multi-Hazard Mitigation Plan.

Eric Hodges, Director, Emergency Management
Teresa Chapman, Safe Redbirds Ambassadors Program Manager, Emergency Management
Liz Findley, Assistant Director, Emergency Management
Dan Simon, Emergency Management Coordinator, Emergency Management
Adam McCrary, Director/ Biosafety Officer, Environmental Health & Safety
Don Kunde, Associate Director, Environmental Health & Safety
David Marple, Director, University Risk Management
Brady Mann, Director, Office of Energy Management
Daniel M. Kane, Ass. Director, Office of Energy Management
Karin Earl, Senior Architect, Facilities Planning, Designing & Construction
Thomas Durbin, Senior Mechanical Engineer, Facilities Planning, Designing & Construction
Marc Martindale, Assistant Athletics Director/Events & Facilities, ISU Athletics
Becky Ludolph, Director / Privacy Officer, Student Health Service
Bobbie Stevens, Associate Director, Student Health Service
Nichol Bleichner, Deputy Chief, University Police
David Hopper, Emergency Manager, Carle BroMenn Medical Center
Bernie Anderson, Regional Manager, Community Affairs - South, Nicor Gas
Kevin Gadzala, Regional Manager, Community Affairs - NW, Nicor Gas
Mike Morrison, Assistant Chief, Town of Normal Fire Department
Zachary Wall, Project Engineer, Town of Normal Engineering and Public Works Department
Cathy Beck, Director, McLean County Emergency Management Agency

President’s Office
Dr. Aondover Tarhule, President

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Section 1. Introduction

Hazard mitigation encompasses efforts aimed at reducing or eliminating the enduring risks posed to human lives and properties by various hazards. The Federal Emergency Management Agency (FEMA) has identified hazard reduction as a central objective. The planning and execution of hazard mitigation initiatives, projects, measures, and policies serve as a primary means for FEMA to attain this objective.

The Federal Disaster Mitigation Act of 2000 (DMA 2000) mandates the creation of a Multi-Hazard Mitigation Plan (MHMP). Local government's compliance with this requirement is essential to retain eligibility for specific federal disaster aid and hazard mitigation funding programs. For participation in future mitigation funding opportunities, National Flood Insurance Program (NFIP) communities must also adopt an MHMP.

Recognizing the pivotal role of planning in mitigation endeavors, FEMA introduced Hazus Multi-Hazard (Hazus-MH), a robust geographic information system (GIS)-based tool for assessing disaster risks. This tool empowers communities of all sizes to estimate potential losses resulting from floods, hurricanes, earthquakes, and other natural hazards, while also evaluating the effectiveness of various mitigation strategies in reducing these losses. The Illinois Emergency Management Agency (IEMA) has determined the importance of Hazus-MH in risk assessments conducted within the state of Illinois.

Illinois State University Emergency Management, in collaboration with Southern Illinois University, has undertaken the updating of the University's 2019 multi-hazards mitigation plan. The actions outlined in this MHMP are applicable not only to the University but also to any administrative units, academic departments, or affiliated organizations that formally endorse this plan. Throughout the planning process and the drafting of the MHMP, comprehensive stakeholder involvement was sought. In the context of this planning, stakeholder participation entailed the submission of department/organization-specific data (such as completing a Risk Assessment worksheet and identifying mitigation strategies) and the attendance of a department/organizational representative at a planning or public meeting.

This plan integrates cutting-edge hazard analyses, adapts to alterations in the likelihood and impact of specific hazards, and incorporates shifts in land-use, population, and demographic trends within the University's scope. It includes thorough GIS and Hazus-MH Level 2 analyses for risk assessment and establishes effective mitigation strategies for each university department and community partner. This document, therefore, serves as the 2025 Multi-Hazard Mitigation Plan for Illinois State University.

Section 2. Planning Process

2.1 Timeline

The MHMP process is structured around a sequence of five key gatherings of the mitigation planning team. The meetings were jointly conducted by Southern Illinois University (SIU) and by the Director of Emergency Management at Illinois State University (ISU).

Meeting 1: The inaugural meeting focused on introducing the MHMP (Mitigation Hazard Mitigation Plan) and assembling essential resources with assistance of the university management office. A primary charge was collecting local resources integral to crafting a comprehensive risk assessment for Illinois State University. SIU presented historical hazard data. With this information, the Planning Team identified natural hazards to incorporate into the plan, ranking them based on the potential for damage and frequency of occurrence.

Meeting 2: Meeting two facilitated a "brainstorming session," where the Planning Team, contributed to the identification and prioritization of mitigation strategies and projects aimed at mitigating the threats pinpointed in the risk assessment. This was in alignment with FEMA's requirement that the plan should address mitigation strategies tailored to each hazard. SIU also presented funding options for the implementation of these strategies, providing a written guide for distribution among all participants.

Meeting 3: At the public meeting, SIU presented the preliminary risk assessment, a product of Hazus-MH and GIS modeling applied to specific disasters. The general public's involvement was actively encouraged through the university newspaper and websites. In adherence to FEMA's guidelines for public input, SIU invited questions and input from the public, fostering a more inclusive planning process. Important discussion, particularly around energy resistance, is incorporated in this plan.

Meeting 4: Here, the Planning Team reviewed the draft plan, proposed necessary revisions, and endorsed the plan once SIU had incorporated the essential changes. Subsequently, SIU relayed the University MHMP to the mitigation staff at the Illinois Emergency Management Agency (IEMA) for a comprehensive review before submitting it to FEMA.

Meeting 5: The fifth meeting entails the official adoption of the approved plan by the university. Once FEMA granted its approval of the draft, the plan returned to the University for formal adoption, overseen by the Office of the President.

2.2 University Department & Community Partner Participation

Approximately thirteen university departments and community partners make up the MHMP, aiming to officially embrace the plan and thereby meet the DMA 2000 requirements. Meetings featured delegates from each department or organization, as detailed in Section 2.3, "Planning Team Information."

Participant University Departments and Community Partners	
ISU Emergency Management	Carle BroMenn Medical Center
ISU Environmental, Health and Safety	Nicor Gas
ISU Risk Management	Normal Fire Department
ISU Office of Energy Management	Normal Engineering & Public Works departments
ISU Facilities Planning, Designing & Construction	McLean County Emergency Management Agency
	Ameren
ISU Athletics	
ISU Student Health Services	
ISU University Police	

2.3 Planning Team Information

Eric Hodges, serving as the Director of Emergency Management, leads the Planning Team. This team comprises representatives from a range of university departments, local municipalities, and both public and private utilities. Each member of the Planning Team shares a commitment to the University's overarching goal of minimizing disaster losses and disrupting the cycle of disaster damage, subsequent reconstruction, and recurrent damage. Throughout the process, all Planning Team members played an active role by participating in meetings, offering feedback on the draft plan, engaging in the public input process, and participating in the University's formal adoption of the plan.

Illinois State University Planning Team Members

ISU Department/ Community Partner	Name	Title
ISU Emergency Management	Eric Hodges	Director
	Teresa Chapman	Safe Redbirds Ambassadors Program Manager
	Liz Findley	Assistant Director
	Dan Simon	Emergency Management Coordinator
ISU Environmental, Health and Safety	Adam McCrary	Director/ Biosafety Officer
	Don Kunde	Associate Director
ISU Risk Management	David Marple	Director
ISU Office of Energy Management	Brady Mann	Director
	Daniel M. Kane	Assistant Director
Facilities Planning, Designing & Construction	Karin Earl	Senior Architect
	Thomas Durbin	Senior Mechanical Engineer
ISU Athletics	Marc Martindale	Assistant Athletics Director/Events & Facilities
ISU Student Health Services	Becky Ludolph	Director / Privacy Officer
	Bobbie Stevens	Associate Director
ISU University Police	Nichol Bleichner	Deputy Chief
Carle BroMenn Medical Center*	David Hopper	Emergency Manager
Nicor Gas*	Bernie Anderson	Regional Manager, Community Affairs – South
	Kevin Gadzala	Regional Manager, Community Affairs – NW
Normal Fire Department*	Mike Morrison	Assistant Chief
Normal Engineering & Public Works departments*	Zachary Wall	Project Engineer
McLean County EMA*	Cathy Beck	Director

** Community Partner*

The DMA 2000 planning regulations mandate active participation in the MHMP (Multi-Hazard Mitigation Plan) process by Planning Team members from each University Department and Community Partner. The Planning Team played a crucial role in various aspects of the process, including:

- Attending the MHMP meetings
- Providing available assessment and campus building inventory and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the University

The first formal MHMP meeting took place in Normal, Illinois, on August 10th, 2023. During this event, representatives from SIU (Southern Illinois University) clarified the underlying rationale of the MHMP process and addressed queries from the attendees. In addition, SIU representatives provided a comprehensive overview of GIS/Hazus-MH, outlined the timeline, and explained the intricacies of the mitigation planning process.

The ISU Planning Team convened for a total of four formal meetings, with an additional meeting of university officials to adopt the plan. Each of these meetings spanned one to two hours in duration. Detailed attendance records for all sessions can be found in Appendix A. Over the course of these meetings, the Planning Team achieved several significant milestones: identification of critical facilities, review of hazard data and maps, assessment of existing mitigation measures, establishment of future mitigation projects, and support for public participation

Planning Meetings	
Meeting 1	**Aug 10 2023**
Meeting 2	**Dec 11 2023**
Meeting 3	**July 23 2024**
Meeting 4	**Sep 16 2024**

2.4 Public Involvement

The planning process for the ISU risk assessment involved active engagement with the public, as overseen by the ISU Director of Emergency Management. On Sep 16th, 2024, a public meeting was conducted to facilitate a comprehensive review of the assessment. Feedback during from those in attendance during and after the meeting was incorporated into the plan by SIU under the direction of the ISU Emergency Management Director. Attendance records for this meeting can be found in Appendix A. Appendix B contains press releases and other information disseminated to local media outlets, aimed at keeping the public informed about these meetings and the associated progress.

2.5 McLean County Involvement

As detailed in Section 2.3, the ISU – MHMP featured a diverse range of stakeholders, encompassing both university-affiliated and non-university participants. In addition to those constituents who actively participated in meetings, invitations were extended to engage the following individuals in the planning process: the McLean County Emergency Management Agency, as well as multiple representatives from county government and various community groups. This collaborative approach sought to ensure their active involvement in shaping the planning process.

2.6 Review of Technical Documents

The ISU Planning Team systematically sourced technical documents from key agencies (land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes) to enhance the planning process. Additionally, it integrated pre-existing natural hazard mitigation elements from earlier planning endeavors. To ensure a comprehensive and informed approach, the following technical data, reports, and studies were employed for hazard mitigation:

Federal Emergency Management Agency
- *Developing the Mitigation Plan (April 2003)*
- *Mitigation Ideas (January 2013)*
- *Local Mitigation Planning Handbook (May 2023)*
- *FEMA Open data Sets (OpenFEMA Data Sets | FEMA.gov)*
- *FEMA Community Status Book (Community Status Book | FEMA.gov)*
- *FEMA Community Rating System (https://www.fema.gov/floodplain-management/community-rating-system))*

United States Census Bureau
- *County Profile Information*
  - *U.S. Census Bureau QuickFacts: Normal town, Illinois; United States*
  - *U.S. Census Bureau QuickFacts: Bloomington city, Illinois; Normal town, Illinois; United States*
- *2020 Census Data*
- *American Community Survey (2018-2020)*

U.S. Department of Transportation
- *Pipeline and Hazardous Materials Safety Administration (PHMSA: Oracle Analytics Interactive Dashboards - Hazmat Incident Report Search)*

U.S. Environmental Protection Agency
- *Acute Exposure Guideline Levels (Acute Exposure Guideline Levels for Airborne Chemicals | US EPA)*

NOAA / National Climatic Data Center
- *Past Atmospheric Hazards (NCEI: Storm Events Database - Search Page | National Centers for Environmental Information)*

NOAA / National Water Service Storm Prediction Center
- *Severe Weather Data*

NOAA/ National Drought Mitigation Center (University of Nebraska-Lincoln)
- *US Drought Monitor (Time Series | U.S. Drought Monitor)*

Illinois Emergency Management Agency
- *2023 Illinois Natural Hazard Mitigation Plan*
- *Hazardous Materials Incident Report Database for the State of Illinois (IEMA | FOIA | Hazmat Search)*
- *Flood Insurance Claim Information (https://www.fema.gov/about/reports-and-data/data-visualizations)*

Illinois Environmental Protection Agency
- *2020/2022 303(d) Listed Waters Maps - Appendix C-8.*

Illinois State Water Survey
- *Climate Data* (Climate Atlas of Illinois, Illinois State Water Survey)

Illinois State Geological Survey
- *Panno, et al, 1997, Karst Regions of Illinois*
- *Bauer, 2008, Planned Coal Mines Subsidence in Illinois: A Public Information Booklet (library.isgs.illinois.edu/Pubs/pdfs/circulars/c573.pdf)*
- *Bauer, 2006, Mine Subsidence in Illinois: Facts for Homeowners (library.isgs.illinois.edu/Pubs/pdfs/circulars/c569-2013.pdf)*
- *Illinois Coal Association, 1992. Illinois coal facts: Springfield Illinois*
- *White, 1988, Geomorphology and Hydrology of Karst Terrains, Journal of Quaternary Science (Geomorphology and hydrology of karst terrains : Free Download, Borrow, and Streaming : Internet Archive)*

Illinois State University

Emergency Operation Plan (2022)
Master Plan (2010-2030)
ISU Buildings and Space Inventory Data (2023)
University Facilities Services (university-building-inventory.pdf)
University Housing Services (24-29758 Housing At A Glance Flier ADA PDF.pdf)
University Fall 2019 Factbook
University Common Data Set 2023-2024 (Planning, Research, and Policy Analysis | Illinois State)
Planning, Research, and Policy Analysis (Reports and Dashboards | Planning, Research and Policy Analysis | Illinois State)
US News website – ISU page (Illinois State University Student Life - US News Best Colleges)

McLean County

McLean County Regional Comprehensive Plan (2009)
McLean County Multi-Jurisdictional All Hazards Mitigation Plan (July 2022)
Codes and Ordinance (https://ecode360.com/MC2883)

City of Bloomington

City of Bloomington Comprehensive Plan 2035 (2015)
Bloomington Fire Department Salaries - Illinois
*Codes and Ordinances (*https://www.bloomingtonil.gov/government/codes-ordinances*)*

Town of Normal

Town of Normal 2040 Comprehensive Plan (2017)
Fire Department (Fire | Normal, IL - Official Website/ IAFF Local 2442 | Normal, IL - Official Website)
*Codes and Ordinances (*https://normal.municipalcodeonline.com/)
Residents | Normal, IL - Official Website
Police Department (Police | Normal, IL - Official Website)
Hazard Mitigation Plan 2015

2.7 Adoption by Local Government

Following the approval from both IEMA and FEMA, the Planning Team proceeded to present their recommendations for the plan to the Illinois State University Office, which was formally adopted by the President of Illinois State University on June 12, 2025. Collaborating closely with various university departments and community partners, the Planning Team ensured that all relevant parties formally endorsed the plan. Appendix C provides a record of this formal adoption, including the signed Adopting Resolution by the President of Illinois State University.

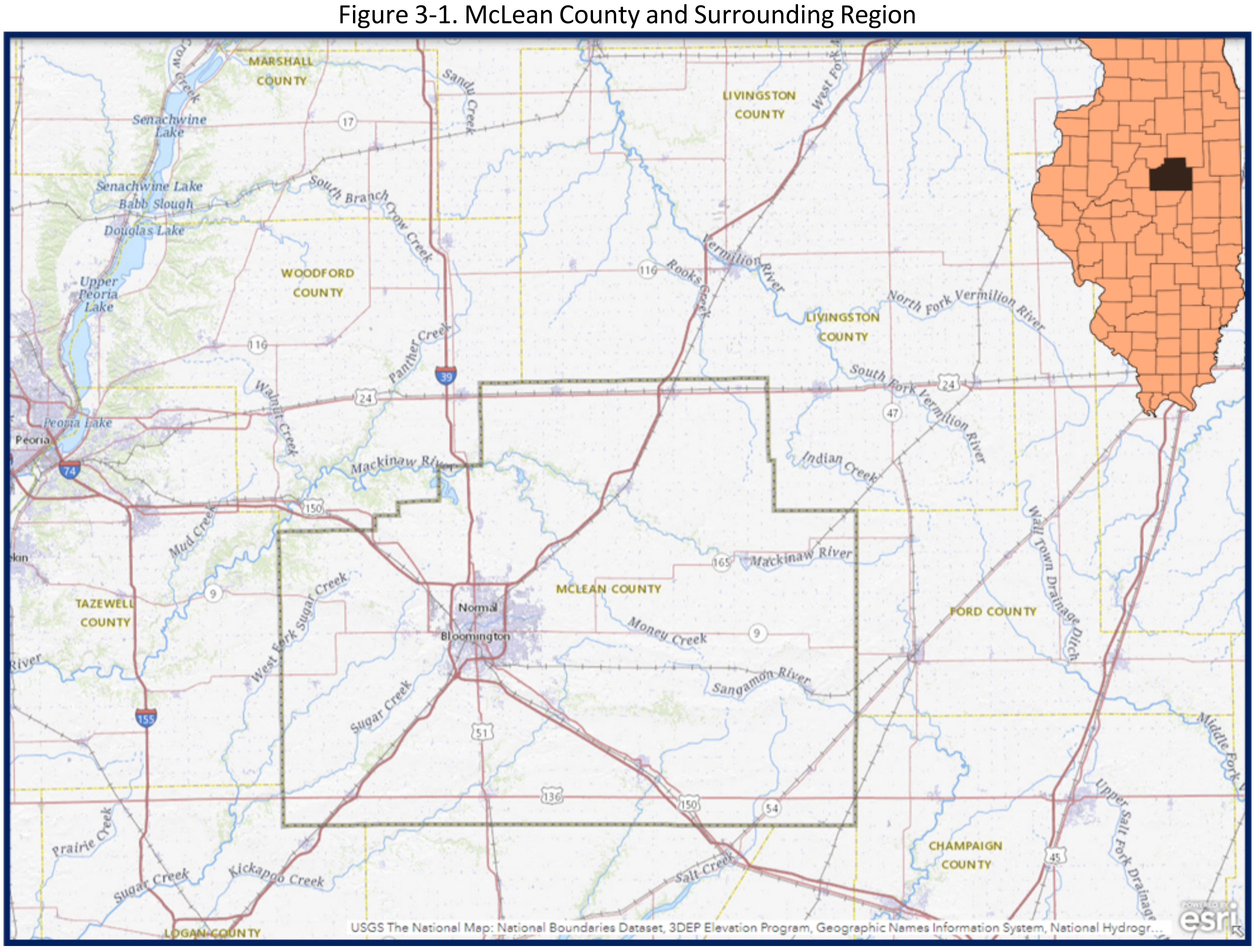
Section 3. University Profile

3.1 Geography and Environment

Illinois State University (ISU) is situated in Normal, McLean County, Illinois (Figure 3-1 shows a map of McLean County and surrounding region). The campus occupies 920 acres and is located in the twin-city community of Bloomington- Normal. The ISU campus includes over 60 major buildings and state-of-the-art technology. The University is situated at the intersection of three major interstate highways cross through Central Illinois and lies along the Chicago-St. Louis railroad corridor. The campus is located 137 miles southwest of Chicago and 164 miles northeast of St. Louis. Additionally, Bloomington-Normal area is a transportation center, as Interstates 74, 55, and 39, U.S. Route 150, and Illinois Route 9 all intersect here. The Bloomington Normal Amtrak station is two blocks from the campus.

While the town was previously known as North Bloomington, it was renamed Normal in February 1865 and officially incorporated on February 25, 1867. The name Normal was taken from Illinois State Normal University. Later, the university was renamed to Illinois State University once it became a four-year university. Though Normal is the smaller of two principal municipalities of the Bloomington-Normal metropolitan area, the town is the seventh most populous community in Illinois outside of the Chicago Metropolitan area. In addition to Illinois State University, Normal has two other higher learning institutions: Heartland Community College and Lincoln College.

Figure 3-1. McLean County and Surrounding Region



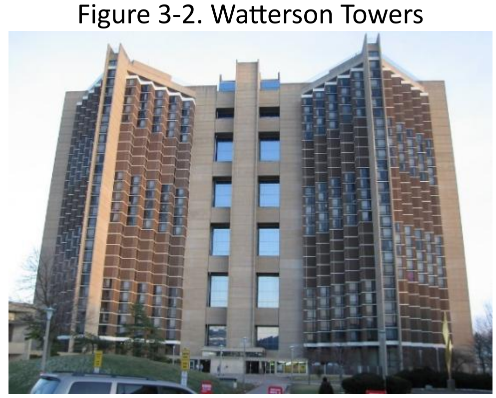
Bloomington and Normal join to form an urban agricultural, commercial, and industrial center in central Illinois. The rich agricultural area surrounding Bloomington- Normal is situated in the Bloomington Ridged Plain physiographic subdivision of the Till Plains section. The region is a flat glacial plain crossed with moraine ridges.

The climate in Normal is typically characterized by its hot dry summers and cool wet winters. The variables of temperature, precipitation, and snowfall can differ greatly between years. In summer, the average low is 65°F and the average high is 86°F. Average monthly precipitation ranged from 1.71 inches in February to 4.52 inches in May. (NCEI Storm Event Data from 1971 to 2000). The average low temperature in January is 14°F and is accompanied by substantial amounts of ice and snow.

The two main watersheds in Bloomington-Normal are Evergreen Lake and Lake Bloomington. Evergreen Lake consists of 900 acres and 22.5 miles of shoreline. Lake Bloomington is a man-made lake consisting of 570 acres and 9.5 miles of shoreline. Both watersheds provide an expansive array of recreational fishing, including largemouth bass, smallmouth bass, crappies, hybrid walleye, muskie, white bass, bluegill, channel catfish, and flathead catfish.

Topographically, the highest elevation on campus is 282 feet at Watterson Towers (Figure 3-2). Located in Normal, Illinois at the corner of Fell and Beaufort Streets, it is the second tallest dormitory in the world. The Illinois State University campus quadrangle consists of buildings spaced closely together around a rectangular center lawn and is the center of dormitory life. This popular site is known as the "Quad" where special events including concerts and Festival ISU takes place. The ISU Quad is also host to the Fell Arboretum, which is part of a 350-acre site that consists of 150 tree species from the state of Illinois. Uniquely, trees on the north side of the quad are from Northern Illinois and those on the south side are from Southern Illinois. In 2008, Fell Arboretum won the Tree Campus USA award.

Figure 3-2. Watterson Towers



3.2 University Facts and Institutional Trends

On February 18, 1857, Governor William Bissell signed a bill that established a normal school and created the Board of Education of the State of Illinois as its governing body. Abraham Lincoln acted as attorney of the board. As a result, Illinois State Normal University was founded as the first public institution of higher education in the state. The name "normal" shows that its primary mission was as a teaching school. Initially classes were held in downtown Bloomington in Mayor's Hall, which is previously the site of Lincoln's "Lost Speech." After the completion of Old Main in 1860, the school moved to its current location. ISU is one of the oldest institutions of higher education in the Midwest, and one of 12 public universities in Illinois. ISU is accredited by the North Central Association of Colleges and Schools.

Traditionally a training school for teachers, the University 's 36 academic departments house across 7 colleges offer a combined 67 undergraduate programs in more than 188 major/minor fields of study in the Colleges of Applied Science and Technology, Arts and Sciences, Business Education, Fine Arts, Engineering and Mennonite College of Nursing. The Graduate School manages 94 master's degrees, 10 doctoral programs, and 33 certificate programs.

The University offers extended education non-degree programs throughout the state of Illinois. Milner Library supports the University's academic programs offering a collection of more than three million holdings.

Illinois State University is the site of "Redbird Country" and home of the red and white. The unofficial nickname was first the "Fighting Teachers." Since 1960, Reggie Redbird has been on the sidelines for Illinois State. In 1981, he took on the name of "Reggie" after baseball hall of farmer Reggie Jackson (Figure 3-3).

Figure 3-3. Reggie Redbird

3.3 Population, Occupancy, and Demographics

The University enrollment includes students from throughout Illinois, as well as out-of-state and international students from 47 states and 77 countries. Illinois State University continues to see record-breaking enrollment numbers, despite an increasingly competitive recruiting environment and an ongoing state budget crisis. Illinois State has seen growth in the number of transfers, graduate students, and first-time-in-college Enrollments. The total enrollment in 2023-2024 academic year is 20-22,000 students. (23/24 Enrollment data).

Population and demographic information provide baseline data about the University community. This community consists of specific key groups, such as students, faculty, and staff. Any changes in the demographics or populations may be used to identify higher-risk populations. Baseline demographic information for Fall 2023 & Fall 2024 semester at ISU is provided in tables 3-1, 3-2, and 3-3 below (23/24 Common dataset and Reports and Dashboards of ISU Planning, Research and Policy Analysis website).

Table 3-1a: Baseline Demographic Information - Student Enrollment 2023 Fall (23/24 Common Data Set)

DEMOGRAPHICS	FULL-TIME	PART-TIME	Total
Undergraduate Degree Program			
Degree-seeking, first-time, first-year students	4,133	14	4,147
Degree-seeking, other first-year students	1,659	155	1,814
Degree-seeking, all other students	11,612	841	12,453
All other students enrolled in credit courses	12	24	1,814
Total Undergraduates	**17,416**	**1,034**	**18,450**
			Graduate Degree Program
Degree-seeking, first-time students	454	179	633
Degree-seeking, all other students	885	935	1820
All other students enrolled in credit courses	12	74	86
Total Graduates	**1,351**	**1,188**	**2,539**
			Gender
Male	8,111	798	8,909
Female	10,656	1,424	12,080
Not Disclosed	0	0	0
Total Population (23/24)	**18,767**	**2,222**	**20,989**

Table 3-1b: Baseline Demographic Information – Students Enrollment 2023 Fall versus 2024 Fall.		
Academic Level	**Fall 2023**	**Fall 2024**
Undergraduate	**18,450**	**19,107**
Freshman	5,578	5,533
Sophomore	3,958	4,208
Junior	4,063	4,645
Senior	4,815	4,671
Non-Degree Seeking Undergraduate	36	50
Graduate	**2,539**	**2,439**
Masters	1,759	1,656
Certificate	203	210
Doctoral	491	499
Non-Degree Seeking Graduate	86	74
Total	**20,989**	**21,546**
Academic Load	**Fall 2023**	**Fall 2024**
Full-Time	18,767	19,304
Part-Time	2,222	2,242
Total	**20,989**	**21,546**
Admitted Type by Entry Status	**Fall 2023**	**Fall 2024**
New	**6,669**	**7,139**
First Time in College	4,147	4,285
External Transfer	1,814	1,788
Non-Degree Seeking Undergraduate	31	40
Degree Seeking Graduate	633	987
Non-Degree Seeking Graduate	44	39
Continuing	**14,320**	**14,407**
First Time in College	9,001	9,516
External Transfer	3,362	3,367
Degree Seeking Undergraduate (No Cohort)	90	101
Non-Degree Seeking Undergraduate	5	10
Degree Seeking Graduate	1,820	1,378
Non-Degree Seeking Graduate	42	35
Total	**20,989**	**21,546**
Gender	**Fall 2023**	**Fall 2024**
Male	8,790	8,839
Female	11,952	12,393
Non-Binary or Not Disclosed	247	314
Total	**20,989**	**21,546**

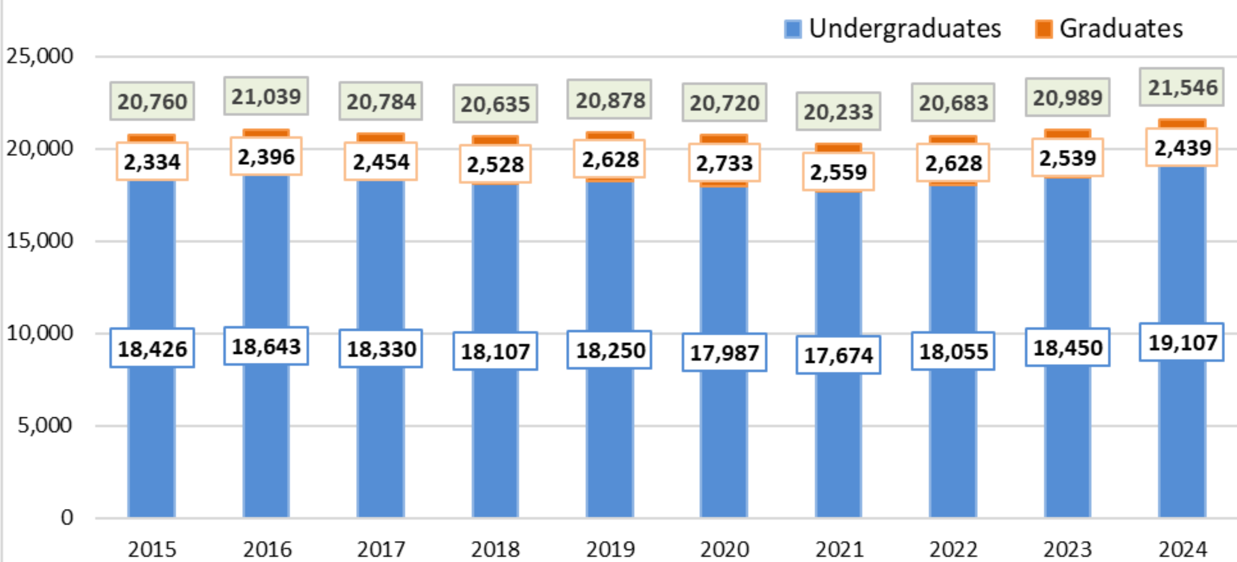
Table 3-2: Race/ Ethnicity/Nationality – Students Enrollment (23/24 Common Data Set)			
Race/ Ethnicity	**Undergraduates**	**Graduates**	**Total**
American Indian or Alaska Native, non- Hispanic	15	2	17
Asian, non-Hispanic	518	47	565
Black or African American, non-Hispanic	2,126	182	2,308
Hispanic/Latino	2,553	160	2,713
Native Hawaiian/ other Pacific Islander, non-Hispanic	5	1	6
White, non-Hispanic	12,253	1451	13,704
Two or more races, non-Hispanic	733	63	796
Race and/or ethnicity unknown	99	40	139
International (nonresidents)	148	593	741
Total	**18450**	**2539**	**20989**

Table 3-2b: Race/ Ethnicity/Nationality – Students Enrollment Data 2023 Fall versus 2024 Fall.		
Race/Ethnicity (IPEDS)	**Fall 2023**	**Fall 2024**
American Indian/Alaskan Native	17	16
Asian	565	560
Black or African American	2,308	2,775
Hispanic	2,713	2,895
Native Hawaiian or Pacific Islander	6	12
White	13,704	13,650
Two or More Selections Excluding Hispanic	796	840
Unspecified	139	185
Non-U.S. Citizen	741	613
Total	**20,989**	**21,546**

Table 3-3: Faculty and Staff Data (23/24 Common Data Set & 2023 Fact sheet)			
DEMOGRAPHICS	**FULL-TIME**	**PART-TIME**	**Total**
Instructional faculty	908	325	1233
Other Faculty			154
Staff			2,225
Total			**3,612**
Members of minority groups	148	27	175
Female	472	212	684
Male	436	113	549
International (non-residents)	43	0	43
Faculty with doctorate, or other terminal degrees	732	72	804
Faculty whose highest degree is a master's degree but not a terminal master's degree	165	228	393
Faculty whose highest degree is a bachelor's degree	7	21	28
Faculty whose highest degree is unknown or other	4	4	8
Library Faculty			76

Based on Fall-2024 enrollment data, the total student population in ISU is 21,456. Based on University 2023 Fact Sheet, ISU has a population of 3,612 faculty and staff members. Majority of undergraduate students are traditional-aged (under 25). Additionally, according to the US Census Bureau Population Estimates for July 1, 2023, the town of Normal, IL has a population of 52,618. Bloomington, IL is slightly larger with a population of 78,587.

Figure 3-4. ISU Undergraduate & Graduate Student Enrollment (Fall, 2015 – Fall, 2024)



** ISU Office of Student Admissions*

** Student Enrollment Reports -* [Enrollment Dashboards (Fall 2015 through Current Term)]

ISU has experienced a 5.2% decrease in undergraduate enrollment from 2016 to 2021. From 2021 to 2024, undergraduate enrollment has shown notable growth, with an 8.1% increase. Graduate enrollment grew significantly between 2015 and 2020, with a net increase of 17.1%. From 2020 to 2024, graduate enrollment declined by 10.8%.

Overall, total enrollment has increased by 6.5% since 2021. Given these trends, it remains crucial for the University to properly maintain its existing infrastructure and develop plans to manage or redevelop unused properties. This will help ensure there is adequate housing, classroom space, and facilities to accommodate changing enrollment patterns.

Illinois State University and the surrounding community have a variable population density. This means the level of vulnerability to risk will shift throughout the course of the year and the day. Periods of time where there are fewer people on campus and the University has a lower population density (i.e., evening, nights, weekends, and intersession periods) can make it difficult to determine who and where people are on campus. Conversely, low population density helps prevent hazards from affecting a greater number of people.

The demographics referenced above are based on enrollment rates for the Fall semester in each academic year. However, university populations fluctuate based on both time of year and time of day. The student population of ISU drops during the winter session (typically mid-December to mid-January) and summer session (mid-May to mid-August) as students return to their primary places of residence. Most classes are held during the day, though classes may be held in the late afternoon and evening hours. Full- time or part-time status of a student, staff member, or faculty member will also impact the frequency with which they are on campus. Most of the university population during the weekday evening and weekends consists of resident students. In contrast, periods of time where there are more people on campus and the University has a higher population density (i.e., fall/spring semesters and weekdays) can result in a greater risk as transportation accidents, utility interruptions, and other events will impact a greater number of people.

ISU is a co-educational, residential university comprising undergraduate student housing clustered in four neighborhoods located across the 920-acre campus. The four areas house more than 6,000 students: Watterson Towers, East Campus (Hewett-Manchester Hall), West Campus Tri Towers (Haynie, Wilkins, and Wright Hall), and Cardinal Court.

As of Fall 2023, 35% of the students live in college -owned, -operated or -affiliated housing and 65% of students live off campus (Source: usnews.com). Given that, damage to residential properties due to environmental hazards is not only expensive to repair or rebuild but also can be devastating to displaced individuals.

3.4 Land Use and Development Trends

Illinois State University's physical campus comprises 920 acres, 221 structures, 20 miles of sidewalks, approximately 70 acres of parking lots, and more than 150 tree species. The Historic Quad and adjacent areas consist of 350 acres. Roughly, 270 acres are located on the Gregory Street property, which is immediately west of the Weibring Golf Club and close to one mile from the Historic Quad's center point (Figure 3-5). Formerly the University Farm site, the Gregory Street property encompasses land equal to three times the area of the Historic Quad. The University Farm was relocated to approximately 300 acres in Lexington in 2002 (Source: Master Plan 2010-2030).

Figure 3-5. The Historic Quad

Illinois State maintains 6.8 million square feet of facility space. Most of this space is located on-campus, although there are also off-campus facilities. Most of the on-campus space is used for residential facilities (24%), followed by office space used to support administrative purposes, as well as instructional, research, and public service activities (16%). Figure 3-6 depicts a current campus map of ISU. The map shows university buildings, green space, and the campus boundary. The map does not show the University Farm or other off-campus areas. The map also includes some areas and buildings not owned by the University solely for the purpose of identifying various campus landmarks in relationship to the local community.

Figure 3-6. Current Campus Map of ISU

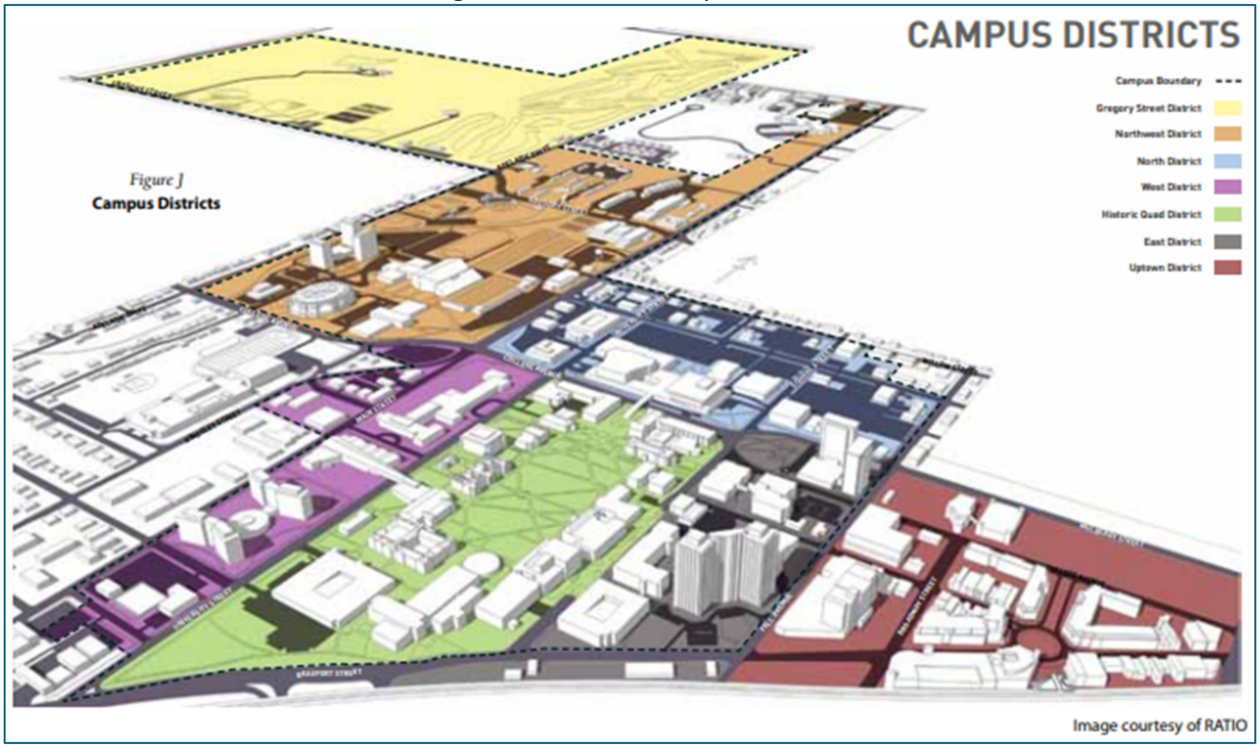
Source: Illinois State University Master Plan 2010-2030: Looking to the Future

Illinois State University Master Plan 2010-2030, examined all aspects of the University's facilities, including requirements for rehabilitation, renovation, and construction of new facilities that must accommodate emerging technologies and provide more classroom space for future students in the areas of instruction, research, creative activities and public service. The plan assessed existing conditions in terms of total space, space by type, age of facilities, and condition of space. The plan presents a series of recommendations designed to foster the University's physical transformation in addition to what has been accomplished in recent years. The physical campus environment is an important feature of the University, not only for the faculty, staff, and students, but also for the local communities.

The Plan is intended to serve as a long-range blueprint for the physical development of Illinois State University, encompassing its future size, form, function, character, image, and environment. Appropriate facilities, along with a healthy, safe, and environmentally sustainable campus, are key to positioning students for success, promoting academic excellence, and enhancing pride among students, faculty, staff, alumni, and the community. Figure 3-7 illustrates the proposed future land use for ISU as outlined in the Master Plan 2010-2030. As the physical transformation of the campus progresses, eight distinct districts will be created.

This mitigation plan complements and supports the overall goals of the master plan 2010-2030.

Figure 3-7. Future Campus of ISU



Source: Illinois State University Master Plan 2010-2030: Looking to the Future

Section 4. Risk Assessment

The goal of mitigation is to reduce future hazard impacts including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation requires a rigorous risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much the disaster could affect the community, and the impact on community assets. This risk assessment consists of three components—hazard identification, vulnerability assessment, and risk analysis.

4.1 Hazard Identification

4.1.1 Existing Plans

The Planning Team identified technical documents from key agencies to assist in the identification of potential hazards. Several other documents were used to profile historical hazards and guide the Planning Team during the hazard ranking exercise. Illinois State University is located in the town of Normal in McLean County, Illinois and McLean County have their own FEMA-approved hazard mitigation plan. Though many university students, faculty, and staff are residents of the county, the ISU MHMP focuses on hazards and issues that are specifically related to a small, fairly densely populated area within the county. Section 2.6 contains a complete list of the technical documents utilized to develop this plan.

4.1.2 National Hazard Records

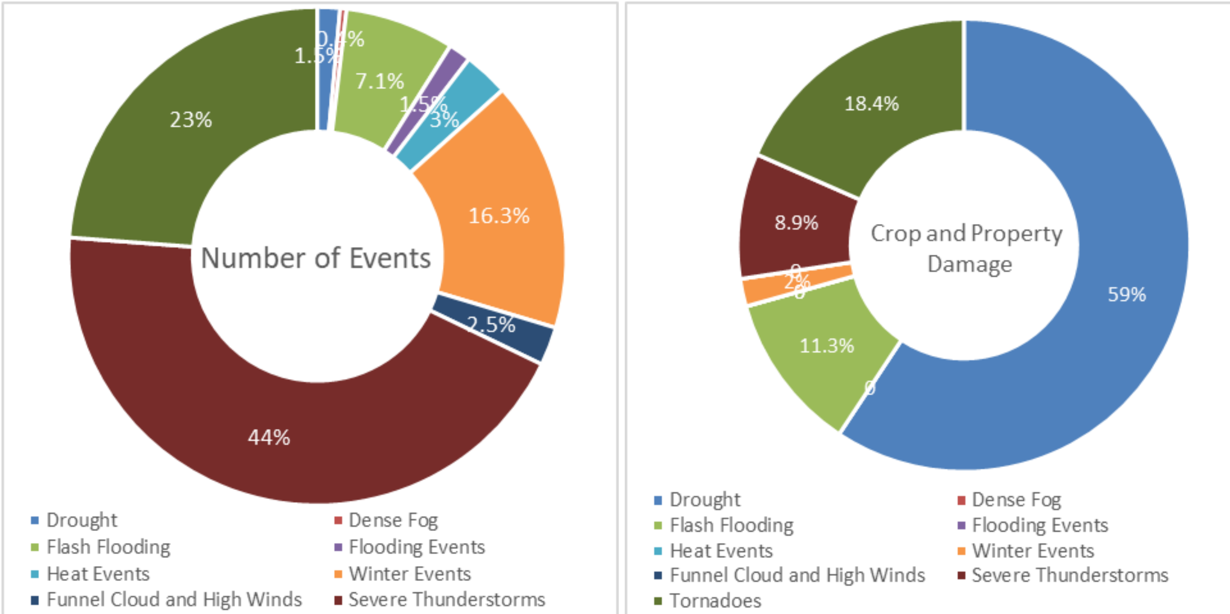
To begin initial investigations and aid the Planning Team, historical storm event data from the National Centers for Environmental Information (NCEI) was complied. NCEI – Storm Event Database records are estimates of damages reported to the National Weather Service (NWS) from various local, state, and federal sources. It is important to note that these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

The Storm Event database included 365 reported meteorological events with winds over 30 mi/hour in McLean County from 1950-2023. The following hazard-profile sections each include a summary table of events related to each hazard type. Table 4-1 summarizes the meteorological hazards reported for McLean County. Figure 4-1 summarizes the relative frequency of reported meteorological hazards in Storm Event database and the percentage of total damage associated with each hazard for McLean County. Full details of individual hazard events are on the NCEI - Storm Event database website.

Table 4-1. Summary of Meteorological Hazards Reported by the NCEI for McLean County

Hazards	Time Period		Number of Events	Property and Crop Damage	Deaths	Injuries
	Start	End				
Tornadoes	1950	2023	114	$20,337,000	0	5
Severe Thunderstorms	1973	2022	211	$9,893,000	0	8
Funnel Cloud/High Winds	1997	2019	12	0	0	0
Winter Events	1996	2022	78	$2,181,000	12	17
Heat Events	1997	2014	14	$0	4	0
Flood Events	1998	2022	41	$12,535,000	0	0
Dense Fog	2008	2015	2	$0	1	1
Drought	2012	2013	7	$65,500,000	0	0

Figure 4-1. Distribution of NCEI Meteorological Hazards for McLean County



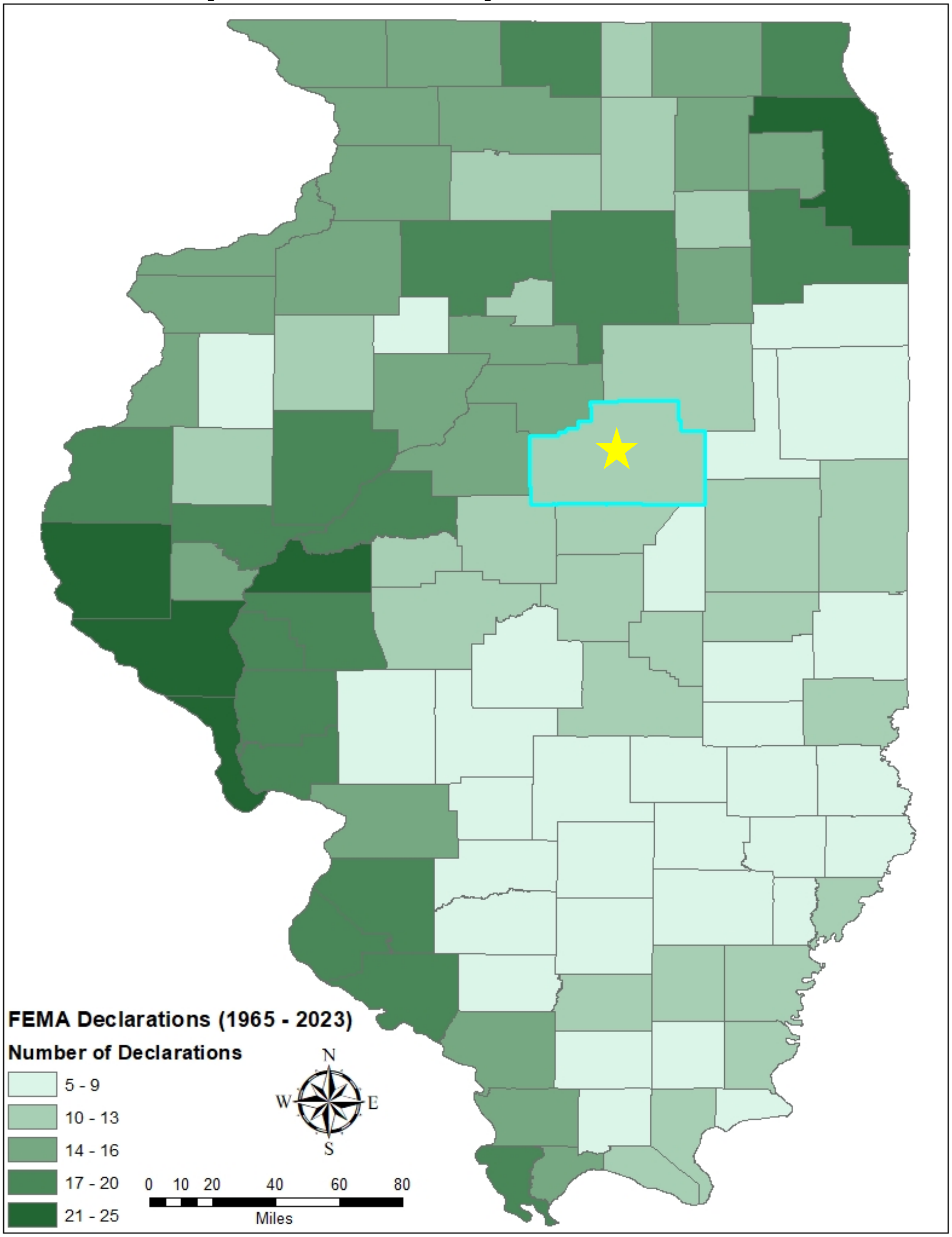
4.1.3 FEMA Disaster Information

Since 1957, FEMA has declared a total of 53 major disasters and 7 emergencies for the state of Illinois. Emergency declarations grant states access to FEMA funds for Public Assistance (PA), while disaster declarations provide additional PA funding, including Individual Assistance (IA), and access to the Hazard Mitigation Grant Program (HMGP). McLean County has received federal aid for six declared disasters and three emergencies since 1965. Table 4-2 lists specific information for each disaster declaration in McLean County. Furthermore, Figure 4-2 illustrates the number of declared disasters and emergencies for both the state of Illinois and McLean County – which encompasses ISU – since 1965. All but the tornado outbreak of 1974 (starred) directly impacted the university.

Table 4-2. Details of FEMA-declared Emergencies and Disasters in McLean County

Disaster Number	Declaration Date	Declaration Title
242	06/05/1968	Tornadoes, Severe Storms & Flooding
373	04/26/1973	Severe Storms & Flooding
427*	04/11/1974	Tornadoes
860	03/06/1990	Severe Ice Storm
1681	02/09/2007	Severe Winter Storm
1960	03/17/2011	Severe Winter Storm and Snowstorm
3134	01/08/1999	Il-Winter Storm 1/1/99
3161	01/17/2001	Illinois Winter Snowstorms
3230	09/07/2005	Hurricane Katrina Evacuation
3435	03/13/2020	Covid-19
4489	03/26/2020	Covid-19 Pandemic

Figure 4-2. FEMA-declared Emergencies and Disasters in Illinois



4.1.4 Hazard Ranking Methodology

Based on Planning Team input, national data sets, and existing plans, the ISU Planning Team developed and ranked a list of hazards. These hazards ranked the highest based on the Risk Priority Index discussed in Section 4.1.5.

ISU Hazard List

HAZARDOUS MATERIALS RELEASE

EXTREME HEAT

FLASH FLOODING

TORNADOES

SEVERE THUNDERSTORM

WINTER STORMS/ ICE

DROUGHT

4.1.5 Risk Priority Index

The Risk Priority Index (RPI) quantifies risk as the product of hazard probability and magnitude to guide Planning Team members in prioritizing mitigation strategies for high-risk-priority hazards. Planning Team members use the historical hazard data, in combination with the knowledge of local conditions, to determine the possible severity of a hazard. Tables 4-3 and 4-4 display the criteria the Planning Team used to quantify hazard probability and magnitude.

Table 4-3. Hazard Probability Ranking

Probability	Characteristics
4 – Highly Likely	☐ Event is probable within the next calendar year ☐ This event has occurred, on average, once every 1-2 years in the past
3 – Likely	☐ Event is probable within the next 10 years ☐ Event has a 10-50% chance of occurring in any given year ☐ This event has occurred, on average, once every 3-10 years in the past
2 – Possible	☐ Event is probable within the next 50 years ☐ Event has a 2-10% chance of occurring in any given year ☐ This event has occurred, on average, once every 10-50 years in the past
1 – Unlikely	☐ Event is probable within the next 200 years ☐ Event has a 0.5-2% chance of occurring in any given year ☐ This event has occurred, on average, once every 50-200 years in the past

Table 4-4. Hazard Severity Ranking

Magnitude/Severity	Characteristics
8 – Catastrophic	☐ Multiple deaths ☐ Complete shutdown of facilities for 30 or more days ☐ More than 50% of property is severely damaged
4 – Critical	☐ Injuries and/or illnesses result in permanent disability ☐ Complete shutdown of critical facilities for at least 14 days ☐ More than 25% of property is severely damaged
2 – Limited	☐ Injuries and/or illnesses do not result in permanent disability ☐ Complete shutdown of critical facilities for more than seven days ☐ More than 10% of property is severely damaged
1 – Negligible	☐ Injuries and/or illnesses are treatable with first aid ☐ Minor quality of life lost ☐ Shutdown of critical facilities and services for 24 hours or less ☐ Less than 10% of property is severely damaged

The product of hazard probability and magnitude is the RPI (Risk Priority Index). The ISU Planning Team ranked specified hazards based on the RPI, with larger numbers corresponding to greater risk. After evaluating the calculated RPI, the ISU Planning Team adjusted the ranking to better suit the campus community.

During the five-year review of the plan, the ISU Planning Team will update this table to ensure these rankings accurately reflect the campus community's assessment of these hazards.

Table 4-5 identifies the RPI and adjusted ranking for each hazard specified by the ISU Planning Team (Ranking 1 being the highest concern). The ISU Planning Team made these rankings at Meeting 1. The rankings consider the same hazards as in the prior plan although the absolute ranking are different from the previous plan based on events and community changes since 2019.

Table 4-5. Illinois State University Hazard Priority Index and Ranking

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Hazardous Materials Release	2	4	8	1
Extreme Heat	3	2	6	2
Flash Flooding	4	1.5	6	3
Tornadoes	1	4	4	4
Severe Thunderstorms	4	1	4	5
Winter Storms/ Ice	4	1	4	6
Drought	2	2	4	7

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

Processes and Sources for Identifying Assets

Following meeting one, the Planning Team revised the roster of vital facilities sourced from university and state outlets. Local GIS data was employed to authenticate the whereabouts of all crucial facilities on campus and in the nearby community. Illinois State University provided local assessment and campus building inventory data to estimate the actual count of buildings prone to damage for the risk assessment. The SIU GIS analysts integrated these revisions and adjustments into the Hazus-MH data tables before executing the risk assessment. The revised Hazus-MH inventory contributed to a Level 2 analysis, enhancing the accuracy of the risk assessment.

Essential Facilities List

Table 4-6 gives the count of essential facilities recognized at Illinois State University and in the community of Normal, IL. Essential facilities represent a subset of critical facilities. Appendix E contains a detailed inventory of essential facilities at Illinois State University and in the community of Normal, IL, while Appendix F showcases a large-scale map illustrating the locations of critical facilities within the planning area.

Table 4-6. ISU and Community Essential Facilities

Facility	Number of Facilities
Student Health Centers	1
Emergency Operations Centers	1
ISU Police Department	1
Residential Housing	6 complexes
Campus Utilities	1 central system
Healthcare Facilities*	13
Emergency Operations Centers*	1
Fire Stations*	3
Police Stations*	1
Schools*	24
Utilities*	6

**Community Essential Facilities*

Facility Replacement Costs

Table 4-7 outlines the facility replacement costs or the total building exposure. ISU supplied local assessment data for updating replacement costs, containing both the costs for replacing structures and the documented content costs.

Table 4-7. Building Exposure Cost of ISU

General Occupancy	Estimated Total Buildings	Total Building Exposure
Educational	35	$1,194,254,894.00
Athletics/ Public Assembly	9	$379,452,112.00
Residential Housing	19	$521,283,256.00
Administrative	14	$189,009,488.00
Utility/Warehouse/ Garage	17	$153,923,275.00
Recreational	5	$136,206,121.00
Total:	99	$2,574,129,146.00

Future Development

In the future development master plan, Illinois State University is not anticipated to initiate any new major construction projects. However, there are ongoing renovation, demolition, and expansion activities occurring on the campus.

4.3 Risk Analysis

4.3.1 GIS and Hazus-MH

The third step in the risk assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. The hazards were quantified using GIS analyses and Hazus-MH where possible. This process reflects a Level 2 Hazus-MH analysis. A level 2 Hazus-MH analysis involves substituting selected Hazus-MH default data with local data and improving the accuracy of model predictions.

Updates to the default Hazus-MH data include:

- Updating the Hazus-MH defaults, critical facilities, and essential facilities based on the most recent available data sources.
- Reviewing, revising, and verifying locations of critical and essential point facilities with local input.
- Applying the essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) to the Hazus-MH model data.
- Updating Hazus-MH reports of essential facility losses.

The following assumptions were made during analysis:

- Hazus-MH aggregate data was used to model the building exposure for all earthquake analyses. It is assumed that the aggregate data is an accurate representation of Illinois State University.
- The analyses were restricted to the jurisdiction's boundaries. These boundaries do not contain damage assessments from adjacent counties.
- For each tax-assessment parcel, it is assumed there is only one building that bears all the associated values (both structure and content).
- For each parcel, it is assumed that all structures are wood-framed, one-story, slab-on-grade structures, unless otherwise stated in assessment records. These assumptions are based on sensitivity analyses of Hazus and regional knowledge.

Depending upon the analysis options and the quality of data the user inputs, Hazus-MH generates a combination of site-specific and aggregated loss estimates. Hazus-MH is not intended as a substitute for detailed engineering studies; it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This plan does not fully document the processes and procedures completed in its development, but this documentation is available upon request. Table 4-8 indicates the analysis type (i.e. GIS, Hazus-MH, or historical records) used for each hazard assessment.

Table 4-8. Risk Assessment Tool Used for Each Hazard

Hazard	Risk Assessment Tool(s)
Hazmat Release	GIS-based (ALOHA)
Heat / Extreme Heat	Historical Records
Flooding	Hazus-MH
Tornadoes	GIS-based (ArcGIS)
Severe Thunderstorm	Historical Records
Winter Storms/ Ice	Historical Records
Drought	Historical Records

4.4 Main Hazards

4.4.1 Hazardous Material Storage and Transportation Hazard

Hazard Definition

Transporting chemicals and substances along interstate routes is common in Illinois as it is served by an extensive network of active transportation lines that traverse many counties. Active railways frequently transport hazardous and volatile substances across both county and state lines. Additionally, the rural areas of the state experience significant agricultural activity, leading to frequent transportation of fertilizers, herbicides, and pesticides on local roads. These factors increase the risk of hazardous material releases and spills throughout the state.

Such releases or spills can lead to explosions, particularly when volatile substances like petroleum products, natural and other flammable gases, hazardous chemicals, dust, or bombs are involved. Explosions can result in fatalities, injuries, and extensive property damage. Typically, an explosion is followed by a fire, which can exacerbate damage and hinder emergency response efforts. Effective emergency responses may involve fire services, law enforcement, search and rescue teams, and hazardous materials units.

Previous Occurrences

Illinois State University has not encountered a major hazardous material incident at a fixed site or during transport that resulted in fatalities or serious injuries. However, there have been multiple minor releases that required the intervention of local firefighters, hazardous materials teams, emergency management, and/ or law enforcement. These teams have worked to stabilize such incidents and mitigate harm to the University's faculty, staff, and students.

The Illinois Emergency Management Agency maintains a comprehensive "Hazardous Materials Incident Report Database" for the State of Illinois. The database contains information on all Hazardous Materials Reports since 1987 but does not include an assessment of economic and property losses in terms of dollars. The database reported 855 incidents in McLean County as of November 2024.

Industries regulated by "U.S. Department of Transportation – Pipeline and Hazardous Materials Safety Administration (PHMSA)", are required to report incidents which meet or exceed established reporting criteria. The data for reported incidents are available on the PHMSA website via the U.S. Department of Transportation Hazmat Intelligence Portal. Since 2010, the database reported 22,819 incidents for the State of Illinois, and 60 incidents for McLean County.

Geographic Locations of Hazards

Hazards related to hazardous material are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Extent of Hazard

The extent of the hazmat hazards varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification

Based on input from the ISU Planning Team, future occurrence of hazardous materials accident in the planning area is highly likely. According to the Risk Priority Index (RPI) and the Planning Team's input, the hazardous materials storage and transportation, is ranked as the number one hazard.

Risk Priority Index

Probability	x	Magnitude	=	RPI
2	x	4	=	8

Vulnerability Analysis

The university is vulnerable to hazardous material release and can expect impacts within the affected area. The main concern during a release or spill is the affected population. To accommodate this risk, this plan considers all buildings located on campus as vulnerable.

Critical Facilities

All critical facilities and communities within the university and county are at risk. A critical facility will encounter many of the same impacts as any other building within the planning area. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g., a damaged police station can no longer serve the community). Table 4-6 lists the types and number of critical facilities for the entire University and community and Appendix F displays a large format map of the locations of all critical facilities within the planning area.

Building Inventory

Table 4-7 lists the building exposure cost in terms of types and numbers of buildings for the entire University. The buildings within the planning area can expect similar impacts to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris, and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

In the event of hazardous material release, various types of infrastructure could be affected, including roadways, utility lines, railroads, and bridges. Although a comprehensive inventory of all infrastructure is not available for this plan, it is crucial to recognize that such incidents could potentially damage any of these elements.

Potential impacts include:

- Roadways: They may become broken, damaged, or impassable.
- Utility Lines/Pipes: There could be failures or breaks, leading to disruptions in power or gas supplies to the community.
- Railroads: Railways may experience failures, such as breaks or blockages, affecting rail transport.
- Bridges: Bridges might become impassable, posing risks to motorists and other travelers.

ALOHA Hazardous Chemical Release Analysis

The U.S. Environmental Protection Agency's **ALOHA (Areal Locations of Hazardous Atmospheres**) model was utilized to evaluate the potential impact area for a chlorine release at the water treatment plant in town of Normal, IL. The ISU Planning Team chose this scenario due to the transportation of bulk chemicals through a densely populated area and its proximity to the local water treatment plant.

ALOHA is a software tool designed for managing chemical accidents, emergency planning, and training. It is used to model the dispersion of hazardous chemicals such as ammonia, chlorine, and propane, which are commonly transported in either liquid or gas form by rail and truck tankers.

ALOHA uses "Acute Exposure Guideline Levels (AEGLs)" to outline estimated threat zones during a hazardous material release. AEGLs are designed to assess the risk to human health from once-in-a-lifetime, or rare, exposure to airborne chemicals.

The AEGL guidelines are developed by the "**National Advisory Committee for the "Development of Acute Exposure Guideline Levels for Hazardous Substances (NAC/AEGL Committee)**" at US Environmental Protection Agency to assist both national and local authorities, as well as private companies, in managing emergencies involving spills or other catastrophic exposures.

AEGLs provide threshold exposure limits for the general public during emergency situations, covering periods from 10 minutes to 8 hours. The three AEGL levels are defined as follows:

- **AEGL-1:** The airborne concentration (in parts per million or milligrams per cubic meter) above which the general population, including sensitive individuals, may experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. These effects are not disabling and are reversible once exposure ceases.
- **AEGL-2:** The airborne concentration (in ppm or mg/m³) above which the general population, including sensitive individuals, may experience irreversible or serious long-lasting adverse health effects or face an impaired ability to escape.
- **AEGL-3:** The airborne concentration (in ppm or mg/m³) above which the general population, including sensitive individuals, may experience life-threatening health effects or death.

Airborne concentrations below AEGL-1 can cause mild, progressively increasing but transient, non-disabling sensory irritation or certain asymptomatic effects. As concentrations rise above each AEGL, the likelihood and severity of health effects increase accordingly. Although AEGL values set thresholds for the general population, including vulnerable groups such as infants, children, the elderly, and individuals with pre-existing health conditions, it is acknowledged that some people may experience adverse effects at lower concentrations due to individual sensitivities.

<u>Analysis Parameters of the Chlorine Scenario</u>

Chlorine is a greenish-yellow gas with a sharp, suffocating odor. It is toxic when inhaled and slightly soluble in water. Chlorine liquefies at -35°C and room pressure and can be easily liquefied at room temperature under applied pressure. Contact with unconfined liquid chlorine can cause frostbite due to its evaporative cooling effect. While chlorine does not burn, it supports combustion similarly to oxygen. Prolonged exposure to low concentrations or short-term exposure to high concentrations can have severe health effects. Chlorine vapors are much heavier than air and tend to accumulate in low-lying areas.

For the chlorine release scenario, SIU considered average atmospheric and climatic conditions typical for the fall season, with a breeze coming from the northeast. The atmospheric modeling parameters for the chlorine release, as shown in Figure 4-3, were based on a northeasterly wind speed of 10 miles per hour. The weather conditions assumed for the simulation included a temperature of 50°F, 75% humidity, and half-cloud cover. SIU used average spring weather conditions reported by NOAA to model the scenario, including wind direction, wind speed, and temperature.

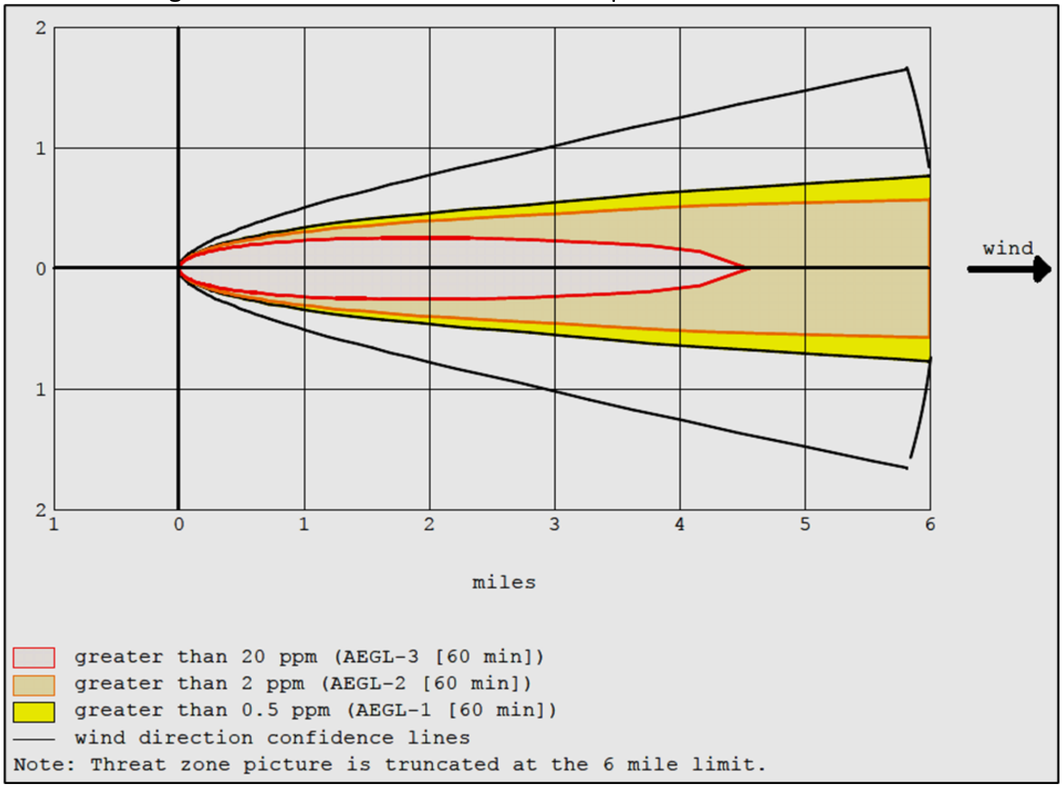
The source of the chemical spill is a horizontal cylindrical tank with an 8-foot diameter and a length of 33 feet, holding approximately 12,408 gallons of chlorine. At the time of the release, the tank was estimated to be 75% full. The chlorine was in a liquid state, and the release occurred through a 2.5-inch-diameter hole located 12 inches above the tank's bottom. Figure 4-3 provides a detailed depiction of the plume modeling parameters. In this scenario, approximately 8,860 pounds of chlorine would be released per minute.

Figure 4-3: ALOHA Modeling Parameters for Chlorine Release

```
SITE DATA:
  Location: NORMAL, ILLINOIS
  Building Air Exchanges Per Hour: 0.76 (sheltered single storied)
  Time: April 30, 2024  1214 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: CHLORINE
  CAS Number: 7782-50-5                  Molecular Weight: 70.91 g/mol
  AEGL-1 (60 min): 0.5 ppm   AEGL-2 (60 min): 2 ppm   AEGL-3 (60 min): 20 ppm
  IDLH: 10 ppm
  Ambient Boiling Point: -30.4° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 10 miles/hour from ENE at 10 feet
  Ground Roughness: open country         Cloud Cover: 5 tenths
  Air Temperature: 50° F                 Stability Class: D
  No Inversion Height                    Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Non-flammable chemical is escaping from tank
  Tank Diameter: 8 feet                  Tank Length: 33.0 feet
  Tank Volume: 12408 gallons
  Tank contains liquid                   Internal Temperature: 50° F
  Chemical Mass in Tank: 56.1 tons       Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 19 minutes
  Max Average Sustained Release Rate: 8,860 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 103,972 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
  Model Run: Heavy Gas
  Red   : 4.6 miles --- (20 ppm = AEGL-3 [60 min])
  Orange: greater than 6 miles --- (2 ppm = AEGL-2 [60 min])
  Yellow: greater than 6 miles --- (0.5 ppm = AEGL-1 [60 min])
```

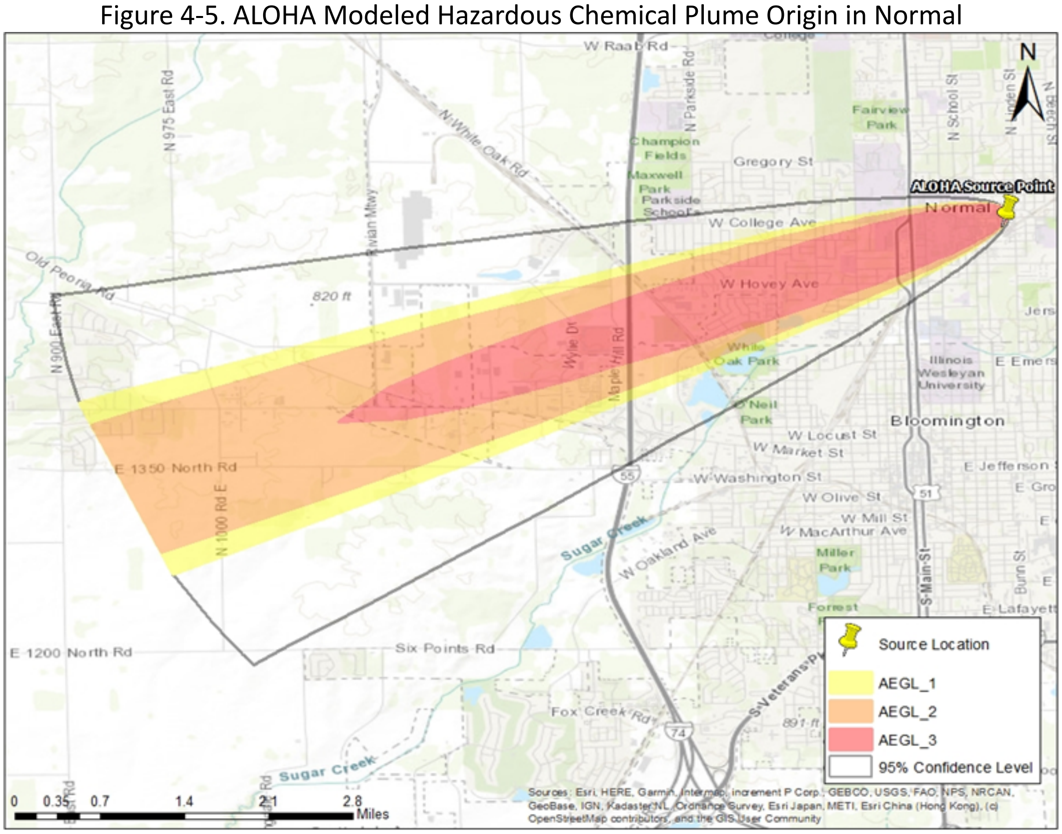
Figure 4-4 illustrates the plume footprint generated by ALOHA. As the chlorine disperses from the source, its concentration diminishes. The color-coded areas in the image represent different concentration levels, measured in parts per million, with each color indicating a specific concentration range.

Figure 4-4: Aloha Generate Plume Footprint of Chlorine Scenario



Figures 4-5 illustrate the plume origins of the modeled hazardous chemical releases in Normal, IL.

Figure 4-5. ALOHA Modeled Hazardous Chemical Plume Origin in Normal

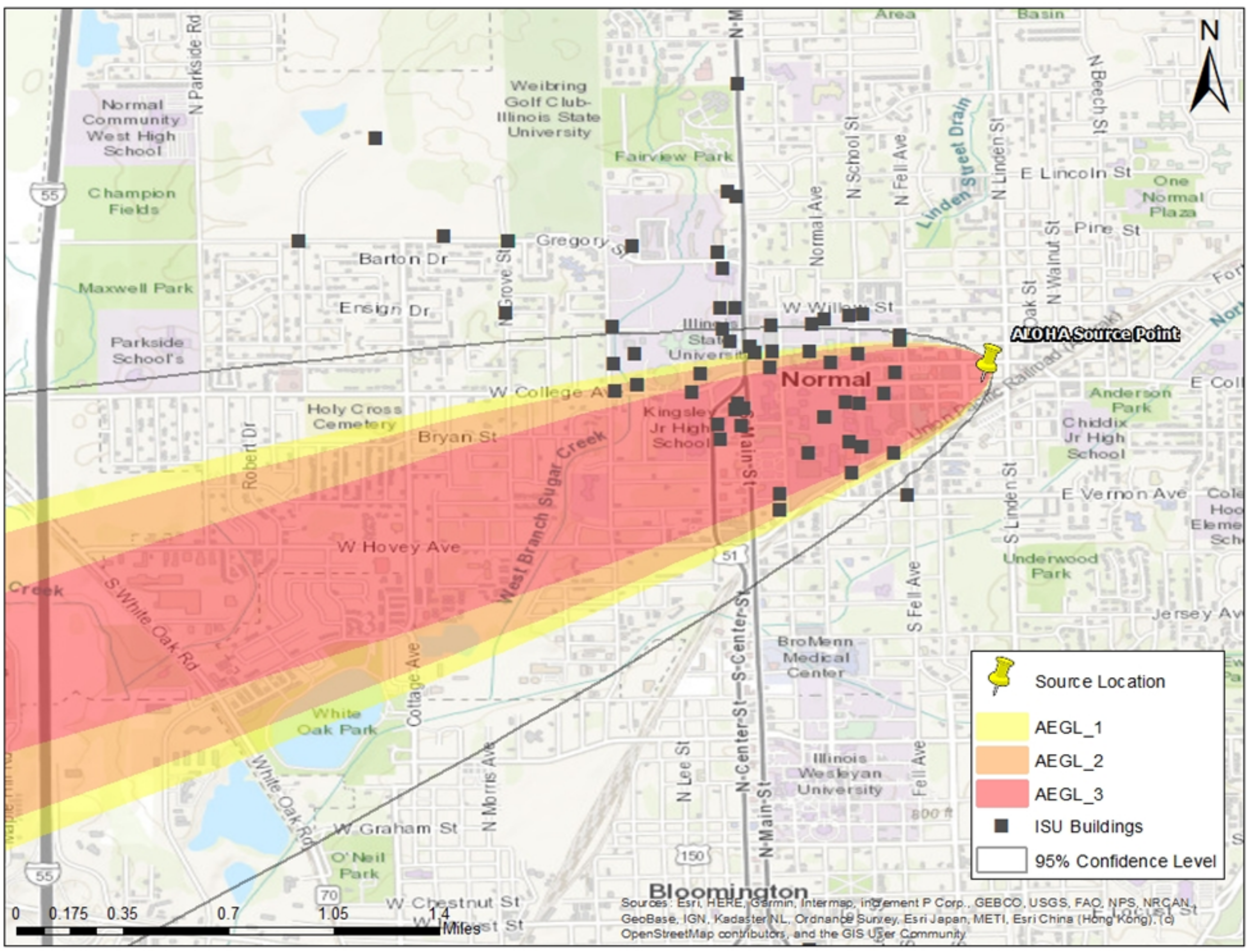


The red buffer zone, indicating a chlorine concentration of 20 ppm, extends up to 4.5 miles from the release point after one hour. The orange buffer, representing a concentration of 2 ppm, and the yellow buffer, at 0.5 ppm, both extend up to six miles from the source. The dashed line on the map outlines the boundary within which the entire plume footprint is expected to remain. The ALOHA model is 95% confident that the release will stay within this defined boundary.

Results for Chlorine Release

An estimate of property exposed to the chlorine spill was determined by using the building inventory and cross-referencing it with the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm, and AEGL 1: ≥ 0.5 ppm). There are 68 buildings located within the chlorine plume. It is important to interpret these results as potential degrees of impact rather than precise counts of buildings affected by the chlorine release. Figure 4-6 illustrates the chlorine spill footprint and the locations of the exposed buildings.

Figure 4-6. ALOHA Plume Footprint and Buildings Exposed to Chlorine Release



Essential Facilities Damage

Within the chlorine leak scenario, a couple of essential facilities are situated within the plume's impact area. The police station and campus Emergency Operations Center (EOC) are located within the higher risk region of the plume and most likely be affected. Other than these critical facilities most of the school buildings/facilities fall within the >2 ppm concentration level zone. Table 4-9 details these affected facilities in AEGL-3 Zone.

Table 4-9. Essential Facilities within the Chlorine Plume Footprint

Essential Facility	Facility Name
Emergency Operations Center	Nelson Smith Building
University Police	
Department of Agriculture	Hudelson Building
On Campus Housing	Watterson Towers

Vulnerability to Future Assets/Infrastructure

Illinois State University is not expected to undergo any physical changes to the campus currently. However, because hazardous material hazard events may occur anywhere within the county, future development and the industries along with the major transportation routes located in planning areas pose a threat of dangerous chemicals and hazardous materials release.

4.4.2 Extreme Heat and Drought Hazard

Hazard Definition

Drought is a climatic phenomenon that can occur across the United States, including McLean County, Illinois. The meteorological condition that creates a drought is below normal rainfall over a sustained period of time. Droughts can occur during any month over the year, but especially over summer.

The severity of a drought is altered by location, length of time, and geography. Additionally, drought severity depends on the water supply, usage demands by human activities, vegetation, and agricultural operations. Droughts impact the quality and quantity of crops, livestock, and other agricultural assets.

Additionally, drought conditions are often accompanied by excessive heat, which is defined as temperatures that exceed the average high for the area by 10°F or more for the last for several weeks. Excessive heat can lead to increased evaporation, which in turn increases drought conditions. Extreme heat settings can have extreme negative impacts on humans. Below are a few common conditions associated with extreme heat:

- **Heat Wave**
  A prolonged period of excessive heat is often combined with excessive humidity.
- **Heat Index**
  A number, in degrees Fahrenheit, estimates how hot it feels when relative humidity is combined with air temperature. Exposure to full sunshine can increase the heat index by 15°F.
- **Heat Cramps**
  Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.
- **Heat Exhaustion**
  Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs, resulting in a form of mild shock. If left untreated, the victim's condition will worsen. The body temperature will continue to rise, and the victim may suffer heat stroke.
- **Heat and Sun Stroke**
  A life-threatening condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body's temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Previous Occurrences

The NCEI - Storm Event database reported 25 droughts, extreme heat, and heat wave events in McLean County since 1950. The most recent event occurred in August 2023, on the 20th, when a prolonged stretch of dangerous heat and humidity occurred across the Midwest. Peak afternoon heat indices were near or over 110 degrees each day, and heat indices remained above 80 degrees overnight. A strong heat dome over the Midwest resulted in a six-day stretch of dangerous heat and humidity, which began on August 20 and continued through August 25. High temperatures were routinely above 90 degrees, while afternoon dew points were near 80 degrees, resulting in heat indices exceeding 110 degrees. During the overnight hours, the lows only fell into the upper 70s, keeping heat indices in the 80s. There were no fatalities in McLean County due to prolonged heat exposure in this event, but in August 2024, in a similar event, one person did unfortunately die from the extreme heat. Table 4-10 identifies NCEI-recorded drought/heat wave events that caused major damage, death, or injury in McLean County.

Table 4-10. NCEI-recorded Extreme Heat Events that caused Death, Damage or Injury in McLean County

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
McLean	7/26/1997	Heat	1	0	0	0
McLean	8/19/2005	Heat	1	0	0	0
McLean	6/6/2011	Heat	1	0	0	0
McLean	9/1/2012	Drought	0	0	0	$65,500,000
McLean	8/25/2014	Heat	1	0	0	0
		Total:	**4**	**0**	**$0**	**$65,500,000**

Geographic Location

Droughts are regional in nature. Most areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent

The extent of droughts or extreme heat varies depending on the magnitude and duration of the heat and the range of precipitation.

Risk Identification

Based on historical information, the occurrence of future droughts and/or prolonged extreme heat is possible. Illinois State University should expect extreme heat and prolonged periods of less than average rainfall in the future. According to the Illinois State University Planning Team's assessment, the extreme heat is ranked as the number two hazard.

Risk Priority Index (Extreme Heat)				
Probability	x	Magnitude	=	RPI
3	x	2	=	6

Likewise, the drought is ranked as the number seven.

Risk Priority Index (Drought)				
Probability	x	Magnitude	=	RPI
2	x	2	=	4

Vulnerability Analysis

Drought and extreme heat are a potential hazard for the university. As such, the university is vulnerable to this hazard and can expect impact throughout the area. Young children, elderly, and hospitalized populations have the greatest risk. The entire population and all buildings are at risk. To accommodate this risk, this plan considers all buildings located within the planning area as vulnerable. Tables 4-6 display the existing buildings and critical infrastructure in the planning area. Even though the exact areas affected are not known, a discussion of the potential impact is detailed below.

Critical Facilities

A critical facility will encounter many of the same impacts as any other building within the planning area, which should involve little or no damage. Potential impacts include water shortages, fires from drought conditions, and residents in need of medical care from the heat and dry weather. Table 4-6 lists the types and number of critical facilities for the University and community and Appendix F displays a large format map of the locations of all critical facilities within the planning area.

Building Inventory

Table 4-7 lists the building exposure cost in terms of types and numbers of buildings for the entire University. The buildings within the planning area can expect similar impacts to those discussed for critical facilities. These impacts include water shortages, fires because of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure

During a drought, or time of extreme heat conditions can increase the risk of fire to these structures.

Economic Losses

According to the NCEI - Storm Event database, McLean County has experienced $65.5 million in crop damage relating to drought and extreme heat events storms since 1950. NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. Note, these estimates are not totally comprehensive and may not match the final assessment of economic and property losses caused by a particular weather event. Rather, they should be viewed as minimum losses.

Vulnerability to Future Assets/Infrastructure

Overall, certain urban and rural areas are at higher risks than others. For example, urban areas are subject to water shortages during periods of drought and extreme heat. Excessive demands of densely populated areas put a limit on water resources. In rural areas, crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Suggestion for Community Development Trends

Urban and rural areas are both vulnerable to heat waves. Those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions surrounding extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures, causing increased health problems. Additionally, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the "urban heat island effect." University officials can address drought and extreme heat hazards by educating the public on steps to take before and during the event, primarily by taking advantage of designated cooling centers on campus.

4.4.3 Flooding Hazard

Hazard Definition

Flooding is a major natural hazard across the United States, with its type, magnitude, and severity influenced by factors such as precipitation levels, how quickly rainwater infiltrates the ground, the shape and hydrology of the catchment area, and the dynamics of river flow. In this plan, floods are categorized into two types: upstream floods and downstream floods. Both are prevalent in Illinois.

Upstream floods, also known as flash floods, occur in the upper reaches of drainage basins and are typically caused by intense, short-duration rainfall. These floods often strike with little warning and can cause severe localized damage, sometimes resulting in loss of life due to the high energy of the rushing water. The powerful flow can snap trees, demolish buildings, and shift large boulders or other structures. Just six inches of fast-moving water can knock someone off their feet, while 24 inches can sweep away a vehicle. Upstream floods usually cause significant damage in confined areas. Urban flooding, a specific type of upstream flood, occurs when storm drains overflow, often due to inadequate drainage systems combined with heavy rainfall or rapid snowmelt. Although upstream or flash floods can happen any time of the year in Illinois, they are most frequent during the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Previous Occurrences

Between January 1, 2000, and November 11, 2024, the NCEI Storm Event database recorded 35 flash flooding events in McLean County over a span of 9,082 days. In June 2021, central Illinois experienced a major weather event due to two waves of heavy rainfall on June 25th and 26th. Southern McLean County, northern Logan County, and parts of Scott and Morgan counties were mostly impacted. The first wave, from 7pm to 11pm CDT on June 25th, brought 4 to 7 inches of rain within four hours, primarily from McLean to Bloomington-Normal and southeast to LeRoy. The second wave on June 26th added 2 to 4 more inches to the same areas, leading to storm totals of 6 to 11 inches over 24 hours. The highest recorded rainfall was 10.71 inches near Bloomington, marking a 1,000-year event (0.1% annual chance). Funks Grove, Shirley, and parts of Bloomington experienced a 500-year rainfall (0.2% chance). Severe flash flooding affected Bloomington and surrounding areas, closing roads, requiring water rescues, and causing infrastructure damage, including a shoulder collapse on I-55 near Kickapoo Creek, which reached record levels and flooded homes in Lawndale. Table 4-11 details NCEI-recorded flooding events that caused significant damage, death, or injury in McLean County.

Table 4-11. NCEI-recorded Flooding Events - Death, Damage (over $35,000) or Injury in McLean County

Location	Date	Time	Direct Death	Injuries	Property Damage Est.
NORMAL	5/7/2023	4:30	0	0	$5,000
SHIRLEY	5/7/2023	4:30	0	0	$1,000
YUTON	6/26/2021	15:27	0	0	$200,000
STANFORD	6/25/2021	22:30	0	0	$11,800,000
MC LEAN	7/8/2015	21:45	0	0	$500,000
GRIDLEY	9/13/2008	20:00	0	0	$35,000
Totals:			**0**	**0**	**$12,541,000**

**NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event (Storm Events Database - Search Page | National Centers for Environmental Information).*

As a state university, ISU does not participate in the NFIP. However, several structures in McLean County have experienced repeated flash flooding losses. According to the Federal Emergency Management Agency (FEMA), a Repetitive Loss Structure is defined as an NFIP-insured building that has experienced at least two paid flood losses of more than $1,000 each within any 10-year period since 1978.

According to the Illinois Emergency Management Agency and the Illinois Department of Natural Resources show that McLean County has 21 structures that were subjected to repetitive losses. The total compensation for building replacement and contents for these properties amounts to $985,385.70. Details of these repetitive loss structures for each jurisdiction are outlined in Table 4-12.

Table 4-12. Repetitive Loss Structures for each Jurisdiction in McLean County

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Bloomington	single-family	5	10	$150,270.22	9,914.28	$160,184.50
	non-residential	1	2	$17,122.91	$6,166.79	$23,289.70
Colfax	single-family	2	4	$60,958.21	$0.00	$60,958.21
Heyworth	single-family	1	3	$81,819.41	$76.90	$81,896.31
	business	1	2	$55,729.08	$3,014.64	$58,743.72
Hudson	single-family	1	2	$6,066.74	$1,394.00	$7,460.74
Le Roy	single-family	1	2	$14,782.03	$0.00	$14,782.03
McLean Village	single-family	1	2	$9,108.63	$3,427.76	$12,536.39
Normal	single-family / Other res.	3	8	$136,481.10	$8,316.12	$144,797.22
Towanda	single-family	1	2	$10,040.75	$0.00	$10,040.75
Unincorporated McLean County (Downs, Lexington, Meredosisa)	single-family / Other res.	4	8	$366,045.83	$44,650.30	$410,696.13
Total:		**21**	**45**	**$908,424.91**	**$76,960.79**	**$985,385.70**

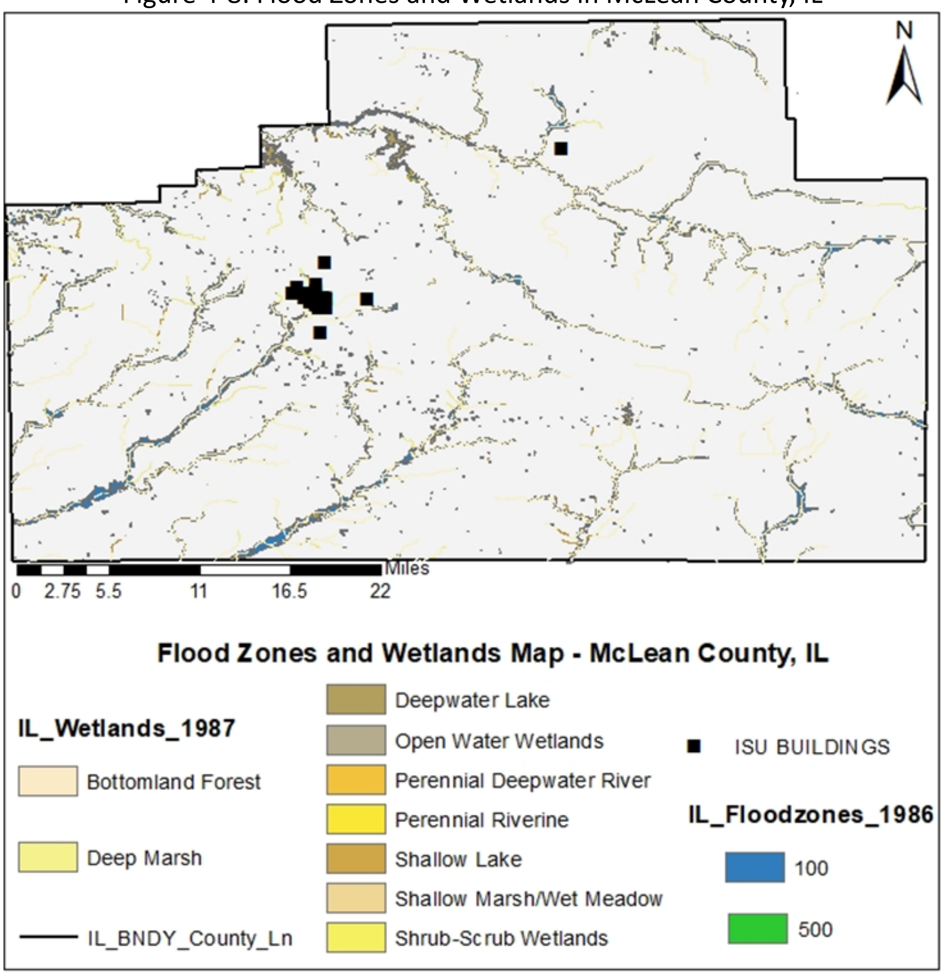
<u>Geographic Location</u>

In Illinois, riverine flooding typically happens in the spring or summer, primarily due to heavy rainfall or a mix of rainfall and snowmelt. Flash floods, which can affect low-lying areas, can occur at any time of year but are generally less common and more localized from mid-summer to early winter. For example, Figure 4-7 shows a flash flood impacting a major underpass in Normal. Figure 4.8 shows the flood zones and wetlands in McLean County.

Figure 4-7. Flooding in a residential neighborhood in Normal, near Fort Jesse Road and Blair

Source: McLean County Rainfall Tops 100-Year Flood Projections | WGLT (2021-06-28)

Figure 4-8: Flood Zones and Wetlands in McLean County, IL



Hazard Extent

A base flood, also known as the 100-year flood or one-percent annual chance flood, is a flood event with a 1% chance of occurring in any given year. This probability-based definition, used by the National Flood Insurance Program (NFIP) and adopted by the State of Illinois, is essential for setting flood insurance requirements and regulating new development. A 100-year flood does not imply that such a flood will occur only once every century; rather, it indicates a statistical probability. Therefore, multiple 100-year floods can happen within a short period, such as twice in a single year or in consecutive years, particularly if factors like unusual weather patterns, stream modifications, or increased urban development (such as paving) amplify flood risks. It is also possible for a 100-year flood to not occur at all over the span of a century. The 500-year floodplain, indicating areas with a 0.2% annual chance of flooding, typically encompasses a larger area than the 100-year floodplain.

While 4.1% of the land area in McLean County lies within the base floodplain and is susceptible to riverine flooding, almost the entire County is vulnerable to flash flooding. As a result, a majority of the buildings, infrastructure and critical facilities that may be impacted by flooding are located outside of the base floodplain and are not easily identifiable. However, there are no dams within the planning area, which can influence the area's flood risk profile.

Risk Identification

There have been 35 verified flash flood events between Jan. 1, 2000, and November 11, 2024. Given that, the McLean County should expect at least one flash flood event each year. There were 11 years over the past 24.5 years where two or more flash flood events occurred. This indicates that the probability that more than one flash flood event may occur during any given year within the County is approximately 44.89%.

Based on historical information and the Flood Vulnerability Rating, future occurrence of flooding in the planning area is unlikely. According to the Risk Priority Index (RPI) and ISU Planning Team's input, flooding is ranked as the number three hazard.

Risk Priority Index				
Probability	x	Magnitude	=	RPI
4	x	1.5	=	6

Vulnerability Analysis

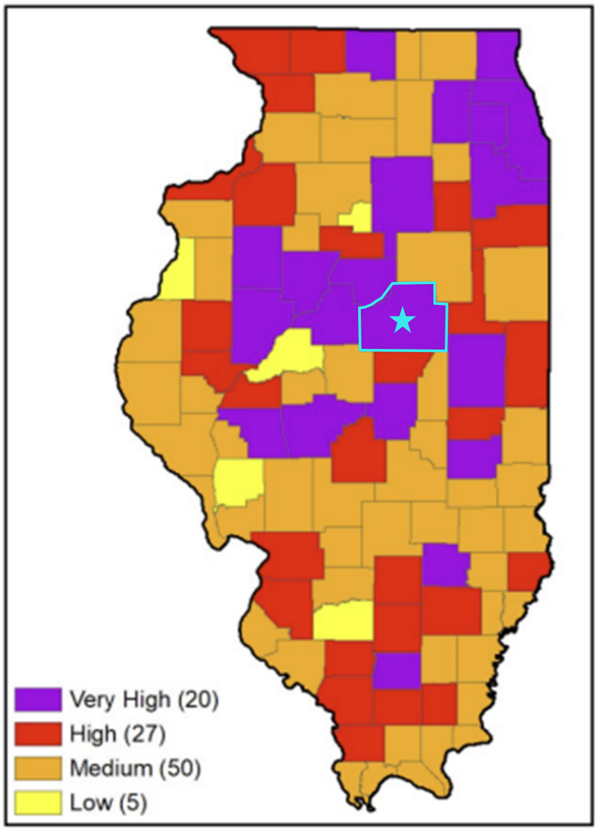
The 2023 Illinois Hazard Mitigation Plan assessed various natural hazards, including flooding vulnerability. To evaluate this, a Flood Vulnerability Index (FVI) was developed for all counties and jurisdictions in Illinois. The FVI integrates Hazus-based estimates of flood exposure and loss with the widely used Social Vulnerability Index (SoVI). Generally, the highest vulnerability scores were found in rural counties and communities along Illinois's major rivers, such as the Mississippi, Green, Illinois, Kaskaskia, Rock, and Ohio Rivers.

The vulnerability ratings are categorized as low, average, elevated, or high, reflecting the flood vulnerability index (Table 4.13). McLean County is rated as one of 20 very high-risk counties out of 102 counties in Illinois for flood loss estimation according to Hazus-MH. Figure 4-9 illustrates the Flood Vulnerability Ratings for Illinois's 102 counties.

Table 4-13. Statistics related to flood vulnerability in McLean County

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk #	Overall Risk
McLean	6	2	3	9	2	3	25	Very High

Figure 4-9. Flash Flood Vulnerability Rating for Illinois by county



Critical Facilities

All critical facilities located within the 100-year floodplain are at risk of flooding. Essential facilities are susceptible to similar impacts as other buildings within the flood zone. These impacts may involve structural damage, significant water damage, and loss of functionality (for example, a damaged police station cannot effectively serve the community).

- In Bloomington, Caroline Street pre-treatment facility and the Fell Avenue utility substation lie in the 100-year floodplain of Sugar Creek.
- In the Bloomington-Normal Water Reclamation District, the Little Kickapoo Creek pump station and combined sewer overflow lagoon are adjacent to the Goose Creek 100-year floodplain. The GE Valley Pump Station lies within both the 100-year and 500-year floodplains of Sugar Creek. The Oakland Avenue wastewater treatment facility is situated in the 500-year floodplain of Goose Creek, while the 700 N Road wastewater treatment facility is located near the Little Kickapoo Creek 100-year floodplain.

- At the Carle BroMenn Medical Center, part of the facility is within the 500-year floodplain of Sugar Creek, and the W. Virginia Avenue parking lot and parking garage are in both the 100-year and 500-year floodplains of Sugar Creek.
- In Normal, the facilities management building of the town, also sits in the 100-year floodplain of Sugar Creek.

Building Inventory

All buildings within the floodplain are at risk of flooding. The potential impacts include structural failure, significant water damage, and loss of functionality (e.g., a damaged home becomes uninhabitable, forcing residents to seek alternative shelter). This plan identifies all buildings situated downstream of major rivers and streams within the 100-year and floodplains as vulnerable.

Infrastructure

Infrastructure potentially affected by floods includes roadways, utility lines and pipes, railroads, and bridges. Due to the lack of a comprehensive inventory for this plan, it is crucial to recognize that a flood could impact on any of these types of infrastructure. Potential impacts include damaged, failed, or impassable roadways; broken or inoperative utility lines (e.g., loss of power or gas to the community); and disruptions to railways, which may become damaged or impassable. Additionally, bridges could fail or become unusable, posing risks to motorists.

Hazus-MH Flood Analysis

Hazus-MH was used to generate the flood depth grid for a 100-year return period by clipping the USGS one-third arc-second DEM (~10 m) to the flood boundary. Subsequently, Hazus-MH was employed to estimate damages for Illinois State University (ISU) using a detailed building inventory database provided by the University Risk Manager.

The analysis indicates that no ISU buildings are directly located within the 100-year floodplain. However, certain areas on campus are prone to frequent flooding with minimal damage. This flooding typically occurs around roadways, paths, and low-lying delivery access areas, thereby affecting the University's ability to receive supplies. Some of these areas are currently being mitigated. It is important to interpret these results as indicative of potential loss rather than precise numbers of buildings exposed to flooding. Figure 4-10 shows the building inventory within the 100-year floodplain.

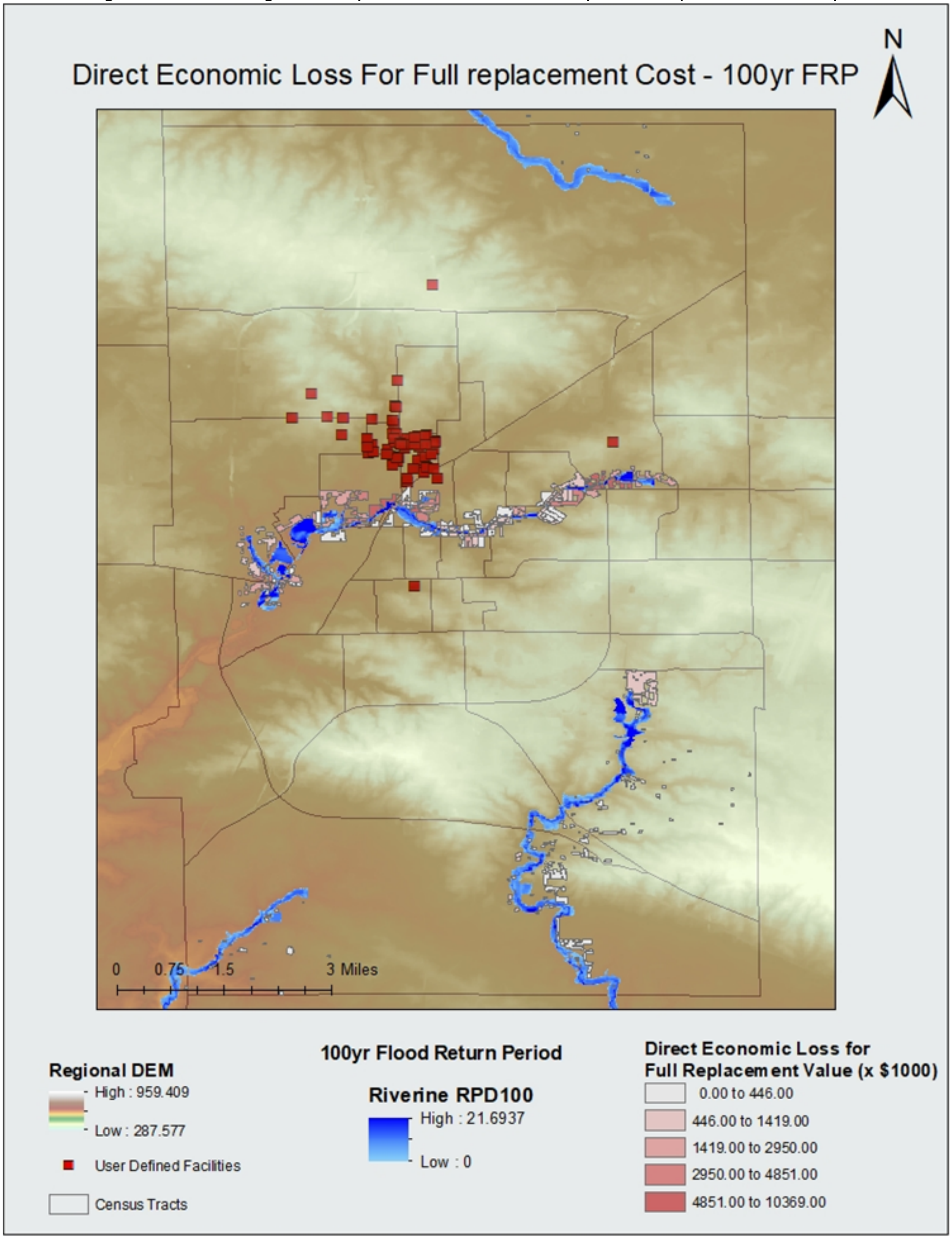
Vulnerability Analysis to Future Assets/Infrastructure

Flooding can impact nearly any location within the planning area, making all buildings and infrastructure vulnerable. Currently, new developments adhere to the state flood ordinance. Table 5.1 provides a list of local building ordinances for the county and surrounding communities. As of now, there are no plans for new construction within the 100-year floodplain.

Suggestions for Community Development Trends

Minimizing development in floodplains is essential for reducing flood-related damage. Newly developed areas may be particularly vulnerable to drainage issues. Storm drains and sewer systems are often the most susceptible to such problems. Damage to these systems can lead to backups of water, sewage, and debris into homes and basements, resulting in structural and mechanical damage, as well as posing public health risks and creating unsanitary conditions.

Figure 4-10. Building Inventory Located within the 100-year Floodplain on ISU Campus



4.4.4 Tornado Hazard

Hazard Definition

Tornadoes are violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air that have not contacted the ground. These violently rotating columns of air are closely monitored, as they can reach the ground quickly and become a tornado. Once a funnel cloud picks up and blows debris, it has reached the ground and is considered a tornado.

Tornadoes are a significant risk to Illinois and its citizens. Tornadoes most frequently occur in the afternoon and evening and are most common in early spring and summer but can occur at any time on any day and any time of the year (NOAA). Their unpredictability and destructive nature results in tornadoes being one of Illinois' most dangerous hazards. Tornado winds are violently destructive in developed and populated areas. A wind velocity of 200 miles per hour results in a pressure of 102.4 pounds per square foot, a load that exceeds the tolerance limits of most buildings. The high wind speeds easily devastate entire communities when they occur.

Tornadoes are classified according to the Enhanced Fujita tornado intensity scale. The Enhanced Fujita scale ranges from intensity EF0, with effective wind speeds of 40 to 70 miles per hour, to EF5 tornadoes, with effective wind speeds of over 260 miles per hour. Table 4-14 outlines the Enhanced Fujita intensity scale.

Table 4-14. Enhanced Fujita Tornado Rating

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 Gale	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, signboards damaged, shallow-rooted trees blown over.
1 Moderate	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 Significant	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 Severe	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 Devastating	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 Incredible	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations were swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Previous Occurrences of Tornadoes

ISU has not directly experienced a damaging tornado event. The NCEI Storm Event database reported 115 tornadoes in McLean County since 1950. 44 of those events had associated property damage. An example of a significant event occurred in May 2000, when a tornado touched down half a mile north of Shamrock. It traveled east/northeast causing minor to moderate damage to several machine sheds and barns. The most severe damage was to a two-story house two miles north/northwest of Downs. The newly built house sustained major damage with the roof being blown off and two exterior walls caved in. Four family members sustained minor cuts and bruises. A neighboring house sustained minor damage, mainly due to flying debris from the destroyed home. Most recently, an EF1 tornado in 2019 caused $40,000 in damage.

Several other events are recorded in Table 4-15. This table documents only NCEI-recorded tornadoes that caused damage (over $100,000), death, or injury in McLean County between 1950 and 2024. Additional details of individual hazard events are available on the NCEI website.

Table 4-15. NCEI-Recorded Tornadoes - Damage (over $100,000), Death, or Injury in McLean County

Location	Date	Time (CST)	Magnitude	Death	Injuries	Property Damage	Crop Damage
109 Colfax	12/1/2018	7:42 PM	EF1	0	0	$110,000	0
82 Shamrock	5/8/2000	10:14 PM	F2	0	4	$175,00	0
73 Downs	4/30/1997	3:05 PM	F0	0	0	$100,00	0
72 Mc Lean	4/19/1996	6:09 PM	F3	0	0	1,000,000	0
70 Carlock	5/13/1995	6:15 PM	F0	0	0	$150,000	0
71 Sabina	5/13/1995	8:15 PM	F1	0	0	$518,000	0
67 Le Roy	5/9/1995	6:10 PM	F1	0	0	$150,000	0
69 Saybrook	5/9/1995	7:17 PM	F1	0	0	$106,000	0
62 McLean	12/8/1991	3:13 PM	F0	0	0	$250,000	0
57 Lexington	9/29/1986	4:34 PM	F2	0	0	$2,500,000	0
50 Cooksville	8/24/1982	1:25 PM	F2	0	0	$2,500,000	0
53 Heyworth	8/24/1982	1:35 PM	F0	0	0	$250,000	0
49 Pleasant Hill	8/4/1982	4:55 PM	F0	0	0	$250,000	0
37 Lexington	4/13/1981	8:30 PM	F2	0	0	$250,000	0
33 Towanda	7/18/1977	11:00 AM	F1	0	0	$250,000	0
24 Colfax	4/3/1974	1:30 PM	F3	0	0	$250,000	0
13 MCLEAN	4/30/1970	12:30 PM	UNK	0	0	$250,000	0
11 Saybrook	9/14/1965	4:15 PM	F2	0	0	$250,000	0
10 Arrowsmith	3/4/1961	4:30 PM	F1	0	1	$250,000	0
8 Bloomington	6/4/1960	11:37 PM	F2	0	0	$250,000	0
TOTALS:				**0**	**5**	**$12,090,000**	**0**

**NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.*

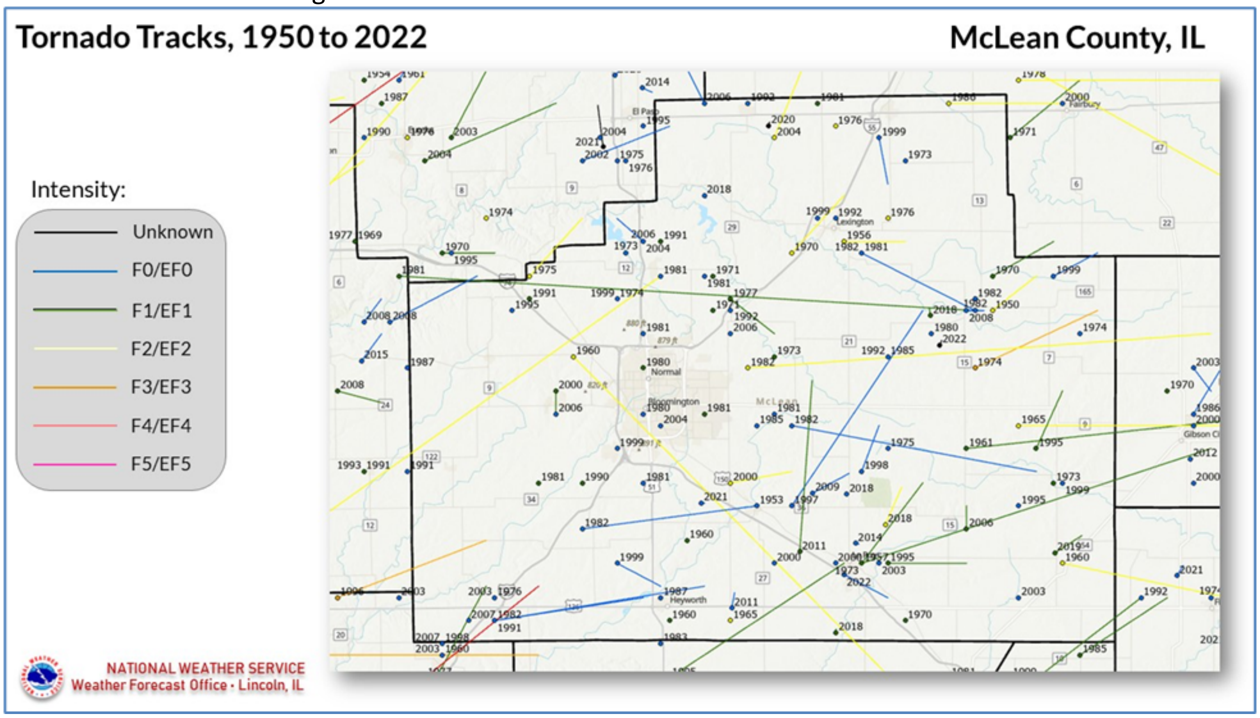
Geographic Location

The entire county has the same risk of tornado occurrence. Tornadoes can occur or pass through any part of this county.

Hazard Extent

Historical tornadoes generally moved from southwest/west to northeast/east across the county, although many other tracks are possible, from more southerly to northerly directions. The extent of the hazard varies according to the tornado's size, path, and wind speed. See Figure 4-11 below for the historical tornado tracks from 1950 to 2022 (Source: Storm Prediction Center (SPC) data).

Figure 4-11: historical tornado tracks from 1950 to 2022.



Risk Identification for Tornado Hazard

Based on historical records, the probability of tornado occurrence in McLean County is significant. The University should plan on and prepare for future tornadoes with varying magnitudes. Tornadoes ranked as the number four hazard according to the ISU Planning Team's risk assessment.

Risk Priority Index				
Probability	x	Magnitude	=	RPI
1	x	4	=	4

Vulnerability Analysis

Tornadoes can occur within any area of the county, making the entire county population and all buildings subject to possible damage from tornadoes. To accommodate this risk, this plan considers all buildings located within the planning area as vulnerable. Tables 4-6 display the existing buildings and critical infrastructure within the planning area.

Critical Facilities

Tornadoes pose a threat to all critical facilities, which are susceptible to impacts similar to those experienced by other buildings in the area, depending on the severity of the tornado. Potential impacts include structural failure, debris such as trees and limbs causing damage, roofs being blown off, windows broken by hail or strong winds, and loss of functionality (for example, a damaged police station cannot serve the community). Table 4-6 provides details on the types and quantities of critical facilities for both ISU and the community. Appendix F features a large-format map showing the locations of all critical facilities within the planning area.

Building Inventory

Table 4-7 details the building exposure cost in terms of building type and quantities at the University. These buildings, like critical facilities, are vulnerable to similar impacts within the planning area.

Infrastructure

Various types of infrastructure are also susceptible to tornado impacts, including roadways, utility lines/pipes, railroads, and bridges. Given the vulnerability of the entire county's infrastructure, it is crucial to make sure that these structures could sustain damage during a tornado. Potential impacts include roadways becoming impassable, utility lines or pipes breaking or failing (resulting in community-wide power or gas loss), railway disruptions due to broken or blocked rail lines, and bridges potentially failing or becoming impassable, posing risks to motorists.

GIS-based Tornado Analysis

Table 4-16 presents the maximum Tornado-path widths and expected damage associated with each Fujita Scale Rank. These Estimations are derived from conceptual wind speeds, path widths, and path lengths recommended by the Enhanced Fujita Scale guidelines. Degrees of damage depend on proximity to the centerline within a given tornado path. The most intense damage occurs along the center of the damage path, with decreasing amounts of damage away from the center.

Table 4-16. Fujita Scale and Maximum Expected Damage

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

A tornado scenario was simulated for Illinois State University, involving a path passing through the town of Normal. The analysis aimed to assess the expected impacts on buildings and infrastructure within the county using GIS-Overlay modeling. The analysis focused on evaluating the potential effects of an EF4 tornado, employing a hypothetical path resembling an F4 tornado event that spanned approximately 2 miles through the town of Normal. Damage zones (buffers) were added around the tornado path in GIS to model the EF4 tornado. Zone analysis is presented in Table 4-17 and Figure 4-12, while Figure 4-13 shows the selected hypothetical tornado path.

Table 4-17. EF4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-12. Tornado Analysis (Damage Curves) Using GIS Buffers

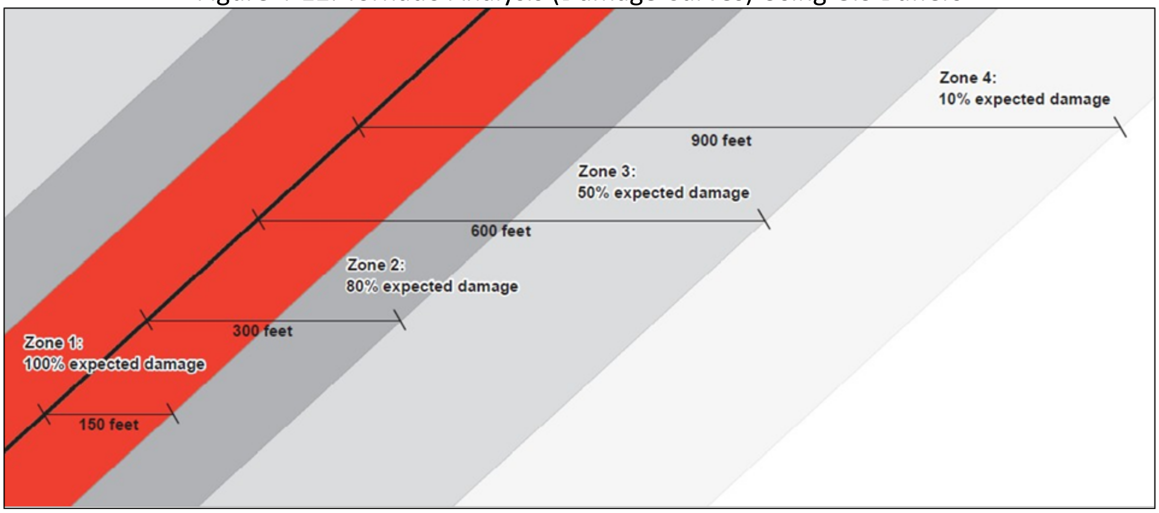
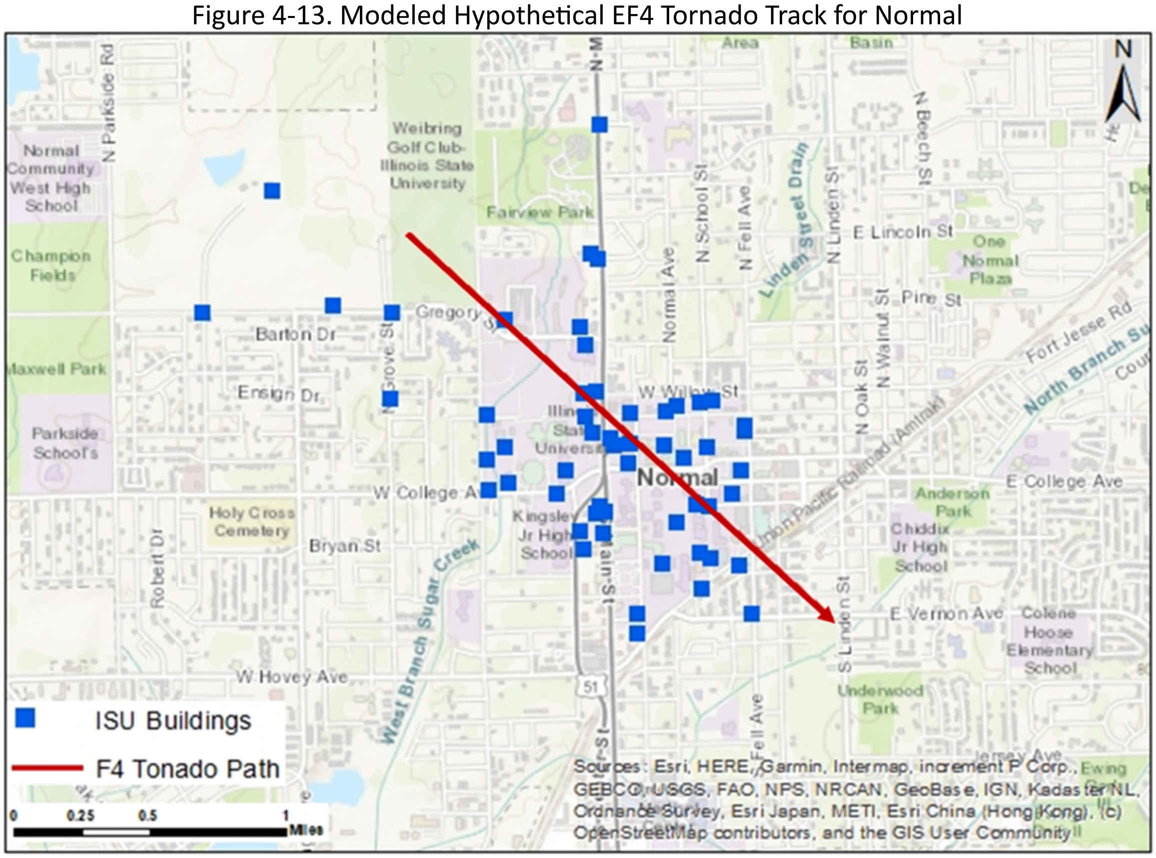


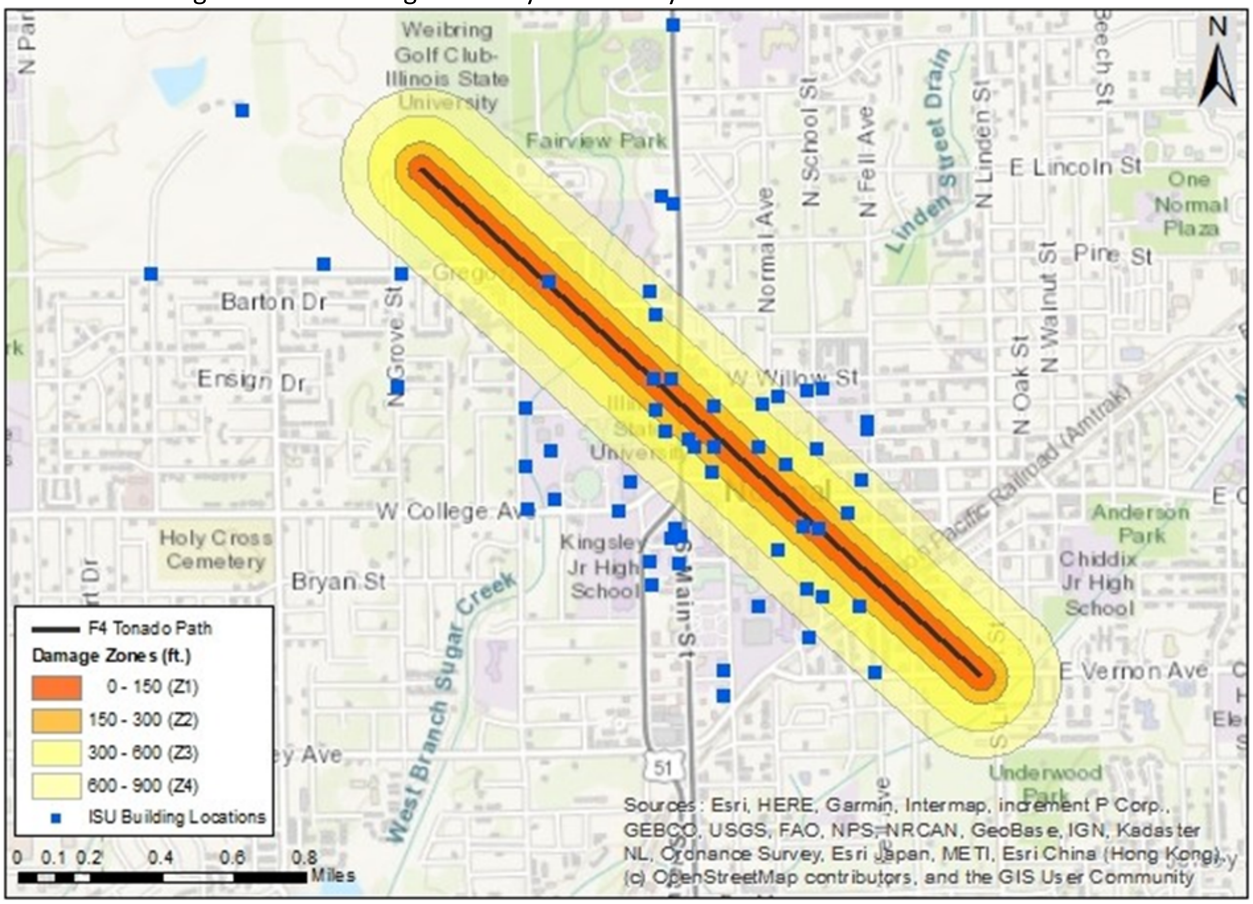
Figure 4-13. Modeled Hypothetical EF4 Tornado Track for Normal



Modeled Impacts of the EF4 Tornado

The GIS analysis estimates that the modeled EF4 tornado (Figure 4-14) would damage 37 buildings, 17 of those being educational buildings. The rest are 3 campus housing buildings, 10 administration facilities, 4 utility warehouses, and 3 sports & recreation facilities. The estimated building losses are over $489 million. The building losses are an estimate of building replacement costs multiplied by the damage percent.

Figure 4-14. Building Inventory Affected by the EF4 Tornado Modeled for ISU



Vulnerability to Future Assets/Infrastructure

The entire population and all buildings face risk since tornadoes can happen anywhere in the state and at any time. Additionally, any future development, including new construction within the planning area, is also vulnerable. Table 4-7 details the building exposure cost for Illinois State University. Appendix E lists the essential facilities for ISU and the community, while Appendix F features a large-format map showing the locations of all critical facilities within the planning area.

Suggestions for Community Development Trends

Enhancing preparedness for severe storms can be significantly improved if local officials support initiatives aimed at raising awareness about severe storms. Suggestions include constructing more sturdy buildings at the University and reinforcing existing structures to reduce the potential impacts of severe weather. Furthermore, installing additional warning sirens or other alert systems can effectively alert the campus community of approaching storms, ensuring the safety of faculty, staff, and students at Illinois State University while minimizing property damage.

4.4.5 Severe Thunderstorm Hazard

Hazard Definition

Severe thunderstorms are defined as weather events characterized by strong winds, large and damaging hail, and frequent lightning. Severe thunderstorms tend to happen in Illinois during the spring and summer months during rainy and warm seasons, but they can happen at any time. The impacts of a severe thunderstorm can be either localized or widespread in nature.

A thunderstorm is considered severe when it has one or more of the following characteristics:

- **Hail 0.75 inches or greater in diameter**
  Hail is a possible product of a strong thunderstorm. Hail typically falls near the center of a storm, but strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, and some reports note hailstones are larger than softballs.
- **Frequent and dangerous lightning**
  Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but lightning damages many structures and kills or severely injures numerous people in the United States each year.
- **Wind speeds greater than or equal to 58 miles per hour**
  Straight-line winds from thunderstorms occur frequently in Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences

The NCEI Storm Event database reported 212 hailstorms in McLean County since 1950. Hailstorms have occurred in most years, particularly during the spring and early summer months. The most significant event took place in July 1994, when hail measuring 1.75 inches in diameter fell in Towanda and Lexington, causing $5,000 in property damage. Table 4-18 lists the significant hailstorms (such as those causing death, damage, or injury) in McLean County between January 1, 1950, and October 31, 2024.

Table 4-18. Selected NCEI-Recorded Hail that Caused Damage, Death, or Injury in McLean County

Location or County*	Date	Deaths	Injuries	Property Damage
McLean County	07/06/1994	0	0	$5,000
Total:		**0**	**0**	**$5,000**

**NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.*

The NCEI Storm Event database reported 6 lightning events in McLean County. The most recent reported event was in January 2020, causing $30,000 in property damage. During this event, showers with a few embedded thunderstorms affected central Illinois during the pre-dawn hours of January 11th. Lightning struck a tree and caused a house fire in Lexington in McLean County, resulting in damage to the house. Overall, there have been $395,000 recorded in property damage since 1950. Table 4-19 identifies NCEI-recorded lightning that caused damage, death, or injury in McLean County.

Table 4-19. Selected NCEI-Recorded Lightning that Caused Damage, Death, or Injury in McLean County

Location	Date	Deaths	Injuries	Property Damage
BLOOMINGTON	7/21/2008	0	0	$200,000
SHIRLEY	6/18/2009	0	0	$30,000
BLOOMINGTON	9/2/2010	0	0	$50,000
NORMAL	5/26/2016	0	0	$60,000
FLETCHER	8/16/2018	0	0	$25,000
LEXINGTON	1/11/2020	0	0	$30,000
Total:				**$395,000**

**NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.*

The NCEI Storm Event database reported 315 thunderstorm wind events in McLean County, between January 1, 1950, and October 31, 2024. The most damaging wind event occurred in August 2012, when a vigorous upper-level disturbance, interacting with an approaching cold front, triggered scattered severe thunderstorms across north-central Illinois during the afternoon and early evening of August 9. Downburst winds of 70 to 80 mph produced extensive damage across McLean County from near Danvers to just north of Heyworth. In addition to the wind damage, large hail up to the size of half dollars was reported north of Heyworth in McLean County. The estimated damage was $3.5 million. Table 4-20 identifies selected NCEI-recorded wind related storms that caused major damage (over $40,000), death, or injury in McLean County.

Table 4-20. Selected NCEI-Recorded Thunderstorm Wind events that Caused Major Damage (over $40,000), Death, or Injury in McLean County

Location	Date	Magnitude	Direct Deaths	Direct Injuries	Property Damage	Crop Damage
Danvers	8/9/2012	70 kts. EG	0	1	$3,500,000	$0.00
Countywide	6/29/1998	70 kts.	0	0	$1.100,000	$0.00
Countywide	4/20/2000	52 kts. M	0	0	$1,010,000	$0.00
Hudson	7/11/2020	61 kts. EG	0	0	$350,000	$0.00
Stanford	11/10/1998	57 kts.	0	1	$275,000	$0.00
Downs	7/11/2020	61 kts. EG	0	0	$250,000	$0.00
Normal	11/17/2013	61 kts. EG	0	0	$225,000	$0.00
Say brook	11/17/2013	61 kts. EG	0	0	$200,000	$0.00
Le Roy	6/18/2009	61 kts. EG	0	0	$140,000	$0.00
Say brook	3/13/2006	62 kts. EG	0	0	$126,000	$0.00
Normal	8/22/2001	55 kts. E	0	0	$100,000	$0.00
Laurette	8/10/2020	52 kts. EG	0	0	$100,000	$0.00
Normal	7/13/2016	61 kts. EG	0	0	$90,000	$0.00
Towanda	7/11/2020	61 kts. EG	0	0	$80,000	$100,000
Bellflower	7/11/2020	61 kts. EG	0	0	$80,000	$0.00
Gridley	7/11/2020	61 kts. EG	0	0	$75,000	$0.00
Le Roy	8/4/2009	61 kts. EG	0	0	$65,000	$40,000
(BMI) Bloomington /Normal	11/17/2013	61 kts. EG	0	0	$60,000	$0.00
Lexington	7/11/2020	61 kts. EG	0	0	$60,000	$0.00

Colfax	7/11/2020	61 kts. EG	0	0	$60,000	$0.00
Le Roy	6/14/2017	52 kts. EG	0	0	$55,000	$0.00
Chenoa	7/11/2020	61 kts. EG	0	0	$55,000	$0.00
Bloomington	12/27/2008	52 kts. EG	0	0	$50,000	$0.00
Colfax	4/6/2001	60 kts. E	0	0	$45,000	$0.00
Cropsey	6/30/2014	52 kts. EG	0	0	$45,000	$0.00
Hudson	6/15/2008	52 kts. EG	0	1	$40,000	$0.00
Mc lean	12/27/2008	61 kts. EG	0	0	$40,000	$0.00
Mc lean	12/27/2008	52 kts. EG	0	0	$40,000	$0.00
Bloomington	12/27/2008	61 kts. EG	0	0	$40,000	$0.00
Bellflower	10/26/2010	52 kts. EG	0	0	$40,000	$0.00
Colfax	7/13/2016	61 kts. EG	0	0	$40,000	$0.00
Downs	7/21/2016	52 kts. EG	0	0	$40,000	$0.00
Hudson	7/11/2020	61 kts. EG	0	0	$40,000	$100,000
Totals:			**0**	**11**	**$8,606,000**	**$240,000**

** NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.*

Geographic Location

The entire county has the same risk for the occurrence of thunderstorms, as they can occur at any location within the county. Events may cause damage to property and crops.

Hazard Extent

The extent of thunderstorms depends upon the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county and pose a threat to any buildings and structures within the county.

Risk Identification

Based on historical information, the occurrence of future high winds, hail, and lightning is highly likely. The University should expect high winds, hail, and lightning of widely varying magnitudes in the future. According to the ISU Planning Team's assessment, severe thunderstorms are ranked as the number five hazard.

Risk Priority Index				
Probability	x	Magnitude	=	RPI
4	x	1	=	4

Vulnerability Analysis for Thunderstorm Hazard

The entire population of the county and all buildings are at risk from severe thunderstorms and are likely to experience similar impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the planning area as vulnerable. Tables 4-6 display the existing buildings and critical infrastructure in the planning area.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms and will endure many of the same impacts as other buildings within the planning area. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a damaged police station cannot serve the community). Table 4-6 lists the types and number of critical facilities for the entire University and community and Appendix F displays a large format map of the locations of all critical facilities within the planning area.

Building Inventory

Table 4-7 lists the building exposure cost in terms of types and numbers of buildings for the entire University. The buildings within the planning area can expect impacts like those discussed for critical facilities. These impacts include structural failure, damaging debris (e.g., trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building.

Infrastructure

A severe thunderstorm or windstorm could impact roadways, utility lines/pipes, railroads, and bridges. Since the entire county is at risk for severe wind and thunderstorms, it must be emphasized that a severe thunderstorm or windstorm could damage any number of these structures. The impacts to these structures include impassable roads or broken or failed utility lines.

Economic Losses

According to the NCEI Storm Event database, McLean County has incurred a total of approximately $9.701 million in property damage relating to server thunderstorms, including thunderstorm winds ($9.301M), hail ($5K), and lightning ($395K) since 1950. NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, the economic losses for a future event cannot be narrowly constrained; however, based on average property damage in the past decade (2015-2024), SIU estimates that McLean County incurs property damages of approximately $170,500 per year related to severe thunderstorms (thunderstorm winds: $1.590M, hail: $0, lightning: $115K).

Vulnerability to Future Assets/Infrastructure

All future development within the county and all communities will remain vulnerable to severe thunderstorm events based on historical storm records.

Suggestions for University/Community Development Trends

University officials could sponsor a wide range of programs and initiatives to improve storm preparedness and address the overall safety of faculty, staff, students, and community residents. The University is encouraged to take historical storm information into account when planning and constructing new structures. Moreover, additional warning sirens or other alert systems can serve to inform the University and surrounding community of approaching storms to ensure the safety of faculty, staff, students, and community residents.

4.4.6 Winter Storm Hazards

Hazard Definition

Severe winter weather involves various forms of precipitation and weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme-low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, or death and cause property damage and disrupt economic activity.

Figure 4-15 shows a picture taken by the Pantagraph newspaper following a massive snowstorm in Bloomington-Normal.

Figure 4-15: Freezing Rain Event

Ice or sleet, even in small quantities, can create hazardous driving conditions and can cause property damage. Sleet is defined as raindrops that freeze completely before touching the ground. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

Ice storms are generally one of the most damaging winter storms in Illinois. Ice storms occur when moisture- laden Gulf air converges with the northern jet stream causing freezing rain that coats power and communication lines and trees with heavy ice. Strong winds can cause the overburdened limbs and cables to snap, which can leave large areas of the population without power, heat, or communication, making these freezing temperatures even more deadly.

Rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility, characterize significant snowstorms. A blizzard is categorized as a snowstorm with winds at 35 (or greater) miles per hour and/or visibility of less than one-quarter mile for three or more hours. Strong winds during a blizzard blow falling and fallen snow, creating poor visibility and impassable roadways. Blizzards potentially result in property damage.

Blizzards have historically affected much of northern Illinois. Blizzard conditions cause power outages, loss of communication, and transportation difficulties. Blizzards can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe cold involves ambient air temperatures that drop to 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences

The NCEI Storm Event database reported 79 winter storms and extreme cold events for McLean County since 1950. These events included winter storms (20), cold/ wind chill (5), extreme cold/wind chill (7), heavy snow (20), ice storm (10), blizzards (5), frost/freezes (1), winter weather (11).

The most recent reported event that caused a death or property damage occurred on January 23rd, 2024, when cold/wind chill froze the area and resulted in one directly related death. On December 28th, 2015, an ice storm resulted in $975,000 worth of damage. Mclean has historically been subject to winter storm hazards and should prepare to continue facing such winter storm related hazards. Table 4-21 identifies NCEI-recorded winter storm events that caused damage, death, or injury in McLean County.

Table 4-21. NCEI-Recorded Winter Storms that Caused Damage, Death, or Injury in McLean County

Date	Winter Storm Type	Direct Death	Direct Injuries	Indirect Deaths	Indirect Injuries	Property Damage
1/23/2024	Cold/wind Chill	1	0	0	0	$0.00
1/26/2014	Cold/wind Chill	1	0	0	0	$0.00
12/1/2013	Cold/wind Chill	1	0	0	0	$0.00
1/15/2009	Extreme Cold/wind Chill	1	0	0	0	$0.00
2/1/2011	Blizzard	0	0	0	0	$500,000
12/12/2010	Blizzard	0	0	1	0	$0.00
12/28/2015	Ice Storm	0	0	2	0	$975,000
12/18/2008	Ice Storm	0	0	0	0	$300,000
12/8/2007	Ice Storm	0	0	1	0	$0.00
3/8/1999	Heavy Snow	0	1	0	0	$0.00
12/24/2010	Heavy Snow	0	0	1	0	$0.00
1/5/2014	Heavy Snow	0	0	1	0	$0.00
12/1/2006	Winter Storm	0	0	1	0	$400,000
1/26/1997	Winter Storm	0	1	0	0	$0.00
1/20/2010	Winter Weather	0	0	0	12	$0.00
12/25/2009	Winter Weather	0	0	0	5	$0.00
1/2/2012	Winter Weather	0	0	0	5	$0.00
2/5/2010	Winter Weather	0	0	1	3	$0.00
1/31/2014	Winter Weather	0	0	1	0	$0.00
Total		**4**	**2**	**9**	**25**	**$2,175,000**

Geographic Location

Severe winter storms are generally regional, and the NCEI data is calculated regionally or statewide.

Hazard Extent

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 the county.

Risk Identification

Based on historical information, the probability of future winter storms occurrence in McLean County is considerable. The University should expect and plan for winter storms with varying magnitudes to occur frequently in the future. Winter storms ranked as the number six (6) hazard according to the ISU Planning Team's risk assessment.

Risk Priority Index

Probability	x	Magnitude	=	RPI
4	x	1	=	4

Vulnerability Analysis of Winter Storm Hazard

Winter storm impacts are equally likely across the entire county; therefore, the entire county is vulnerable to a winter storm and can expect impacts within the affected area. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-6 and 4-7 display the existing buildings and critical infrastructure in the planning area.

Critical Facilities

All critical facilities are vulnerable to winter storms, which can shut down and/or damage these facilities. A critical facility will encounter many of the same impacts as other buildings within the planning area. These impacts can include, but are not limited to, loss of power from gas or electricity due to broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-6 lists the types and number of critical facilities for ISU and community and Appendix F displays a large format map of the locations of all critical facilities within the planning area.

Building Inventory

Table 4-7 lists the building exposure cost in terms of types and numbers of buildings for the entire University. The impacts to the general buildings within the planning area are similar to the damage expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

Winter storms potentially affect infrastructure such as roadways, utility lines/pipes, railroads, and bridges. Historical records show that the entirety of the county could be susceptible to impact from winter storms, which means that winter storms could affect any structure. Potential effects include broken gas and/or electricity lines or damaged utility lines, damaged roads and railways, and broken water pipes.

Economic Losses

According to the NCEI Storm Event database records, winter storms in McLean County have resulted in a total of approximately $2.175 million in property damage since 1950. NCEI records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. These reports are often preliminary, and they may not match the total assessment of economic and property losses related to a given weather event. As a result, they should be considered as minimum losses.

Vulnerability to Future Assets/Infrastructure

Considering historical records, any new development within the county will remain vulnerable to these events.

Suggestions for Community Development Trends

Because winter storm events are regional in nature, future development across the county will also face winter storms. Damages and impacts from winter storms should be considered in future development projects.

4.5 Other Potential Hazards Considered by the Planning Team

4.5.1 Earthquake Hazards

Hazard Definition

An earthquake is the shaking of the earth caused by the energy released when large blocks of the Earth's crust slip past each other. Most earthquakes occur at tectonic plate boundaries; however, some earthquakes occur in the middle of continental plates, for example the New Madrid Seismic Zone or the Wabash Valley Fault System. Both of these seismic areas have a geologic history of strong quakes, and an earthquake from either seismic area could possibly affect Illinois counties. There may be other, currently unidentified faults in the Midwest also capable of producing strong earthquakes.

Strong earthquakes can collapse buildings and infrastructure, disrupt utilities, and trigger landslides, avalanches, flash floods, fires, and tsunamis. When an earthquake occurs in a populated area, it may cause death, injury, and extensive property damage. An earthquake might damage essential facilities, such as fire departments, police departments, and hospitals, disrupting emergency response services in the affected area. Strong earthquakes may also require mass relocation; however, relocation may be impossible in the short-term aftermath of a significant event due to damaged transportation infrastructure and public communication systems.

Earthquakes are usually measured by two criteria: intensity and magnitude (M). Earthquake intensity qualitatively measures the strength of shaking produced by an earthquake at a certain location and is determined from effects on people, structures, and the natural environment. Earthquake magnitude quantitatively measures the energy released at the earthquake's subsurface source in the crust, or epicenter. Table 4-22 provides a comparison of magnitude and intensity, and Table 4-23 provides qualitative descriptions of intensity, for a sense of what a given magnitude might feel like.

Table 4-22. Comparison of Earthquake Magnitude and Intensity

Magnitude (M)	Typical Maximum Modified Mercalli Intensity
1.0 – 3.0	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 and higher	VIII or higher

Table 4-23. Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on the 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 motorcars may rock slightly. Vibrations 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 motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken.

VI	Unstable objects overturned. Pendulum clocks may stop.
VII	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VIII	Damage is 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.
IX	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, and walls.
X	Heavy furniture overturned.
XI	Damage is 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.
XII	Some well-built wooden structures are destroyed; most masonry and frame structures are destroyed with foundations. Rails bent.

Previous Occurrences of Earthquakes

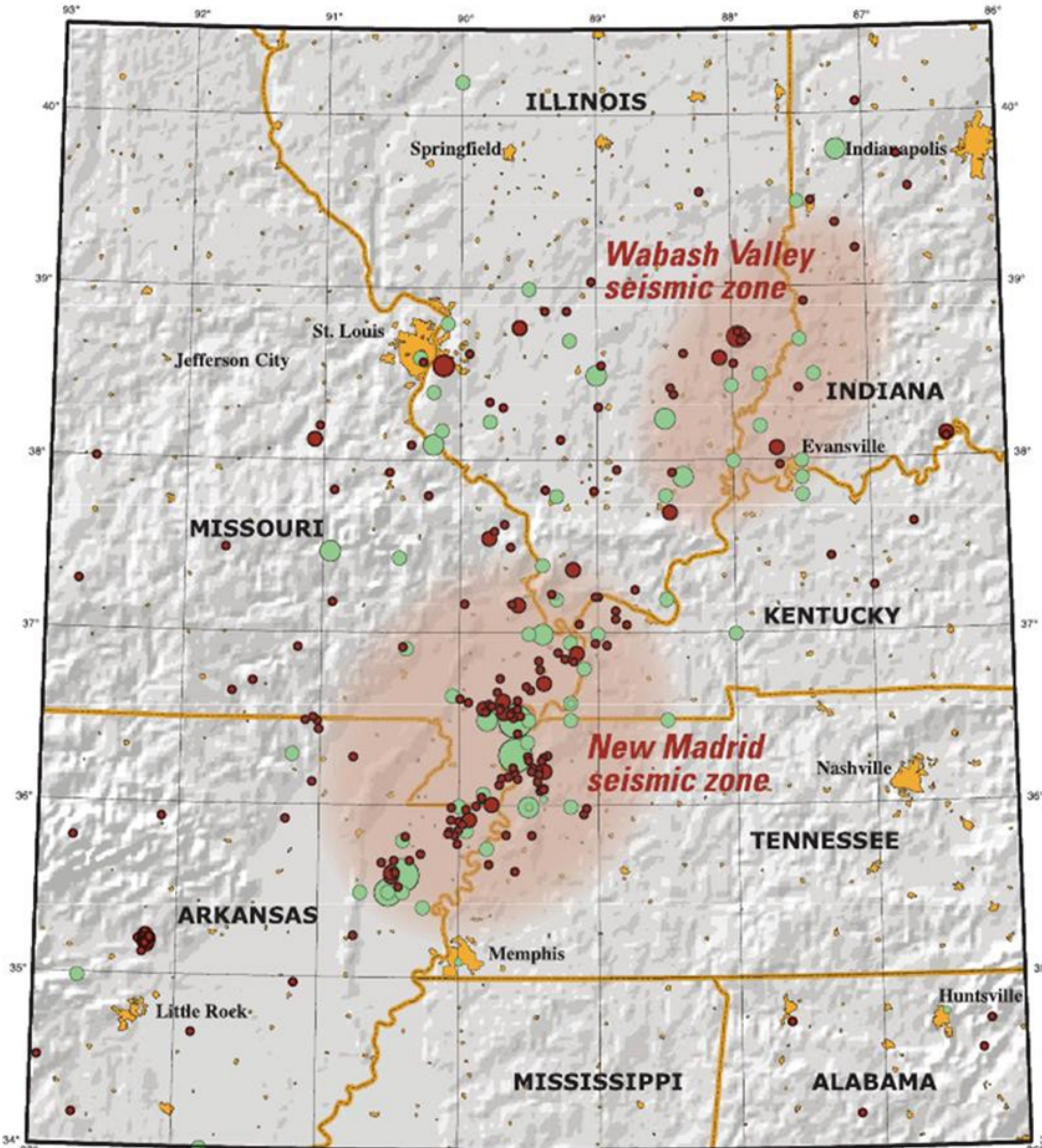
Historically, the most significant seismic activity in Illinois is associated with the New Madrid Seismic Zone. The New Madrid Seismic Zone produced three large earthquakes in the central U.S. with magnitudes estimated between 7.0 and 7.7 on December 16, 1811, January 23, 1812, and February 7, 1812. These earthquakes caused violent ground cracking and geyser-like eruptions of sediment (sand blows) over an area >10,500 km^2 and uplifted a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historic earthquake). The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811-1812 type earthquakes (M7.5-8.0) is 7%-10% over the next 50 years (USGS Fact Sheet 2006-3125).

Earthquakes measured in Illinois typically vary in magnitude from micro seismic events of M=1.3 to larger events up to M=5.4. The most recent earthquake in Illinois that was larger than M3.0—as of the date of this report—was a M3.8 event in September 2017, approximately 12km ENE of Albion, Illinois in Edwards County. The last earthquake in Illinois caused damage (minor, albeit), occurred on April 18, 2008, near Mt. Carmel, IL and measured 5.2 in magnitude. This earthquake was caused by the Wabash Valley seismic zone. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years and are historically concentrated in southern Illinois.

Geographic Location

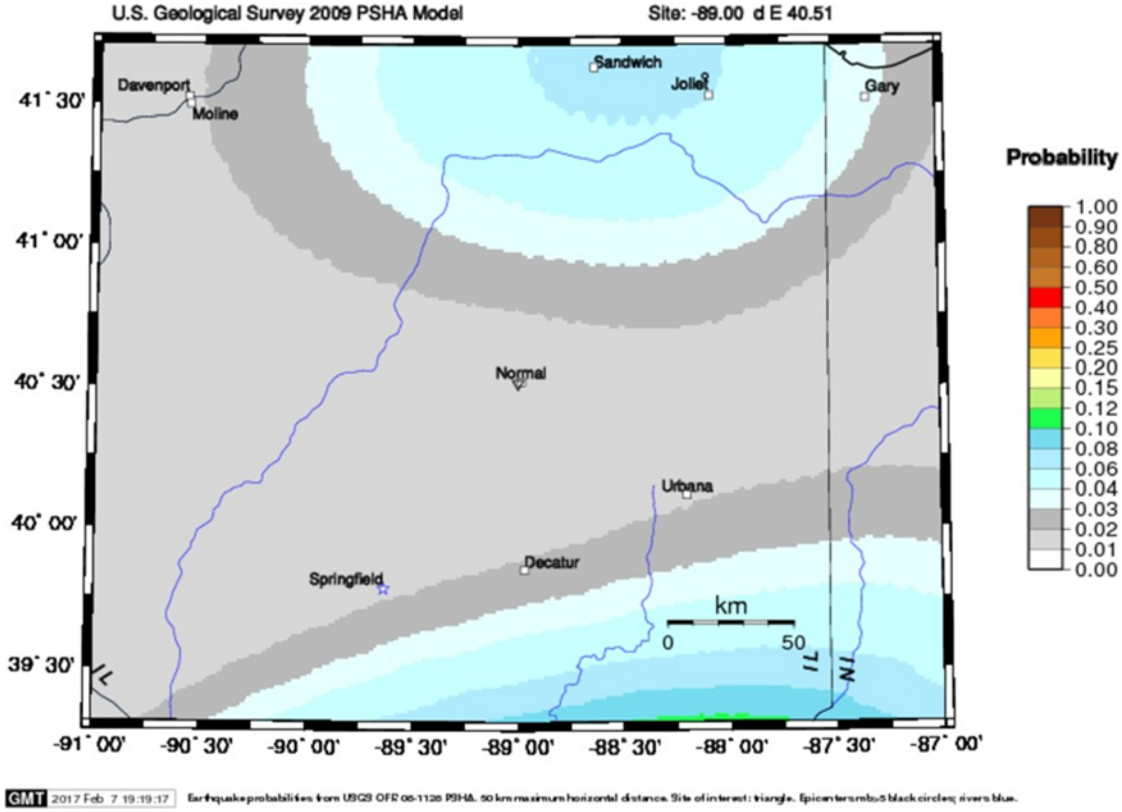
Since 1974, the epicenter of one small earthquake (M2.0-M2.9) has been recorded in McLean County. Figure 4-16 depicts the location of notable earthquakes in the Illinois region.

Figure 4-16. Notable Earthquakes in Illinois



The two most significant zones of seismic activity in Illinois are the New Madrid Seismic Zone and the Wabash Valley Fault System. Return periods for large earthquakes within the New Madrid System are estimated to be ~500–1000 years; moderate quakes between magnitude 5.5 and 6.0 can recur within approximately 150 years or less. The Wabash Valley Fault System extends nearly the entire length of southern Illinois and has the potential to generate an earthquake of sufficient strength to cause damage between St. Louis, MO and Indianapolis, IN. The USGS estimates the probability of a moderate M5.5 earthquake occurring in McLean County within the next 500-years at approximately 1-2% (see Figure 4-17).

Figure 4-17. Probability of earthquakes with M >5.5 within the next 500 years & 50km (Central Illinois).



Hazard Extent

Earthquake effects are possible anywhere in McLean County. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. The National Earthquake Hazards Reduction Program (NEHRP) compliant soils map was provided by FEMA for the analysis. This map identifies the soils most susceptible to failure.

Vulnerability Analysis

Earthquakes could impact the entire county equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake. To accommodate this risk, this plan considers all buildings located within the planning area as vulnerable. All critical facilities are vulnerable to earthquakes. Critical facilities are susceptible to many of the same impacts as any other building within the planning area. These impacts include structural failure and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-6 lists the types and number of essential facilities for Illinois State University and community and Appendix F displays a large format map of the locations of all critical facilities within the planning area. However, ISU has relatively low risk for earthquake damage. As noted above, the USGS estimates the probability of a moderate M5.5+ earthquake at 1-2% for the next 500 years (Figure 4-17).

Infrastructure

During an earthquake, the types of infrastructure that the shake could impact on include the roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure was not available for use in the earthquake models, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risks to motorists.

4.5.2 Ground Failure (Coal Mining)

Hazard Definition

According to the USGS, the term ground failure is generally referred to landslides, liquefaction, lateral spreads, and any other consequence of shaking that affects the stability of the ground. In Illinois, ground failure is typically associated with subsidence of the land surface related to soluble rock (karst), sink holes, or underground mining.

Sinkhole Formation and Collapse

A sinkhole is an area of ground that has no natural external surface drainage—when it rains, water ponds inside the sinkhole and typically drains into the subsurface. Sinkholes can vary from a few feet to hundreds of acres and from less than one to more than 100 feet deep. Typically, sinkholes form slowly, so that little change is seen during a lifetime, but they also can form suddenly when a collapse occurs. Such a collapse can have a dramatic effect if it occurs in a populated setting.

Sinkholes form where rainwater moves through the soil and encounters soluble bedrock. The bedrock begins to dissolve along horizontal and vertical cracks and joints in the rock. Eventually, these cracks become large enough to start transporting small soil particles. As these small particles of soil are carried off, the surface of the soil above the conduit slumps down gradually, and a small depression forms on the ground surface. This depression acts like a funnel and gathers more water, which makes the conduit still larger and washes more soil into the conduit.

Sudden collapse of a sinkhole occurs where the soil close to the ground surface does not initially slump down but instead forms a bridge. Beneath that surface cover, a void forms where the soil keeps washing into the conduit. These voids are essentially shallow caves. Over time, the void enlarges enough that the weight of the overlying bridge can no longer be supported. The surface layer then suddenly collapses into the void, forming a sinkhole.

The process of forming a conduit and a soil bridge usually takes years to decades. However, this natural process can be aggravated and expedited by human activities. Since the process of forming a sinkhole depends on water to carry soil particles down into the karst bedrock, anything that increases the amount of water flowing into the subsurface can accelerate sinkhole formation process. Parking lots, streets, altered drainage from construction, and roof drainage are a few of the things that can increase runoff.

Collapses are more frequent after intense rainstorms. However, drought and altering of the water table can also contribute to sinkhole collapse. Areas where the water table fluctuates or has suddenly been lowered are more susceptible to sinkhole collapse. (White, 1988)

Underground Mining and Subsidence

Underground mines have been used extensively in Illinois to extract coal, lead, zinc, fluorites, shale, clay stones, limestone, and dolomite. When mining first began in Illinois, land over mined areas was sparsely populated. If the ground subsided, homes or other structures were seldom damaged. As towns and cities expanded over mined-out areas, subsidence damage to structures became increasingly more common.

The most common underground mines in Illinois are coal mines. A study from 2008 in Illinois has found that about 333,100 housing units were located over or adjacent to 839,000 acres mined for coal (Bauer, 2008).

Illinois has abundant coal resources. All or parts of 86 of 102 counties in the state have coal-bearing strata. As of 2007, about 1,050,400 acres (2.8% of the state) have been mined. Of that total, 836,655 acres are underground mines (Bauer, 2008). Illinois ranks first among all U.S. states for reserves of bituminous coal (Illinois Coal Association, 1992).

There are two fundamental underground mining methods used in Illinois: high-extraction methods such as long-wall and low-extraction room-and pillar mining. High-extraction methods remove almost all the coal in localized areas. For modern mining practices, subsidence associated with high-extraction methods is planned and regulated by state and federal authorities. The subsurface subsides above the mine within several days or weeks after the coal has been removed. Subsidence of the over-burden above the mined-out area can continue up to seven years after subsurface removal, depending on the local geologic conditions (Bauer, 2008). The initial ground movements associated with this mining, which tend to be the largest, diminish rapidly after a few months. After subsidence has decreased to a level that no longer causes damage to structures, the land may be suitable for development. The maximum amount of subsidence is proportional to the amount of material extracted and the depth between the mining and the surface. In general, over the centerline of the mine panel, subsidence can be 60 to 70% of the extracted material (e.g., 10ft of material extracted would cause a maximum subsidence of six to seven feet; Bauer, 2006).

For low-extraction techniques such as room-and-pillar mining, miners create openings (rooms) as they work. Enough of the coal layer is left behind in the pillars to support the ground surface. In Illinois this system of mining extracts 40% to 55% of the coal resources in modern mines and up to 75% in some older mines. Based on current state regulations, room- and-pillar mines in operation after 1983 that do not include planned subsidence must show that they have a stable design. Although these permitting requirements have improved overall mine stability, there are no guarantees that subsidence will not occur above a room-and-pillar mine in the future. In general, if coal or other mined resources have been removed from an area, subsidence of the overlying material is always a possibility (Bauer, 2006).

In Illinois, subsidence of the land surface related to underground mining undertakes two forms: pit subsidence or trough (sag) subsidence. Pit subsidence structures are generally six to eight feet deep and range from two to 40 feet in diameter. Pit subsidence mostly occurs over shallow mines that are <100 feet deep and where the overlying bedrock is <50 feet thick and composed of weak rock materials such as shale. The pit is produced when the mine roof collapses, and the roof fall void works its way to the surface. These structures form rapidly. If the bedrock is only a few feet thick and the surface material is unconsolidated (loose), this material may fall into adjacent mine voids, producing a surface hole deeper than the height of the collapsed coal mine void. Pit subsidence can cause damage to a structure if it develops under the corner of a building or supports the post of a foundation or other critical location. Subsidence pits should be filled to ensure that people or animals don’t fall into these structures (Bauer, 2006).

Trough (or “sag”) subsidence forms a gentle depression over a broad area. Some trough subsidence may be as large as a whole mine panel (i.e. several hundred feet long and a few hundred feet wide). Several acres of land may be affected by a single trough event or feature. As discussed above, the maximum vertical settlement is 60% to 70% of the height of material removed (e.g., two to six feet). Significant troughs may develop suddenly (in a few hours or days) or gradually over a period of years. Troughs originate over places in mines where pillars have collapsed, producing downward movement at the ground surface. These failures can develop over mines of any depth. Trough subsidence produces an orderly pattern of tensile features (tension cracks) surrounding a central area of possible compression features. The type and extent of damage to surface structures relates to their orientation and position within a trough. In the tension zone, the downward-bending movements that develop in the ground may damage buildings, roads, sewer and water pipes, and other utilities. The downward bending of the ground surface causes the soil to crack, forming the tension cracks that pull structures apart. In the relatively smaller compression zone, roads my buckle and foundation walls may be pushed inward. Buildings damaged by compressional forces typically need their foundations rebuilt and leveled (Bauer, 2006).

Subsidence Related to Karst Features

Subsidence can occur on land located over soluble bedrock. The land over such bedrock often has topography characteristic of past subsidence events. This topography is termed "karst." Karst terrain has unique landforms and hydrology found only in these areas. Bedrock in karst areas is typically limestone, dolomite, or gypsum. In Illinois, limestone and dolomite (carbonate rocks) are the principal karst-rock types. 9% of Illinois have carbonate rock types close enough to the ground surface to have a well-developed karst terrain. The area in Illinois in which the karst terrain is most developed is the southern and southwestern part of the state (Panno, et al., 1997) away from McLean County.

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Previous Occurrences

There are no documented occurrences of karstic or mine collapse in the McClean planning area that have resulted in any significant injuries or deaths.

Geographic Location

Illinois is usually associated with either underground mining or collapse of soil into crevice in underlying soluble bedrock. Areas at risk for subsidence can be determined from detailed mapping of geologic conditions or detailed coal mine maps.

Figure 4-18 shows coal mined areas in McLean County, IL in relation to ISU buildings. Figure 4-19 depicts a zoomed in map of the location of Illinois State University buildings in proximity to underground mines. According to these maps, no ISU buildings are located over previously mined areas. Thus, the Illinois State University buildings are not directly vulnerable due to the location of mines. However, a few are close by, so these structures should be considered possibly vulnerable to mine subsidence. Overall, the hazard risk from mine subsidence is low.

Figure 4-18. Coal Mined areas in McLean County

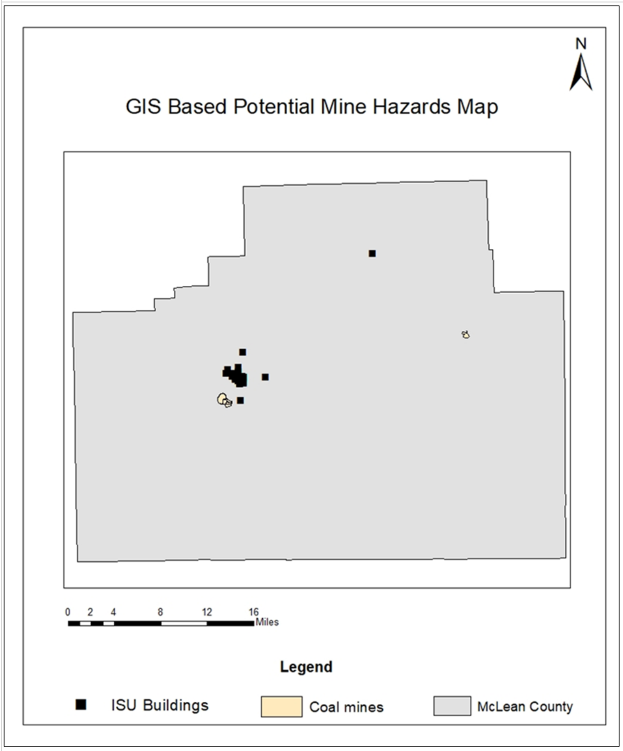
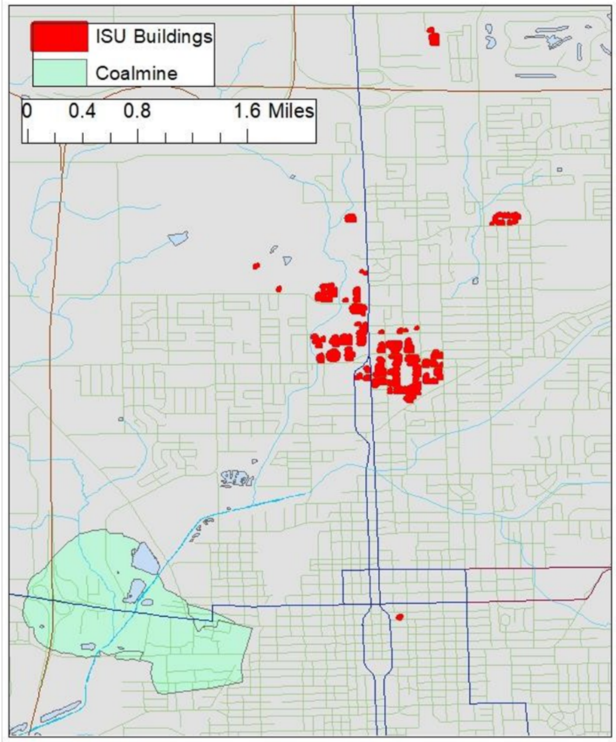


Figure 4-19. Location of ISU buildings in Proximity to underground mines.



Hazard Extent

The extent of ground failure hazard in the planning area is a function of where current development is located relative to areas of past and present underground mining.

Risk Identification

Based on historical information and the underlying geology of the planning area, the occurrence of future ground failure on campus is unlikely.

Vulnerability Analysis

A small portion (<1%) of the county is undermined and there are some buildings on top of the undermined areas. Tables 4-6 and 4-7 display the existing buildings and critical infrastructure in the planning area. There is no known risk from underground mining within the Illinois State University campus.

Critical Facilities

A critical facility will encounter the same impacts as any other building within the affected area. These impacts include damages ranging from cosmetic to structural. Buildings may sustain minor cracks in walls due to a small amount of settling, while worse cases, the failure of building foundations can cause cracking of critical structural elements or even building collapse. Table 4-6 lists the types and number of critical facilities for the University and community planning and Appendix F displays a large format map of the locations of all critical facilities within the planning area.

Infrastructure

The types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with land collapsing directly beneath them in a way that undermines their structural integrity. The impacts on these structures include broken, failed, or impassable roadways; broken or failed utility lines (i.e. loss of power or gas to the community); and railway failure from broken or impassable railways. In addition, bridges could fail or become impassable causing risk to traffic.

Vulnerability of Future Assets/Infrastructure

New buildings and infrastructure placed on undermined land or on a highly soluble bedrock will be vulnerable to ground failure. ISU should avoid the coal mined areas when expanding further infrastructure. Abandoned underground mine subsidence may affect several locations within the county; therefore, buildings and infrastructure are vulnerable to subsidence. Continued development may occur in many of these areas, so any planned construction should be reviewed against historical mining maps to minimize potential subsidence structural damage.

Section 5. Mitigation Strategies

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. Throughout the planning process, the ISU Planning Team worked to identify existing hazard mitigation policies, develop mitigation goals, and create a comprehensive range of mitigation strategies specific to the university. This work provides a blueprint for reducing the potential losses identified in the risk assessment (section 4).

5.1 Existing Hazard Mitigation Policies, Programs and Resources

This section documents the University's existing authorities, policies, programs, and resources related to hazard mitigation and the ability to improve these existing policies and programs. Currently, Illinois State University is functioning under the 2019 FEMA approved hazard mitigation plan. It is important to highlight the work that has been completed at Illinois State University that pertains to hazard mitigation. In addition, the following information also provides an evaluation of these abilities to determine whether they can be improved, in order to more effectively reduce the impact of future hazards.

5.1.1 Successful Mitigation Projects

To be successful, mitigation must be a recurrent process that is continually striving to lessen the impact of natural hazards within the university. Efforts to mitigate natural hazards at Illinois State University have yielded significant progress across several projects.

- ✓ The distribution of OAA weather radios is both complete and ongoing, with an additional 10 radios recently acquired for further distribution.
- ✓ Utility line relocation has been reprioritized as most lines are now underground, leaving very few above ground, particularly those near the ROTC building and certain structures on West and Main Streets.
- ✓ Critical facilities have been equipped with backflow valves and sump pumps, with new installations completed at CEFCU Arena, while aligning with FEMA's preference for fixed building generators. Lightning protection for critical facilities remains an active project.
- ✓ Automatic shutoff valves have been fully automated.
- ✓ The elevating of low-lying roads is ongoing, with the Town of Normal focusing on addressing flooding issues along Fell Avenue, the most consistently impacted area. Drainage pipe installation around CEFCU Arena has been completed.
- ✓ The efforts to mitigate flooding in Watterson, which is consistently impacted due to its low-lying position, are expected to be discussed as part of the town of Normal's broader flood management strategy. The new plan includes the installation of drainage pipes at the State Farm Hall of Business and CBA.
- ✓ The acquisition of emergency response protective gear and equipment has been reprioritized, while efforts to enhance outdoor SIREN warning coverage for the Quad continue, including upgrading eight "blue light phones" to "blue light phones with speakers".
- ✓ A previous attempt to establish a tornado shelter at the Horticulture Center was denied, due to its similarity to the existing shelter at the Farm. With the addition of the new building on Raab Road (AB1), team suggested that revisiting this proposal could provide both a valuable resource for the University and the community.

These measures reflect a concerted effort to enhance safety and resilience across the campus. The strategy 2019 plan to update the blue light emergency system was reprioritized as other capable systems get more use. Other not-yet realized strategies from 2019 are listed as ongoing in table 5-7.

5.1.2 National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. This section covers NFIP status, flood insurance policy and claim statistics, repetitive loss structures, and Community Rating System status of the planning area.

NFIP Status

As mentioned in Section 4.4.3, none of ISU buildings/structures are in the 100-year floodplain. As state-owned and operated buildings, all of ISU physical assets are self-insured. The University carries commercial insurance for flood exposures, and all university buildings have identical coverage for flood risk. ISU is not required to have coverage through the NFIP. McLean County, Bloomington, and the town of Normal all participate in the NFIP and have an effective FIRM. Table 5-1 includes a summary of information for Normal and surrounding communities' participation in the NFIP.

Table 5-1. Information on Normal and Surrounding Communities' Participation in the NFIP

Community	Community Status	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map (FIRM) Identified	Current Effective FIRM Date
McLean County	Participating	09/08/1978	12/18/1985	07/16/2008
Normal	Participating	06/21/1974	09/01/1983	07/16/2008
Bloomington	Participating	06/28/1974	04/03/1984	07/16/2008

NFIP status and information are documented in the "NFIP Community Status Book" Report updated on 11/26/2024.

Flood Insurance Policy and Claim Statistics

According to NFIP redacted Claims data, since the establishment of the NFIP in 1978, 170 flood insurance claims have been filed and paid in McLean County, totaling $1,405,033.12 in payments. 113 flood insurance claims were filed in Bloomington/Normal and Unincorporated McLean County areas, totaling $1,021,990.69 in payments. Table 5-2 summarizes the claims since 1978.

Table 5-2. Flood Insurance Claim Statistics for Normal and Surrounding Communities

Community Name	Total Losses	Amount Paid on Building Claims	Amount Paid on Contents Claim	Total Net Dollars Paid
BLOOMINGTON	44	$238,934.43	$31,504.41	$270,438.84
NORMAL	41	$247,258.26	$23,958.89	$271,217.15
MCLEAN COUNTY *	28	$422,194.91	$58,139.79	$480,334.70
Total	**113**	**$908387.60**	**$113,603.09**	**$1,021,990.69**

NFIP redacted claim statistics from 1978 until the most recently updated date of 10/31/2024.

Repetitive Loss Structures

There are several structures in Normal and surrounding communities that have experienced repetitive losses due to flooding. FEMA defines a Repetitive Loss Structure as an NFIP-insured building that has experienced at least two paid flood losses of more than $1,000 each within any 10-year period since 1978.

As reported in the *Insurance Journal* in October 2024, the United States has over 250,000 properties classified as Repetitive Loss Properties (RLPs) under the National Flood Insurance Program (NFIP).

The Illinois Emergency Management Agency and Illinois Department of Natural Resources were contacted to determine the location of repetitive loss structures in McLean County. Records indicate that there are 21 repetitive loss structures within the county. The total amount paid for building and contents replacement of these repetitive loss structures is $985,385.70. Table 5-3 describes the repetitive loss structures for Normal and surrounding communities.

Table 5-3. Repetitive Loss Structures for Normal/McLean County (from McLean County HMP report)

Participating Jurisdiction	**Structure Type**	**Number of Structures**	**Number of Claim Payments**	**Flood Insurance Claim Payments**		**Total Flood Insurance Claim Payments**
				Structure	**Content**	
Bloomington	single-family	5	10	$150,270.22	9,914.28	$160,184.50
	non-residential structure	1	2	$17,122.91	$6,166.79	$23,289.70
Colfax	single-family	2 1	4 2	$60,958.21	$0.00	$60,958.21
Heyworth	single-family	1	3	$81,819.41	$76.90	$81,896.31
	business	1	2	$55,729.08	$3,014.64	$58,743.72
Hudson	single-family	1	2	$6,066.74	$1,394.00	$7,460.74
Le Roy	single-family	1	2	$14,782.03	$0.00	$14,782.03
McLean Village	single-family	1	2	$9,108.63	$3,427.76	$12,536.39
Normal	single-family/ Other residence	3	8 9	$136,481.10	$8,316.12	$144,797.22
Towanda	single-family	1	2	$10,040.75	$0.00	$10,040.75
Unincorporated McLean County	single-family/ Other residence	4 3	8 6	$366,045.83	$44,650.30	$410,696.13
Total:		**21**	**45**	**$908,424.91**	**$76,960.79**	**$985,385.70**

<u>Community Rating System Status</u>

The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). Over 1,500 communities participate nationwide.

In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program:

- Reduce and avoid flood damage to insurable property.
- Strengthen and support the insurance aspects of the National Flood Insurance Program
- Foster comprehensive floodplain management

As of October 2024, 1,009 communities in Illinois participate in the NFIP (FEMA - Community Status Book). Of these communities, 77 participate in the CRS program (FEMA - Community Rating System). The remaining communities present an outreach opportunity for encouraging participation in the CRS. While joining the CRS is free, maintaining a favorable CRS rating requires significant commitment from the community, including dedicating staff and resources to implement and sustain the credited activities. The CRS uses a class rating system, with classes ranging from 9 to 1. Most communities enter the program at Class 9 or 8, corresponding to a 5% or 10% discount on flood insurance premiums, respectively. Each improvement in class rating results in an additional 5% discount for properties in Special Flood Hazard Areas.

5.1.3 County and Municipal Plans and Regulations

A comprehensive plan establishes a framework of goals, policies, and action items guiding community development. The McLean County Regional Comprehensive Plan, titled "A Guide to Sensible Growth Through Regional Cooperation," was issued in November 2009 as a 25-Year plan and focuses on growth related to transportation, infrastructure, and environmental sustainability. Given the significant changes since its adoption, including the COVID-19 pandemic and data from the 2020 Census, the importance of updating the plan was discussed at the McLean County Regional Planning Commission's executive committee meeting in August 2023.

Both Normal and Bloomington have approved comprehensive plans. The McLean County Regional Planning Commission (MCRPC) collaborated with the community to develop Normal's Comprehensive Plan 2040, adopted in November 2017. This plan divides the community into sectors such as neighborhoods, centers, and corridors, and is subtitled "Complete, Connected, Compact." It guides decisions about future community development, particularly along Veterans Parkway, a major transportation and business hub in Uptown Normal. The Town of Normal's Comprehensive Plan has been recognized for its excellence, receiving the Daniel Burnham Award for an Outstanding Comprehensive Plan from the Illinois Chapter of the American Planning Association in September 2018.

The City of Bloomington Comprehensive Plan 2035, adopted in August 2015, outlines goals for the next two decades, focusing on redeveloping existing neighborhoods, fostering entrepreneurship, and promoting innovation. Bloomington serves as a central hub for transportation and commerce within a highly productive agricultural region. The plan emphasizes maintaining dynamic neighborhoods, a robust education system, a stable economy, a healthy community, solid infrastructure, and efficient government.

ISU's Master Plan 2010-2030 outlines a vision for its campus growth and integration with the surrounding communities. The plan emphasizes sustainable campus expansion, improvements to transportation networks, and enhanced student and community engagement. Specific objectives include modernizing academic buildings, creating more green spaces, and developing a cohesive infrastructure that complements Normal's urban planning efforts.

Both Bloomington and Normal comprehensive plans acknowledge the connections between Illinois State University (ISU) and the municipalities. However, they do not extensively address hazard preparedness or disaster mitigation planning efforts. Incorporating hazard mitigation-related ordinances—such as those pertaining to zoning, burning, or building codes—can effectively reduce risks from known hazards. These regulations enhance community resilience by addressing potential threats. Evaluating local building codes and ordinances is crucial to determine their capacity to mitigate potential damages from future hazards.

Table 5-4 lists the current ordinances of Normal and surrounding communities that directly pertain, or can pertain, to hazard mitigation. It is important to evaluate the local building codes and ordinances to determine if they could reduce potential damage caused by future hazards.

Table 5-4. Ordinances of Normal and Surrounding Communities

Community	Building	Electrical	Stormwater	Flooding	Subdivision	Fire	Land Use	Zoning
McLean County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Normal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bloomington	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**The Codes and Ordinances are published on County and Community websites.*

Implementing new ordinances, such as updated development standards or hazard-specific overlay zones within existing zoning regulations, offers communities effective tools to prevent hazardous construction and control land use types and densities in areas prone to natural hazards. By adopting and enforcing floodplain management standards that exceed the NFIP minimums, communities can significantly reduce future flood losses, especially in rapidly developing areas where existing floodplain maps may not fully reflect current risks. Regular updates to building codes, often based on national or industry standards, provide opportunities to incorporate safe growth practices. Integrating revised code requirements and optional hazard-specific standards enhances community resilience. At Illinois State University, the Design Guidelines and Facilities Standards direct all new design, construction, remodeling, rehabilitation, and maintenance projects, ensuring adherence to safety and resilience objectives.

5.1.4 Fire Insurance Ratings

The Insurance Services Office (ISO) administers the Public Protection Classification (PPC) Program, which evaluates and classifies communities' fire suppression capabilities. This program provides a nationwide standard that assists fire departments in planning and budgeting for facilities, equipment, and training. ISO collects data on municipal fire protection efforts across the United States and analyzes it using the Fire Suppression Rating Schedule (FSRS). Communities are then assigned a PPC grade on a scale from 1 to 10, where Class 1 represents superior property fire protection, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria. The PPC program helps communities to understand the effectiveness of fire protection services and identify areas for improvement. Insurance companies often use PPC ratings to determine property insurance premiums, with better ratings potentially leading to lower premiums for property owners. Table 5-5 displays each Fire Department's insurance rating and total number of employees.

Table 5-5. Normal/Bloomington Fire Departments, Insurance Ratings, and Number of Employees/Volunteers

Fire Department	Fire Insurance Rating	Number of Employees
Normal Fire Department	2	63
Bloomington Fire Department	2	114

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identifies Illinois State University as being prone to several hazards. The Planning Team members understand that, while they cannot eliminate hazards entirely, Illinois State University can work toward building a disaster-resistant campus community. Below is a generalized list of goals, objectives, and actions. The goals represent long-term, broad visions the University aims to achieve for mitigation, while the objectives outline strategies and steps to help the University attain these goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure.

Objectives:

- Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weatherproofing.
- Equip campus facilities and community utilities to guard against damage caused by secondary effects of hazards.

- Minimize the amount of infrastructure exposed to hazards.
- Evaluate and strengthen the communication and transportation abilities of emergency services throughout the campus community.
- Improve emergency sheltering within the campus community.

Goal 2: Create new or revise existing plans/maps for Illinois State University.

Objectives:

- Support community compliance with the NFIP.
- Review and update existing, or create new, departmental emergency response plans and protocols to support hazard mitigation.
- Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate McLean County residents on the hazards

Objectives:

- Raise campus community awareness on hazard mitigation.
- Improve education and training of emergency personnel and campus departments.

5.3 Illinois State University Mitigation Strategies

After reviewing the Risk Assessment, the Mitigation Planning Team was presented with the task of individually listing potential mitigation activities using the FEMA STAPLEE evaluation criteria (see table 5-6). FEMA uses their evaluation criteria STAPLEE (stands for social, technical, administrative, political, legal, economic and environmental) to assess the developed mitigation strategies. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. The Planning Team brought their mitigation ideas to and refined them at Meeting 3.

Table 5-6. FEMA's STAPLEE Evaluation Criteria

Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Table 5-7 contains a comprehensive range of specific mitigation actions and projects for Illinois State University, with an emphasis on new and existing buildings and infrastructure. At least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment. Each university department and community partners were invited to participate in brainstorming sessions where goals, objectives, and strategies were discussed and prioritized. Participants in these sessions were equipped with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects implemented in neighboring communities and counties.

The mitigation strategies are arranged by the hazard they directly address. In some cases, certain mitigation strategies can address all hazards. When provided by university departments and community partners, each mitigation strategy includes specific details about implementation, the responsible and/or organizing agency, and potential funding sources. Potential funding sources are categorized as Federal, State, Local, or Private. Each mitigation strategy is assigned a code in Table 5.8 for ease of reference when reviewing the prioritization of strategies.

Table 5-7. Illinois State University Mitigation Strategies 2025

Code	Mitigation Strategy	Partners Involved	Status	Funding Source(s)	Responsible Organization/ Agency
ALL HAZARDS					
AH1	**Create additional heating / cooling shelters** *The Emergency Management Director will oversee the implementation of this strategy. If funding is available, implementation is forecasted within the next one to three years.*	**ISU**	Proposed	**USDA or other federal grants (e.g., BRIC)**	Emergency Management Director
AH2	**Equip critical facilities with back-up generators** The University has installed back-up generators to the university police department, EOC, and underlying systems. The University will continue to research and purchase back-up generators for critical sites. *Facilities Services will oversee the implementation of this strategy. If funding is available, implementation is forecasted within one to three years.*	**ISU**	Ongoing	**USDA or other federal grants (e.g., BRIC & HGMP)**	Facilities Services
AH3	**Install Solar-Panels at Bone Student Center** *Facilities Services will oversee the implementation of this strategy. If funding is available, implementation is forecasted within one to three years.*	**ISU**	Proposed	**US and state EPA grants, utility partners and university funds**	Facilities Services
AH4	**Build a multi-fuel microgrid on Gregory Street Farm.** The university plans to incorporate steam, gas, solar, wind, and electric systems into the microgrid. *Facilities Services will oversee the implementation of this strategy. If funding is available, implementation is forecasted within one to three years.*	**ISU**	Proposed	**US and state EPA grants, utility partners and university funds**	Facilities Services
AH5	**Provide outdoor warning coverage** The University seeks outdoor siren and signage warning coverage. *If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**IL DECEO PI grants and university funds**	Emergency Management Director
AH6	**Explore and implement appropriate emerging notification methods** *If funding is available, implementation is forecasted within one to three years.*	**ISU**	Ongoing	**USDA or other federal grants (e.g., HGMP)**	Emergency Management Director
AH7	**Retire deprecated emergency notifications methods** *The Emergency Management Director will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**USDA or other federal grants (e.g., HGMP)**	Emergency Management Director
FLOODING					

F1	**Constructing Storm water retention under Turner parking lot** *Facilities Services will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**IL DECEO PI grants and university funds**	Facilities Services
SEVERE THUNDERSTORMS/ TORNADOES					
ST1	**Constructing Storm shelter in Raab Road complex** *Environmental Health & Safety will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**USDA or other federal grants (e.g., HMGP)**	Environmental Health & Safety
ST2	**Implementing windows and roof reinforcement to avoid high wind damage** *Facilities Services will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**State grant funding for facilities, university funds**	Facilities Services
EXTREME HEAT/ DROUGHT					
EH1	**Tree planting for heat mitigation and urban heat island reduction** *Facilities Services will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**IL DNR & EPA grants, university funds**	Facilities Services
EH2	**Implementing the water storage tower/tank with pressure system for drought resilience.** *Facilities Services will oversee this strategy. If funding is available, implementation is forecasted within the next three years.*	**ISU**	Proposed	**IL DNR & EPA and other state grants (e.g., IESMA), university funds**	Facilities Services

5.4 Prioritization of Illinois State University Mitigation Strategies

Effective implementation of mitigation strategies is crucial to the success of the overall mitigation plan. Prioritizing actions based on various factors is essential to ensure that the most critical actions are addressed first. However, due to financial, engineering, environmental, permitting, and site control challenges, some actions may need to be undertaken before those with a higher priority ranking.

Public awareness and input are vital for enhancing understanding, securing funding opportunities, and monitoring the progress of mitigation actions. Additionally, it is important to account for the time required for the University to complete each mitigation project.

Table 5-8 presents the priority ranking for each mitigation strategy, with each code corresponding to a specific strategy listed in Table 5-7. Each strategy is rated as high, medium, or low priority based on the STAPLEE evaluation and the University's timeline for completion: H - High (1-3 years), M - Medium (3-5 years), and L - Low (5+ years).

Table 5-8. Prioritization of Illinois State University Mitigation Strategies

Code	Hazard Ranking
AH1	H
AH2	H
AH3	H
AH4	M
AH5	M
F1	M
F2	M
ST1	M
ST2	M
EH1	M
EH2	M

**Ranking based on STAPLEE evaluation and estimated timeframe: H – High, M – Medium, and L – Low*

Section 6. Plan Implementation and Maintenance

6.1 Implementation through Existing Programs

Throughout the planning process, the Illinois State University Planning Team has identified existing hazard mitigation policies, developed goals, and crafted strategies tailored to stakeholders. This plan provides a blueprint for reducing potential losses outlined in the Risk Assessment (Section 4) and aims to integrate mitigation strategies into the University's ongoing efforts. The Emergency Management Department will lead the implementation, with university departments, community partners, and federal and state assistance supporting key mitigation actions.

Illinois State University intends to use the Multi-Hazard Mitigation Plan (MHMP) to guide mitigation priorities and enhance visibility across campus. Collaboration with community partners will help bridge the gap between emergency response and recovery efforts on and off campus. The team emphasize that development and implementation of mitigation strategies must align with multiple Mitigation Codes and effectively address identified problems.

The updated plan builds on the 2019 mitigation strategies by highlighting the completion of previous measures while introducing new projects to address ongoing hazards. It also focuses on documenting completed actions, identifying recurring issues in projects.

The Multi-Hazard Mitigation Plan (MHMP), along with Emergency Operations Plan (EOP) and Continuity of Operations Plan (COOP) of Illinois State University, will form the three-core emergency-related plans for the University. The MHMP focuses on pre-disaster preparedness, the EOP handles response during a disaster, and the COOP ensures post-disaster recovery and continuity. In addition, the University's updated Master Plan 2010-2030 will guide future campus development, with all plans working together to safeguard the campus community, intellectual property, and facilities.

Active engagement from the campus community is essential for the successful implementation of the MHMP. Feedback collected by the Emergency Management Director will be reviewed by the Planning Team, and hazard mitigation education will be continuously promoted. To keep the community informed, periodic planning meetings will be announced through local newspaper notices. Once finalized, the MHMP will be available in the Emergency Management Department at Illinois State University.

6.2 Monitoring, Evaluation, and Updating the MHMP

During the five-year planning cycle, the Emergency Management Director at ISU will oversee annual reviews and updates of the plan by reconvening the Planning Team. The most recent meeting for the five-year plan update took place on September 16, 2024. Committee members will remain accessible for email correspondence between these annual meetings. Should new developments arise, or a declared disaster occur within Illinois State University, the team will convene as needed to revise mitigation strategies. Implementation of mitigation projects will depend on available grant opportunities and financial resources, potentially involving local partnerships.

Most of the strategies will require, at least in part, material and/or financial support from the University as is noted in table 5-7. However, identifying additional funding to carry out the various actions is frequently the limiting factor in being able to carry them out. The FEMA Region V Mitigation Resource Funding Guide provides an extensive list of federal and state resources from multiple agencies that may be drawn on to further mitigation efforts. For example, federal programs identified applicable to the strategies in table 5-7 include FEMA's Building Resilient Infrastructure and Communities (BRIC) grants, and Hazard Mitigation Program (HMGP). State programs with grants applicable to enabling the carry out of the strategies include grants from the Illinois Emergency Services Management Agency (IESMA) and Environmental Protection Agency (IEPA).

- ✓ According to the strategies meeting, when considering projects for the 2025 - 2030 (5-year) mitigation plan, the University could focus on initiatives that address both immediate needs and long-term resilience. New strategies were proposed to address ongoing hazards and align with updated funding criteria. One potential project is installing solar panels on the Bone building (Bone Student Center), which could ensure continuity during power outages and potentially serve as community shelter or off-campus housing for students. With an estimated cost of over $4 million, it is important to evaluate how long the solar power would last and its potential to feed back into the grid. Another significant proposal includes developing a multi-fuel microgrid at Gregory Street Farm in partnership with Ameren and Nicor. This system would integrate solar, gas, wind, electric, and steam power to enhance energy redundancy. The microgrid could potentially support off-campus entities such as public safety facilities and hospitals.
- ✓ To address flooding, the team proposed constructing an $8 million worth stormwater retention system under Turner Hall parking lot. This system would direct runoff into large underground pipes, gradually releasing water to Sugar Creek while reducing flooding in West Campus and downstream areas. Additional proposals included tree planting for heat mitigation and urban heat island reduction, reinforcing roofs and windows to withstand high winds, ensuring South Chiller Plant has reliable power to maintain building services, establishing a tornado shelter at Raab Road (AB1) for community use, and installing a Water storage system (tower/tank) with pressure support for drought resilience.

As part of the ongoing process, the Planning Team will further review the university's goals and objectives to ensure their alignment with evolving university-level conditions and changes in state and federal policies. The team will also assess the risk assessment section of the plan to determine if updates or modifications are necessary. Additionally, the plan revisions will incorporate changes in local development and its impact on each identified hazard. This report, once approved by the President of Illinois State University, will serve as public notice of any updates or modifications to the Multi-Hazard Mitigation Plan (MHMP) during the five-year planning cycle.

Given the significant funding opportunities available through FEMA's Building Resilient Infrastructure and Communities (BRIC) program, which now offers $50 million per project, and the Flood Mitigation Act, the Planning Team must ensure that proposed projects comply with NFIP coverage requirements. While McLean County holds NFIP coverage, the University itself does not. Therefore, the team will seek clarification on ISU's eligibility for funding based on its location within the county and the requirement for NFIP coverage or the ability to obtain it. Aligning these requirements with the goals and objectives of the MHMP will be essential for securing critical resources during the planning cycle.

The GIS data used for the plan was sourced from existing Illinois State University GIS resources as well as data collected during the planning process. This updated Hazus-MH GIS data has been returned to the University for Public Use and maintenance within its system. As new data becomes available, it will be incorporated into future risk assessments and vulnerability analyses.

Definitions

100-year Floodplain	Areas are subject to inundation by the 1-percent-annual-chance flood event.
Critical Facility	A structure, because of its function, size, service area, or uniqueness, that has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. This includes, but are not limited to, water and wastewater treatment facilities, municipal buildings, educations facilities, and non-emergency healthcare facilities.
Community Rating System (CRS)	A voluntary program for the National Flood Insurance Program (NFIP) participating communities. The goals of the CRS are to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.
Comprehensive Plan	A document, also known as a "general plan", covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all the physical elements that will determine the community's future developments.
Disaster Mitigation Act of 2000 (DMA 2000)	The largest legislation to improve the planning process. It was signed into law on October 30, 2000. This new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.
Essential Facility	A subset of critical facilities, that represent a substantial hazard to human life in the event of failure. This includes (but not limited to) hospital and fire, rescue, ambulance, emergency operations centers, and police stations.
Federal Emergency Management Agency	An independent agency that was created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.
Hazard	A source of potential danger or adverse condition.
Hazard Mitigation	Any sustained action to reduce or eliminate long-term risk to human life and property from hazards.

Hazard Mitigation Grant Program (HMPG) Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration.

Hazus-MH A geographic information system (GIS)-based disaster risk assessment tool.

Multi-Hazard Mitigation Planning Identify policies and actions that can be implemented over the long term to reduce risk and future losses from various hazardous events.

National Flood Insurance Program Administered by the Federal Emergency Management Agency, which works closely with nearly 90 private insurance companies to offer flood insurance to property owners and renters. In order to qualify for flood insurance, a community must join the NFIP and agree to enforce sound flood plain management standards.

Planning Team A group composed of government, private sector, and individuals with a variety of skills and areas of expertise, usually appointed by a city or town manager, or chief elected official. The group finds solutions to community mitigation needs and seeks community acceptance of those solutions.

Risk Priority Index Quantifies risk as the product of hazard probability and magnitude so Planning Team members can prioritize mitigation strategies for high-risk-priority hazards.

Risk Assessment Quantifies the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people.

Strategy A collection of actions to achieve goals and objectives.

Vulnerability Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions.

Acronyms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

C

CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act of 2000

E

EAP – Emergency Action Plan
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map

G

GIS – Geographic Information System

H

Hazus-MH – Hazards USA Multi-Hazard
HMGP – Hazard Mitigation Grant Program
HUC – Hydrologic Unit Code

I

IA – Individual Assistance
IDNR – Illinois Department of Natural Resources
IDOT – Illinois Department of Transportation
IEMA – Illinois Emergency Management Agency
ISO – Insurance Service Office
ISGS – Illinois State Geological Survey
ISWS– Illinois State Water Survey

M

MHMP – Multi-Hazard Mitigation Plan

N	NCEI – National Centers for Environmental Information NEHRP – National Earthquake Hazards Reduction Program NFIP – National Flood Insurance Program NID – National Inventory of Dams NOAA – National Oceanic and Atmospheric Administration NSFHA – Non-Special Flood Hazard Area
P	PA – Public Assistance PHMSA– Pipeline and Hazardous Materials Safety Administration PPM – Parts Per Million
R	RPI – Risk Priority Index
S	SIU – Southern Illinois University Carbondale SPC – Storm Prediction Center STAPLEE – Social, Technical, Administrative, Political, Legal, Economic, and Environmental
U	USGS – United States Geological Survey

APPENDICES

Appendix A. Meeting Sign-In Sheets

Meeting 1 – Aug 10, 2023

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
Adam McCrary	ajmccra@ilstu.edu	ISU- Enviromental Health & Science	8.10.23	2	—	
Becky Ludolph	rlludol@ilstu.edu	ISU- Student Health Services	8.10.23	2	0	Becky Ludolph
Kevin Gadzala for Bernie Anderston	(BAnder3@southernco.com)	Nicor Gas	8.10.23	2	120	Kevin Gadzala
Bobbie Stevens	bjsteve@ilstu.edu	ISU- Student Health Services	8.10.23	2	—	Bobbie Stevens
Brady Mann	bemann@ilstu.edu	ISU- Office Energy Mgmt	8.10.23	2	—	
Cathy Beck	cathy.beck@mcleancountyil.gov	McLean County EMA	8.10.23			
Christine Bruckner	cbruckn@ilstu.edu	ISU- Office of Sustainability	8.10.23			
Daniel Kane	dmkane@ilstu.edu	ISU- Facilities Mgmt	8.10.23	2	-	
David Hopper	David.Hopper@carle.com	Carle Bromenn Hospital	8.10.23	2	-	
David Marple	dgmarpl@ilstu.edu	ISU- Risk Mgmt	8.10.23	2	-	David Marple
Don Kunde	drkunde@ilstu.edu	ISU- Enviromental Health & Science	8.10.23	2	-	

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Eric Hodges	ebhodge@ilstu.edu	ISU- Emergency Mgmt	8.10.23	1.5	0.0	[illegible]
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Josh Walker	Josh.walker@mcleancountyil.gov	McLean County EMA	8.10.23			
Karin Earl	kmearl@ilstu.edu	ISU - Facilities Planning	8.10.23	–	2	Karin Earl
Kristie Toohill	klander@ilstu.edu	ISU- Facilities Mgmt	8.10.23			
Marc Martindale	mamar22@ilstu.edu	ISU- Athletics	8.10.23	2	0	[illegible]
Mark Gramley	magraml@ilstu.edu	ISU- Enviromental Health & Science	8.10.23			
Matt Kinate	mjkinat@ilstu.edu	ISU- Risk Mgmt	8.10.23	2.0	0.0	[illegible]
Mike Morrison	mmorrison@normal.org	Town of Normal Fire Dept	8.10.23	2	1.0	[illegible]

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Meeting 2 – December 11, 2023

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Don Kunde	drkunde@ilstu.edu	ISU- Environmental Health & Safety	12.11.23		0	[signature]

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Josh Walker	Josh.walker@mcleancountyil.gov	McLean County EMA	12.11.23			
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Kristie Toohill	klander@ilstu.edu	ISU- Facilities Mgmt	12.11.23			
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Mark Gramley	magraml@ilstu.edu	ISU- Environmental Health & Safety	12.11.23	.5	0	[signature]
Matt Kinate	mjkinat@ilstu.edu	ISU- Risk Mgmt	12.11.23			
Mike Morrison	mmorrison@normal.org	Town of Normal Fire Dept	12.11.23	1	1	[signature]

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Ryan Otto	rotto@normal.org	Town of Normal - Public Works	12.11.23			
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ZACH WALL	ZWALL@NORMALIL.GOV	TOWN OF NORMAL-PW + ENGINEERING	12/11/23		0	[signature]

Meeting 3 – July 23, 2024

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Bobbie Stevens	bjsteve@ilstu.edu	ISU- Student Health Services	7.23.24			
Brady Mann	bemann@ilstu.edu	ISU- Office Energy Mgmt	7.23.24	2.0		[signature]
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Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Josh Walker	Josh.walker@mcleancountyil.gov	McLean County EMA	7.23.24			
Karin Earl	kmearl@ilstu.edu	ISU - Facilities Planning	7.23.24			
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Matt Kinate	mjkinat@ilstu.edu	ISU- Risk Mgmt	7.23.24	2	0	[signature]
Mike Morrison	mmorrison@normal.org	Town of Normal Fire Dept	7.23.24	2	1	[signature]

Name	Email	Department /Organization	Date	Hours	Miles Driven	Signature
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Teresa Chapman	tachap1@ilstu.edu	ISU- Emergency Mgmt	7.23.24	2	0	[signature]
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Hazard Mitigation Plan Update
Mitigation Strategies Meeting
Tuesday, July 23.24
10:30AM

1. Introductions / sign-in sheets
2. Plan review
3. Review of 2019 plan strategies
4. Review of mitigation codes
5. Mitigation strategies for 2024-2029 plan
6. Next steps
7. Adjourn

<u>Hazard Mitigation Plan Update Mtg. (7/23/24)</u>

- **Mitigation Strategies / Mitigation Codes**
    - Tried establishing a tornado shelter at the Horticulture Center and was denied.
        - Similar to what is at the Farm.
        - Can this be revisited now that we have the new building on Raab Road (AB1)? Could also be for the community as well.
    - Everything we put in the plan has to tie to more than one Mitigation Code, and they have to solve a problem.
        - For example, if we had done this a few weeks prior we could put in a project for the arena due to all the flooding and costs.
    - 72/25 splits
    - BRIC (Building Resilient Infrastructure and Communities) is now $50M/project
    - Funding under the Flood Mitigation Act, but has to have NFIP coverage. County has NFIP coverage, but university does not.
        - Is ISU still included since they're in the county?
        - Have to either have NFIP or ability to have NFIP coverage to be eligible for funding under the Flood Mitigation Act.

- **Review of 2019 Plan Strategies**
    - Part of new plan is that we have to identify what we have done as well as anything new.
    - Need projects that show a repeated loss.
    - FEMA's take on generator is that they want **fixed building generators**.
    - Relocate existing utility lines underground - only utility lines above ground currently are ROTC and a few buildings on West and Main.
        - Need to talk to Ameren about why these are still above ground.
        - Do not renew on updated plan
    - Watterson gets pretty consistent flooding due to it being at the bottom of the hill.
        - The town is working on addressing issue of flooding in Uptown.
    - Install Drainage Pipes - State Farm Hall of Business and CBA
    - Provide Outdoor SIREN warning coverage - primarily for the Quad (Leave in)
        - The plan was to replace 8 blue light phones with blue light phones with speakers
    - Projects to Remove:
        - Install storm resistant glass to critical facilities
            - This has been completed.
        - Install automatic shutoff valve
    - Projects to Keep:
        - Install chlorine scrubbers
        - Install emergency signage (digital signage)

- Chat with IT people about outdoor signs
- Conversation about using the emergency generator from State Farm Building to power Quad.

- **What Kind of Projects Should University Seek Funding For?? / Projects for Mitigation Strategies for 2024-2029 Plan**
  - Idea is to put solar on Bone, and it also feeds Bone and allow it to be a continuity building in the event of an outage. Estimated $4M+. How long would that power for?
    - For this government, would have to be a renewable energy source.
    - Also has to support the community. (could serve as a community shelter, off campus housing students who need storm shelter, perhaps also feedback to the Grid, and a continuity site for campus)
  - Multi-Fuel Microgrid for Gregory Street Farm?
    - Potential partnership between Ameren, Nicor, ISU?
    - Fuel, solar, gas, wind, electric, steam
    - Could this micro-grid support entities off the campus?
      - Key facilities, public safety, hospitals, etc.
  - Storm Water Retention under the Turner Hall Parking lot ($8M)
    - Underground retention flows underground in large pipes that's out slowly into the ground to absorb
    - Runs to sugar creek
    - Chose Turner because of flooding in West Campus
    - Impacts flooding downstream
  - Tree Planting - Heat mitigation/ urban heat island reduction (ET1)
  - Roof and Window replacement / reinforcement to withstand straight line winds / high winds / damage
  - South Chiller Plant is best one to ensure has power in order to maintain BSC.
  - Storm Shelter for Raab Road (AB1) and community (in last year's plan to carry forward)
    - When we write make it more broad then location specific
  - Water storage (water tower / water tank / water pressure - drought resistance)

- **Next Steps**
  - Eric to discuss thoughts on providing a conceptual summary on multi-fuel microgrid to Ameren and Nicor.
  - Next meeting is 9/16 at Alumni Center
  - Following next meeting, should be one final meeting to go over final plan. Intent is November.

Meeting 4 – September 16, 2024

ISU Hazard Mitigation Plan Update | **Sign-in Sheet** | **Public Meeting 9.16.24**

Name	Email	Department /Organization	Date	ISU Staff - Hours	Miles Driven	Signature
Adam McCrary	ajmccra@ilstu.edu	ISU- Environmental Health & Safety	9-16-24 7.23.24	2	-	
Becky Ludolph	rlludol@ilstu.edu	ISU- Student Health Services	7.23.24			
Bernie Anderston	BAnder3@southernco.com	Nicor Gas	7.23.24			
Bobbie Stevens	bjsteve@ilstu.edu	ISU- Student Health Services	7.23.24			
Brady Mann	bemann@ilstu.edu	ISU- Office Energy Mgmt	7.23.24	2	4	
Cathy Beck	cathy.beck@mcleancountyil.gov	McLean County EMA	7.23.24			
Christine Bruckner	cbruckn@ilstu.edu	ISU- Office of Sustainability	7.23.24			
Daniel Kane	dmkane@ilstu.edu	ISU- Facilities Mgmt	7.23.24	-	-	
David Hopper	David.Hopper@carle.com	Carle Bromenn Hospital	7.23.24			
David Marple	dgmarpl@ilstu.edu	ISU- Risk Mgmt	7.23.24			
Don Kunde	drkunde@ilstu.edu	ISU- Environmental Health & Safety	7.23.24	2	-	

ISU Hazard Mitigation Plan Update | **Sign-in Sheet** | **Public Meeting 9.16.24**

Name	Email	Department /Organization	Date	ISU Staff - Hours	Miles Driven	Signature
Elisabeth Reed	ereed2@ilstu.edu	ISU- Office of Sustainability	9-16-24 7.23.24			
Eric Hodges	ebhodge@ilstu.edu	ISU- Emergency Mgmt	7.23.24	2	0	
John Burkhart	jburkhart@normal.org	Town of Normal - Water	7.23.24			
John Summers	jrsumme1@ilstu.edu	ISU - Facilities Planning	7.23.24			
Josh Walker	Josh.walker@mcleancountyil.gov	McLean County EMA	7.23.24			
Karin Earl	kmearl@ilstu.edu	ISU - Facilities Planning	7.23.24			
Kristie Toohill	klander@ilstu.edu	ISU- Facilities Mgmt	7.23.24		-	
Marc Martindale	mamar22@ilstu.edu	ISU- Athletics	7.23.24			
Mark Gramley	magraml@ilstu.edu	ISU- Environmental Health & Safety	7.23.24	2		
Matt Kinate	mjkinat@ilstu.edu	ISU- Risk Mgmt	7.23.24			
Mike Morrison	mmorrison@normal.org	Town of Normal Fire Dept	7.23.24			

ISU Hazard Mitigation Plan Update | Sign-in Sheet | Public Meeting 9.16.24

Name	Email	Department /Organization	Date	ISU Staff - Hours	Miles Driven	Signature
Nick Stoff	nstoff@ilstu.edu	ISU- Facilities Mgmt	9-16-24 7.23.24			
Nikki Bleichner	nkbleic@ilstu.edu	ISU- Police	7.23.24			
Ryan Otto	rotto@normal.org	Town of Normal - Public Works	7.23.24			
Teresa Chapman	tachap1@ilstu.edu	ISU- Emergency Mgmt	7.23.24			
Thomas Durbin	tedurbi@ilstu.edu	ISU - Facilities Planning	9-16-24 ~~7.23.24~~			Teresa Chap
April Harman	aharmon2@ameren.com	Ameren	7.23.24			
Elizabeth Findlay	ekfindl@ilstu.edu	ISU EM		2	0	Elizabeth Findley
Stacey Mcilambre	smmcwila2@ilstu.edu	UHS		2		Stacey Mcilambre
Harmony Brucker	hmbruck@ilstu.edu	ISU - EHS				Harmony Brucker
Mike Gebeke	mdgebek@ilstu.edu	ISU - FS	9/16/24	2		M Gebeke
David Adams	dhadams@ilstu.edu	ISU SCS	9/16/24	2	.5	[illegible]

ISU Hazard Mitigation Plan Update | Sign-in Sheet | Public Meeting 9.16.24

Name	Email	Department /Organization	Date	ISU Staff - Hours	Miles Driven	Signature
Jeff Klepec	jmklepe@ilstu.edu	ISUPD	9/16	2	—	Jeff Klepec
Andy Morgan	amorga3@ilstu.edu	Dean of Students	9/16	2	—	[illegible]
Matt Schwab	MLSCHWA@ILSTU.EDU	OIE	9/16	2	—	[illegible]
Kris Harding	klhardi@ilstu.edu	Alumni Engagement	9/16	2	-	Kris Harding
Stacy Brown	slbrow2@ilstu.edu	Purchasing	9.16	2	—	Brown
Jeff Vargo	jmvargo@ilstu.edu	EMDH	9/16	2	—	[illegible]
Danielle Miller-Schuster	dnmille@ilstu.edu	OVPSA	9/16	2	—	Danielle Miller Schuster
Jill Wirth-Rissman	jkwirth@ilstu.edu	SHS	9/16	2	-	Jill Wirth-Rissman
Tom Heinzman	TAHEINZ@ilstu.edu	TS	9/16	2	—	[illegible]
Dan Thomas	dgthoma@ilstu.edu	TS	9/16	2		[illegible]

Appendix B. Local Press Release and Newspaper Articles

news.illinoisstate.edu/2024/08/hazard-mitigation-plan-public-meeting-september-16-2024/

sta... ITHelp - Login - ISU S... AppArmor - Illinois St... Home | Grants Portal Homepage - Aetna Optum Financial

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Report

Hazard Mitigation Plan public meeting, September 16, 2024

By University Staff August 23, 2024

Illinois State University is revising and enhancing its plans for natural hazards, such as severe weather and flooding, thanks to a grant from the Federal Emergency Management Agency. Emergency planning officials from Southern Illinois University – Carbondale (SIUC), who have assisted communities through the state with such plans, have partnered with Illinois State on the update.

A public presentation by SIUC officials will highlight the natural hazards facing the University and engage attendees in a discussion regarding strategies for managing the impacts from identified threats.

Join us to learn more about the emergency planning and provide feedback on:

- Monday, September 16, 2024
- 10 a.m.-noon
- Alumni Center, Room 116

The plan identifies natural hazards facing the University and ways to limit vulnerability to such hazards. Strategies within the plan will address the location and maintenance of storm shelters and ways to mitigate threats from flooding.

A draft for the plan is expected to be available by December 2024 and finalized by spring 2025.

Units

Media Relations, *University*

Public Notice

Illinois State University is revising and enhancing its plans for natural hazards, such as severe weather and flooding, thanks to a grant from the Federal Emergency Management Agency. Emergency planning officials from Southern Illinois University – Carbondale (SIUC), who have assisted communities through the state with such plans, have partnered with Illinois State on the updated plan.

A public presentation by SIUC officials from 10am - 12pm, Monday, September 16, 2024, in the Alumni Center, Room 116, will highlight the natural hazards facing the University and engage attendees in a discussion about strategies for managing the impacts from identified threats. Members of the University community are encouraged to attend to learn more about the emergency planning and provide feedback.

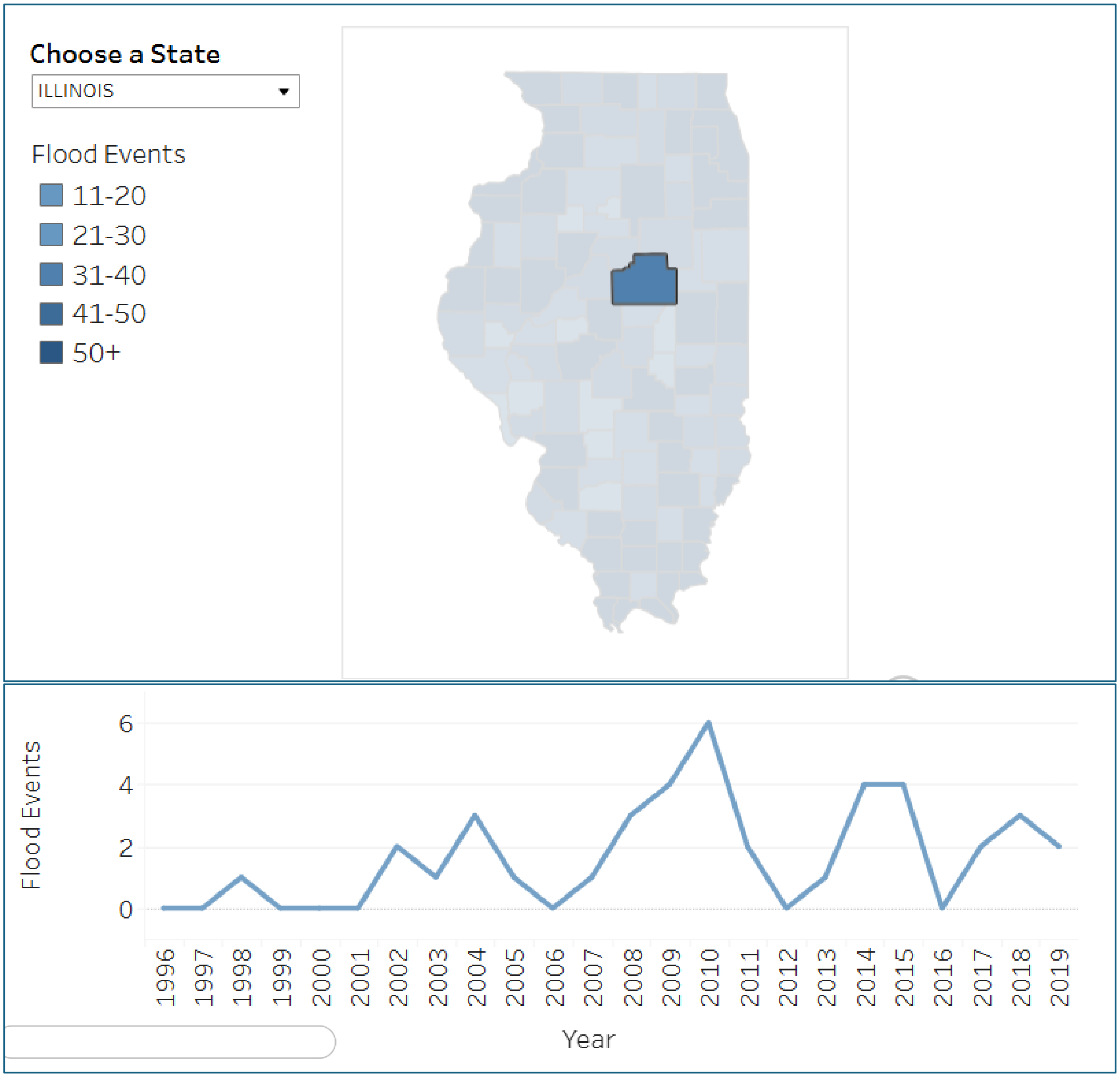
The plan identifies natural hazards facing the University and ways to limit vulnerability to such hazards. Strategies within the plan will address the location and maintenance of storm shelters and ways to mitigate threats from flooding. The plan is expected to be in draft form by December and finalized in Spring of 2025.

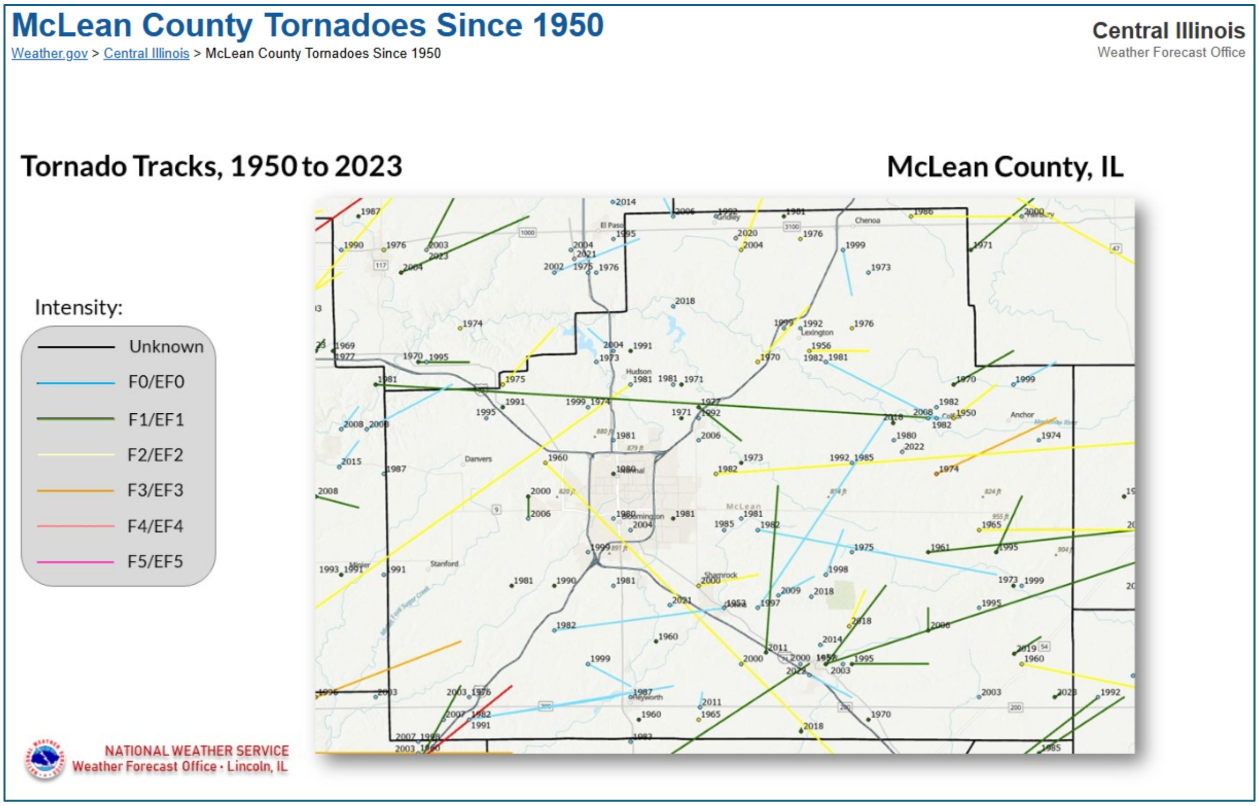
SAFE REDBIRDS

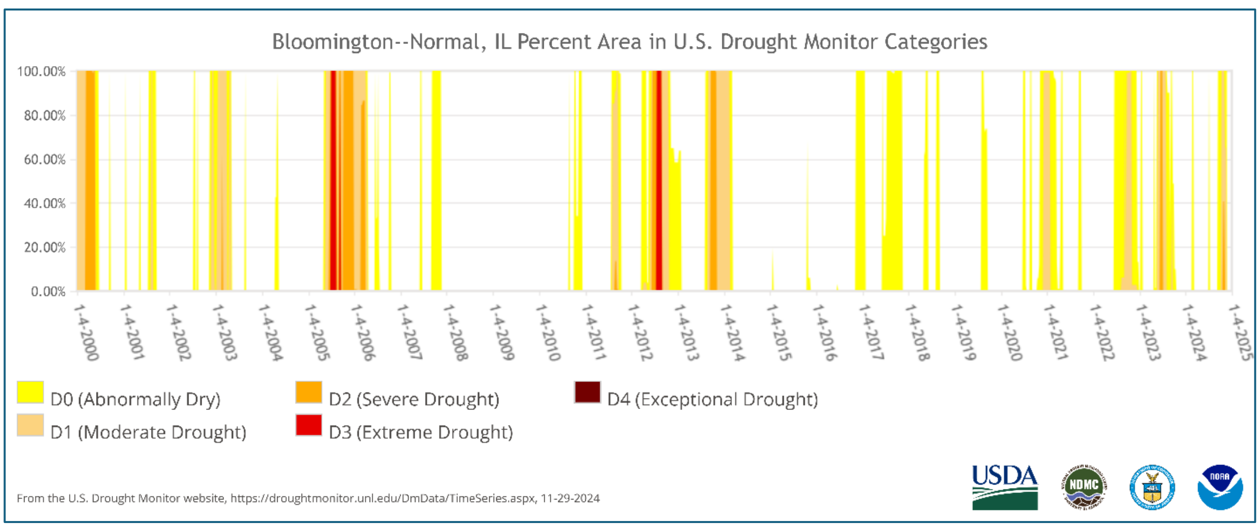
Appendix C. Adopting Resolutions

See page i for adoption

Appendix D. Historical Hazards




McLean County Tornadoes Since 1950
Weather.gov > Central Illinois > McLean County Tornadoes Since 1950
Central Illinois
Weather Forecast Office
Tornado Tracks, 1950 to 2023
McLean County, IL
Intensity:
Unknown
F0/EF0
F1/EF1
F2/EF2
F3/EF3
F4/EF4
F5/EF5
NATIONAL WEATHER SERVICE
Weather Forecast Office • Lincoln, IL


Bloomington--Normal, IL Percent Area in U.S. Drought Monitor Categories
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
1-4-2000
1-4-2001
1-4-2002
1-4-2003
1-4-2004
1-4-2005
1-4-2006
1-4-2007
1-4-2008
1-4-2009
1-4-2010
1-4-2011
1-4-2012
1-4-2013
1-4-2014
1-4-2015
1-4-2016
1-4-2017
1-4-2018
1-4-2019
1-4-2020
1-4-2021
1-4-2022
1-4-2023
1-4-2024
1-4-2025
D0 (Abnormally Dry)
D1 (Moderate Drought)
D2 (Severe Drought)
D3 (Extreme Drought)
D4 (Exceptional Drought)
From the U.S. Drought Monitor website, https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx, 11-29-2024
USDA
NDMC

Appendix E. List of Essential Facilities

Table 1; Essential Facilities at Illinois State University

Building Name	Building Description	City	ZIP Code	Total Real Property
Bone-Braden Student Center	Admin Building	Normal	61790	$78,259,825.00
Hovey Hall & Annex (Admin Hub)	Admin Building	Normal	61761	$18,427,709.00
Moulton Hall (Uni. Registrar)	Admin Building	Normal	61790	$9,885,075.00
Office Of Residential Life	Admin Building	Normal	61790	$1,545,245.00
Office Of Risk Management	Admin Building	Normal	61790	$147,794.00
Office Of Sustainability	Admin Building	Normal	61790	$532,164.00
Student Accounts Building	Admin Building	Normal	61790	$930,877.00
Student Services Building	Admin Building	Normal	61790	$15,588,358.00
Campus Services Building	Admin Building	Normal	61790	$131,959.00
Parking Decks (3)	Utility/Warehouse	Normal	61790	$26,064,539.00
Hazardous Waste Building	Utility/Warehouse	Normal	61790	$56,314.00
Heating/Power Plant	Utility/Warehouse	Normal	61790	$5,543,286.00
Machinery Storage	Utility/Warehouse	Normal	61790	$147,794.00
NW Chiller Loop	Utility/Warehouse	Normal	61790	$10,655,430.00
SE Chiller Loop	Utility/Warehouse	Normal	61790	$10,621,920.00
South Campus Power Plant	Utility/Warehouse	Normal	61709	$3,493,316.00
Carter Harris Physical Plant	Utility/Warehouse	Normal	61790	$5,236,149.00

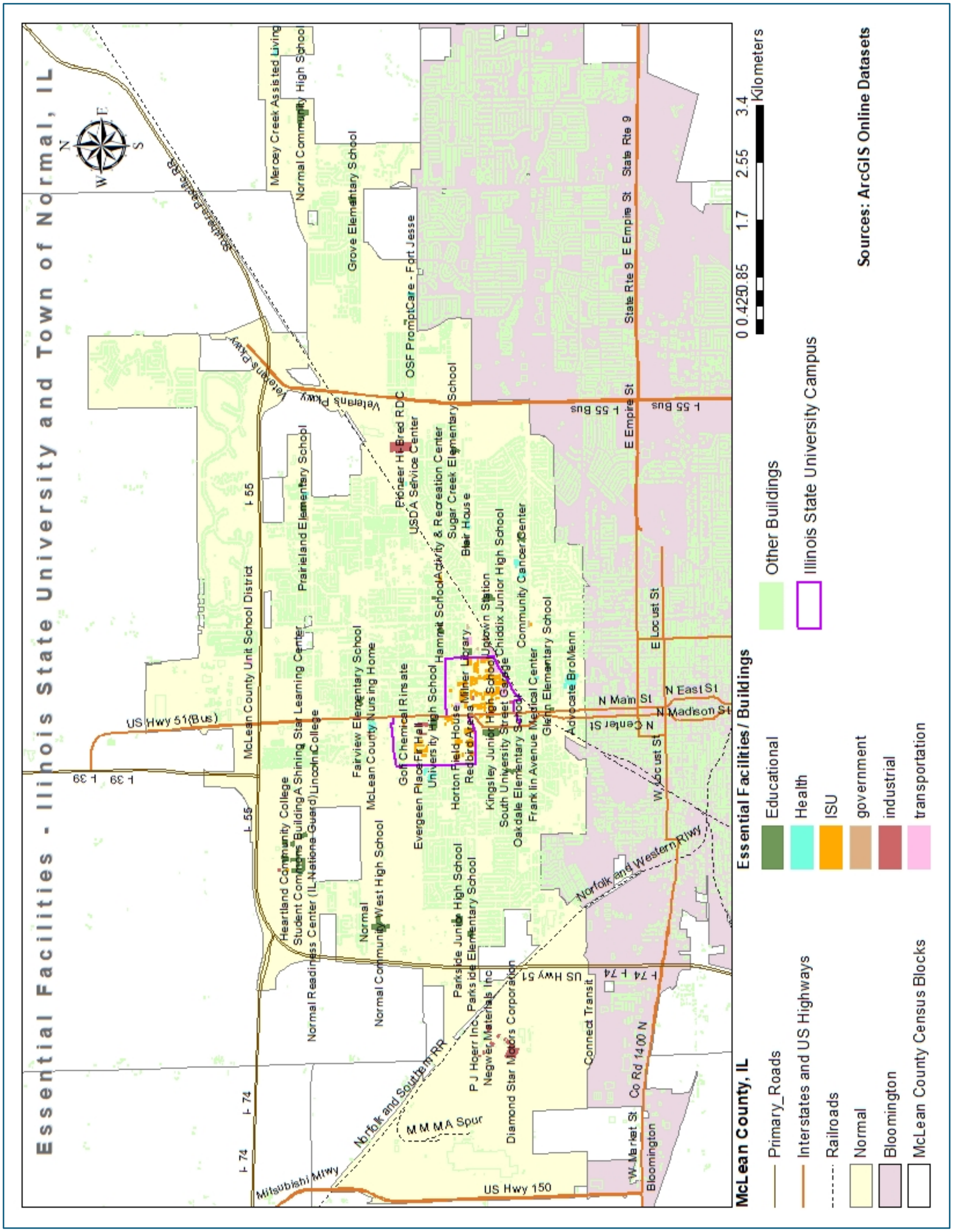
Table 2: Essential Facilities at Bloomington-Normal Community in McLean County

Facility Name	Address	Website
Emergency Operations Center		
Town of Normal Emergency Operations Center	100 E. Phoenix Ave., Normal, IL 61761	https://www.normalil.gov/
McLean County Risk Management	115 East Washington Street, Bloomington, Illinois, 61701	
Fire Stations		
Headquarters Fire Station 1	606 S. Main St., Normal, IL 61761	https://www.normalil.gov/576/Headquarters
Fire Station 2	1300 E. College Ave., Normal, IL 61761	https://www.normalil.gov/1385/2-Fire-House
Fire Station 3	1200 E. Raab Rd., Normal, IL 61761	https://www.normalil.gov/324/3-Fire-House
Bloomington Fire Department and Ambulance Station 1- Headquarters	310 North Lee Street, Bloomington, IL	
Bloomington Fire Department and Ambulance Station 2	1911 East Hamilton Road, Bloomington, IL	
Bloomington Fire Department and Ambulance Station 3	2301 East Empire Street, Bloomington, IL	

Bloomington Fire Department and Ambulance Station 4	1705 South Morris Avenue, Bloomington, IL	
Bloomington Township Fire Protection District Station 1	14880 Old Colonial Road, Bloomington, IL	
Bloomington Township Fire Protection District Station 2	1801 South Morris Avenue, Bloomington, IL	
Dale Fire Protection District- Shirley	8051 East 1100 North Road, Bloomington, IL	
Police Stations		
Normal Police Department	100 E. Phoenix Ave., Normal, IL 61761	https://www.normalil.gov/1573/Police
Bloomington Police Department	305 South East Street, Bloomington, Illinois, 61701	
Water Department		
Normal Water Department	107 East Mulberry Street, Normal, IL	https://www.normalil.gov/494/Water
Bloomington Water Department	603 West Division Street, Bloomington, IL	
Utilities		
Ameren Illinois	North Mitsubishi Motorway, Normal, IL	
Ameren Illinois	2706 East Oakland Avenue, Bloomington, IL	
Nicor Gas	1305 Martin Luther King Drive, Bloomington, IL	
Corn Belt Energy Corporation	1 Energy Way, Bloomington, IL	
Power Illinois	400 North Roosevelt Avenue, Bloomington, IL	
Twin City Energy Services Inc	3311 Barrington Road, Bloomington, IL	
Hospitals/ Healthcare facilities		
Carle BroMenn Medical Center	1304 Franklin Ave., Normal, IL 61761	https://carle.org/locations/carle-bromenn-medical-center
The Loft Rehabilitation and Nursing	510 Broadway, Normal, IL 61761	https://theloftrehab.com/normal/
Community Health Care Clinic	900 Franklin Ave., Normal, IL 61761	https://chcchealth.org/
OSF Medical Group- Primary Care	2200 Fort Jesse Road, Normal, IL 61761	https://www2.osfhealthcare.org/locations/osf-medical-group-primary-care-normal-120262
Heartland Health Care Center-Normal	510 Broadway, Normal, IL 61761	https://www.senioradvice.com/nursing-homes/normal-il
The Arc at Normal	509 N. Adelaide St., Normal, IL 61761	https://www.arcadialtc.com/the-arc-at-normal
Heritage Health Normal	509 N. Adelaide St., Normal, IL 61761	https://www.seniorly.com/skilled-nursing-facility/illinois/normal/heritage-health-normal
McLean County Nursing Home	901 N. Main St., Normal, IL 61761	https://www.mcleancountyil.gov/94/Nursing-Home
Blair House	1200 E. College Ave., Normal, IL 61761	https://blairhousenormal.com/
Heritage Enterprises	115 W. Jefferson St., Bloomington, IL 61701	https://www.heritageofcare.com/
Asta Care Center of Bloomington	1509 N. Calhoun St., Bloomington, IL 61701	https://astacare.com/

Heritage Health Therapy and Senior Care- Bloomington	700 E. Walnut St., Bloomington, IL 61701	https://www.heritageofcare.com/locations/bloomington
St. Joseph's Medical Center	2200 E. Washington St., Bloomington, IL 61701	https://www.sclhealth.org/locations/st-joseph-hospital/
Schools/ Colleges		
Normal Community High School	3900 E. Raab Rd., Normal, IL 61761	https://www.nchs.unit5.org/
Normal Com. West High School	501 N. Parkside Rd., Normal, IL 61761	https://www.ncwhs.unit5.org/
Kingsley Junior High School	303 Kingsley St., Normal, IL 61761	https://www.kingsley.unit5.org/
Chiddix Junior High School	300 S. Walnut St., Normal, IL 61761	https://www.chiddix.unit5.org/
Glenn Elementary School	306 Glenn Ave., Normal, IL 61761	https://www.glenn.unit5.org/
Fairview Elementary School	416 Fairview St., Normal, IL 61761	https://www.fairview.unit5.org/
Oakdale Elementary School	601 S. Adelaide St., Normal, IL 61761	https://www.oakdale.unit5.org/
Parkside Elementary School	1900 W. College Ave., Normal, IL 61761	https://www.parksideel.unit5.org/
Prairieland Elementary School	1300 E. Raab Rd., Normal, IL 61761	https://www.prairieland.unit5.org/
Sugar Creek Elementary School	200 N. Towanda Ave., Normal, IL 61761	https://www.sugarcreek.unit5.org/
Colene Hoose Elementary school	600 Grandview Dr., Normal, IL 61761	https://www.hoose.unit5.org/
Grove Elementary School	1101 Airport Rd., Normal, IL 61761	https://www.grove.unit5.org/
Parkside Junior High School	101 N. Parkside Rd., Normal, IL 61761	https://www.parksidejh.unit5.org/
Prairieland Elementary School	1300 E. Raab Rd., Normal, IL 61761	https://www.prairieland.unit5.org/
Sugar Creek Elementary School	200 N. Towanda Ave., Normal, IL 61761	https://www.sugarcreek.unit5.org/
Cedar Ridge Elementary School	2808 Breezewood Blvd., Bloomington, IL 61704	https://www.cedarridge.unit5.org/
Evans Junior High School	2901 Morrissey Dr., Bloomington, IL 61704	https://www.evans.unit5.org/
Fox Creek Elementary School	3910 Timberwolf Trail, Bloomington, IL 61705	https://www.foxcreek.unit5.org/
Northpoint Elementary School	2602 E. College Ave., Bloomington, IL 61704	https://www.northpoint.unit5.org/
Pepper Ridge Elementary School	2602 Danbury Dr., Bloomington, IL 61705	https://www.pepperridge.unit5.org/
Benjamin Elementary School	6006 Ireland Grove Rd., Bloomington, IL 61705	https://www.benjamin.unit5.org/
Towanda Elementary School	304 S. East St., Towanda, IL 61776	https://www.towanda.unit5.org/
Carlock Elementary School	301 W. Washington St., Carlock, IL 61725	https://www.carlock.unit5.org/
Hudson Elementary School	502 N. Broadway St., Hudson, IL 61748	https://www.hudson.unit5.org/

Appendix F. Critical Facilities Map



Appendix G. Illinois State University Campus Map